



Accelerating renewable energy finance in Indonesia: The potential of municipal green bonds

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CONTENTS

Executive Summary	1
Key Findings	1
Recommendations	3
1. Introduction	6
1.1 Green bonds landscape in Southeast Asia	8
1.2 Opportunity for sub-national governments to finance renewable energy development using municipal green bonds	10
2. Local governments are eligible to issue municipal bonds	12
2.1 Easier procedures to issue municipal bonds	12
2.2 Eligibility requirements for provincial governments with high fiscal capacity like in Java Islands are less challenging than for others	13
1. Prudent loan amount	14
2. Demonstrated ability to repay debts	14
3. No existing arrears	14
4. Passed financial audit	15
3. Market participants are still conservative about municipal green bonds	18
3.1 The rating, reputation, and liquidity of green bonds are put to the same standards as commercial bonds, with perceived increase in risk for green bonds	19
3.2 The need for sweeteners and other qualitative enablers	22
4. Challenges from the supply and demand sides in municipal bond issuance	24
4.1 Skepticism about municipal governments	24
4.2 Existing policies and regulations have limited ability to improve market appetite	25
5. Conclusion	28
6. References	30
Appendix A: Indonesia's Green Bond Framework	31
Appendix B: Market Survey on the Attractiveness of Municipal Green Bonds	33

EXECUTIVE SUMMARY

Indonesia, like its counterparts around the world, has reallocated its 2020 fiscal budget of USD 49 billion (IDR 695.2 trillion) for healthcare, social assistance, and small businesses to cushion the negative impacts of the COVID-19 pandemic. This reallocation consequentially reduced the fiscal capacity of local governments in Indonesia to finance long-term climate goals. Among other impacts, this reduced capacity is a potential threat to achieving Indonesia's energy transition target: cities are a key component to Indonesia's mandated National Energy Policy of reaching 23% renewable energy contribution in the energy mix by 2025.

A potential solution comes in the form of green bonds—sovereign bonds that have positive environmental and/or climate benefits—that can be issued by subnational governments with adequate fiscal capacity to borrow.

Despite their potential, Indonesia's capital market is yet to see the issuance of municipal green bonds due to multiple challenges. These include complex eligibility requirements and issuance procedures, relative government inexperience with municipal green bonds, limited market appetite, inadequate profitable projects in the pipeline, and low green awareness in the industry. The most notable challenge remains the bureaucratic procedures in the sub-national regions.

In this paper, we propose the use of municipal bonds to support Indonesia's energy transition targets and analyze the overall feasibility of implementing such bonds. We identify three main factors that make a strong case for accelerating green bond issuance by municipal governments in Indonesia:

- i. Indonesia's energy transition target;
- ii. the existence of local governments with high fiscal capacity to issue bonds; and
- iii. the rising appetite of the local governments to issue green bonds and the market to buy green bonds whenever sufficiently attractive.

We also outline the opportunities and challenges, both on the supply and demand side, and explore potential solutions to overcome the gaps in issuing municipal bonds.

KEY FINDINGS

Implementation barriers remain for municipal bonds, which are described below:

- 1. Complex eligibility requirements and issuance procedures make it difficult to issue municipal bonds.**

In order to issue bonds, local governments need to fulfill four criteria as mandated by the Ministry of Finance (MoF)¹:

¹ Regulation No. 146/ 2006

- i. prudent loan amount;
- ii. no existing arrears;
- iii. demonstrated ability to repay debts; and
- iv. should have passed the financial audit.

Based on our research, all provincial governments on Java Island are eligible, except for Central Java which has a lower Debt Service Coverage Ratio (DSCR) compared to the requirement set by MoF. The number of ineligible governments is likely to be much higher if provincial governments outside Java Islands are taken into account as they have limited financial capacity.

Complex bureaucratic procedures to issue municipal bonds remain the biggest hurdle for local governments. Prior to 2020, municipal governments were required to seek approval from Dewan Perwakilan Rakyat Daerah (DPRD) or the local House of Representatives. But with the Omnibus Law on Job Creation², passed in October 2020, municipal governments are no longer required to do so. This is a welcome development that, along with other reforms, will hopefully improve the efficiency of municipal bond issuance.

2. Municipal bonds need to achieve high credit ratings as investors are mostly motivated by commercial interest.

We conducted a market survey among securities companies and domestic and foreign investment banks, which reveals that green bonds, by themselves, are not enough. Market participants admit that they are not motivated to include green investments as a mandate in their annual portfolio. Investors' decisions are primarily influenced by the rating of the bond, reputation of issuers, the tenor of the bond (prefer short tenors), guarantor, and the coupon rate.

We further found that market participants typically consider bonds that are at least rated by Pefindo (a locally-owned domestic credit rating agency). Securities companies and domestically owned investment banks usually accept a minimum bond rating of AA- or A-, while international investment banks can usually accept a minimum rating of BBB.

3. Inadequate profitable projects in the pipeline, technical and regulatory hurdles, low green awareness in the industry, and additional costs discourage investors to include green bonds in their annual portfolio.

Our survey showed that market participants are also skeptical about the readiness of the government in issuing municipal green bonds. The primary concerns include the limited pipeline of profitable renewable energy projects, inexperienced bureaucrats, and possible challenges in getting approval from the local parliaments (or DPRD).

Further, mainly because green awareness in the industry is significantly poor, they also believe that municipal green bonds, already on tight budgets, may incur additional costs due to green bond labeling, the need for green campaigns, project feasibility studies, and capacity-building activities to prepare the local bureaucrats. Unclear regulations from the government do not help.

² The Job Creation Act, officially Law Number 11 of 2020, is a bill that was passed on 5 October 2020 by Indonesia's People's Representative Council, with the aim of creating jobs and raising foreign and domestic investment by reducing regulatory requirements for business permits and land acquisition processes.

RECOMMENDATIONS

Based on our analysis, we recommend the following measures to accelerate municipal green bond issuance for financing renewable energy development by sub-national governments in Indonesia:

1. **Simplification of issuance requirements and procedures** such as lowering the DSCR criteria and flexibility to issue short and medium-term bonds (or with tenor less than 5 years) will increase the interest of local governments to use municipal bonds as an alternative financing option to develop renewable energy. Simplification will also help remove some of the technical barriers that inexperienced bureaucrats must overcome to successfully issue municipal green bonds.
2. **Clear and consistent policies on renewable energy from the central government** will convince local investors to consider subscribing to municipal green bonds. A toolbox of policies, such as setting tariffs that match the economic price of renewable energy power generation and additional tax incentives, will increase the list of profitable renewable projects. The central government also needs to raise awareness and knowledge of green projects to persuade non-traditional investors to enter the market.
3. **Local governments should consider selling green municipal bonds to quasi-government institutions**, such as local state-owned banks, state-owned national pension, and insurance providers. Once there is a larger investor base, other smaller investors, pension managers, and insurance companies will be more confident to subscribe.

Table ES 1: How the existing municipal bond regulatory framework can meet the market appetite

Market Appetite	Key policies and regulations		Ability of policies to meet market appetite	
	Key points	Reference	Degree of Ability (0-5)	Notes
Bond Profile				
Reputable rating (e.g. PEFINDO)	The rating is not mandatory	POJK 61/2017 Municipal bonds registration	1	The market tends to pick up based on rating and yield
High yield/ coupon rate	N/A	-	N/A	Government regulations do not influence coupon rate, credit quality does.
Collateral/guarantee	Reserve fund + project-backed guarantee, Bonds guaranteed by municipal govt. budget	PP 56/2018 Regional loan, PMK 180/2015 Municipal bonds	5	Mandatory reserve funds render municipal bonds almost zero-risk for default
Higher underwriting fee	N/A	-	N/A	Depends on the local government's fiscal capacity to pay for underwriting

Transparency of the underlying project	Disclosure requirement, Revenue-generating pipelines only, >70% of proceeds must go to green projects	PP 56/2018 Regional loan, PMK 180/2015 Municipal bonds, POJK 60/2017 Green bonds	4	Current regulatory framework clearly mandates full disclosure of underlying projects
Shorter bond tenor option	Only municipal government's long-term loan can be sourced from the public	PP 56/2018 Regional loan	0	Municipal bonds are categorized as long-term loans with a minimum tenor of 5 years
Non-IDR transaction	Only IDR and domestic market transactions allowed	PP 56/2018 Regional loan	0	The use of local currency is a pivotal monetary policy for local revenue
Public Policy				
Audit of the municipal govt (i.e., BPK + Big Four).	Only BPK audit required	POJK 61/2017 Municipal bonds registration	2	Only audits from BPK with high pass (Wajar Tanpa Pengecualian) are mandatory
Better government incentive (i.e., tax advantage)	Lower bonds tax rate (from 15% to 10%), OJK-issued incentives, such as lower listing fee	UU 11/2020 Omnibus law, POJK 60/2017 Green bonds	4	Low tax rate improves investor appetite, while lower listing fee improves the issuer's appetite
Foreign market participation	Direct foreign loans are prohibited	PP 56/2018 Regional loan	0	Only the central government has the authority to issue foreign loans
Base/ minimum investors as benchmarks	N/A	-	N/A	No legal mandates requiring base/minimum investors as standby buyers
Clearer regulation/ policy synchronization	No house approval required	UU 11/2020 Omnibus law on job creation	4	The law can expedite the process of issuing municipal bonds, reducing cost
Precedent from central govt. issuance	Green sukuk and PT. SMI issuance	POJK 60/2017 Green bonds	4	The central government's precedence for issuing green bonds may improve municipal bond credibility
Strong prospects for green projects	N/A	-	N/A	No strong policy signal yet detected that command/ incentivize the market to subscribe to municipal bonds
Preferred Sweetener				
Physical assets with appreciable value	Only project-backed guarantee	PP 56/2018 Regional loan	1	While the project's asset can be used as a guarantee, it may not have appreciable value

Convertible bond (to stocks)	Only project-backed guarantee	PP 56/2018 Regional loan	N/A	Since there is no equity financing for municipal bonds, there is no legal basis for municipal convertible bonds
Reserve fund	Principal + interest guaranteed	PP 56/2018 Regional loan	5	Mandatory reserve funds make municipal bonds almost zero-risk for defaults
DAU/DAK direct automatic reallocation	N/A	-	0	DAK and DAU are central government fiscal instruments that requires the center's authorization
Cashflow waterfall to secure payment	Allow municipal governments the right to repay the bond before the maturity date (call option)	-	2	While this offers more flexibility for local governments, investors may not favor the call-back option
Bond that can be an underlying repo	N/A	-	N/A	Not regulated

Adverse impact
Low-to-medium impact
Positive impact
No impact

1. INTRODUCTION

On average, the world experienced an economic contraction of -3.5% in 2020 due to COVID 19³, with developing countries bracing for higher impact.⁴ The unprecedented scale of this public health crisis has forced countries to disburse fiscal stimulus, which has reduced their fiscal capacity to finance long-term climate goals.

In response, there are emerging attempts by governments around the world to simultaneously address the health crisis and climate goals by including green recovery in their fiscal stimulus measures. However, there is room for improvement. For example, in Asia, research shows that countries are not doing enough to incorporate climate considerations into their fiscal stimulus responses.⁵

Due to COVID-19, the financial resources needed to meet existing climate goals are likely to be large enough to require sovereign borrowing, such as through sovereign bonds. If a country has the capacity to take on more debt, then a bond issuance is a convenient way to mobilize financing. Other means such as raising domestic revenue or improving economic efficiency would take much longer to materialize.⁶ Therefore, issuing sovereign bonds that produce a climate-beneficial outcome can be solutions for governments with adequate fiscal capacity to borrow, in times of decreasing government revenue caused by COVID-19.

The green bond is a thematic debt instrument used to finance projects, assets, and activities that support climate change adaptation and mitigation. These bonds can be issued by governments, municipalities, banks and corporates.⁷ **Unlike normal or 'vanilla' bonds, green bonds must meet additional requirements to be labeled 'green'. Consequently, the process for issuing green bonds is generally lengthier than issuing conventional bonds.**

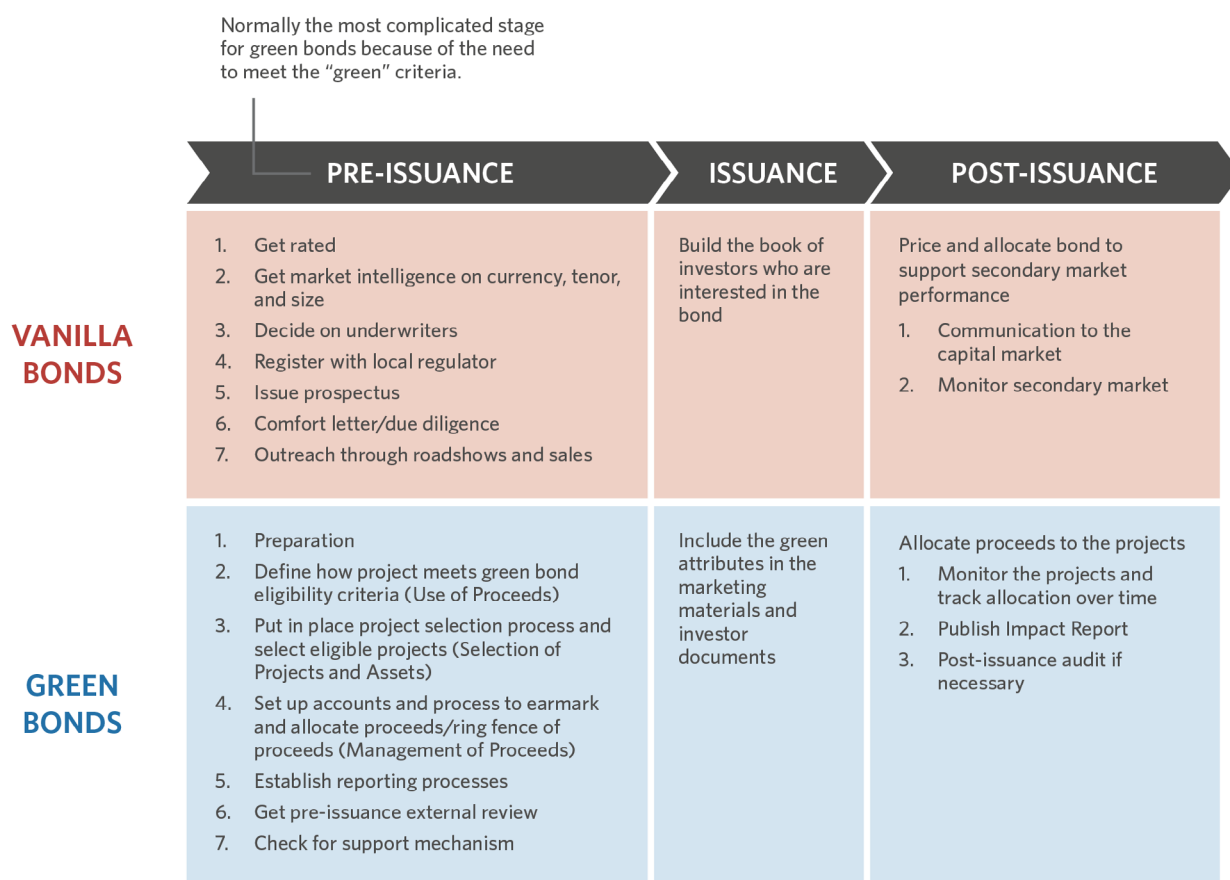
3 <https://www.imf.org/en/Publications/WEO/Issues/2021/01/26/2021-world-economic-outlook-update>

4 <https://www.worldbank.org/en/publication/global-economic-prospects>

5 <https://www.climatepolicyinitiative.org/publication/improving-the-impact-of-fiscal-stimulus-in-asia-an-analysis-of-green-recovery-investments-and-opportunities/>

6 <https://www.climatepolicyinitiative.org/publication/recovery-bonds/>

7 <https://www.climatebonds.net/files/reports/asean-sotm-2020.pdf>

Figure 1: Distinction of green bonds and conventional bonds

Government bonds are generally regarded as a safe investment in times of COVID-19 pandemic, despite relatively low returns. For example, Indonesia's green sukuk and PT SMI bonds managed to secure a high number of subscribers, and Indonesia received the Climate Bonds Awards for largest green sukuk in the world in 2020.

Therefore, government bonds should play a key role in deploying upcoming strategic projects, and municipal governments are central to those efforts (CPI, 2020). Key municipalities such as Central Java, West Java, and Jakarta are forging ahead with plans for projects to install solar panels on municipal government buildings and public schools. These kinds of large-scale projects built on government assets are necessary to achieve scale and attract private investment in the long run. Unfortunately, these projects have struggled to find the financing necessary for deployment, especially in times of crisis impacting municipalities' fiscal flexibility. It is therefore pertinent for subnational governments to consider issuing municipal green bonds. Despite this, as of 2021 no municipal bonds have yet been successfully issued in Indonesia.⁸

This study aims to analyze how feasible it is for Indonesia's municipal governments to issue green bonds to finance renewable energy projects. This paper is structured into four key analyses:

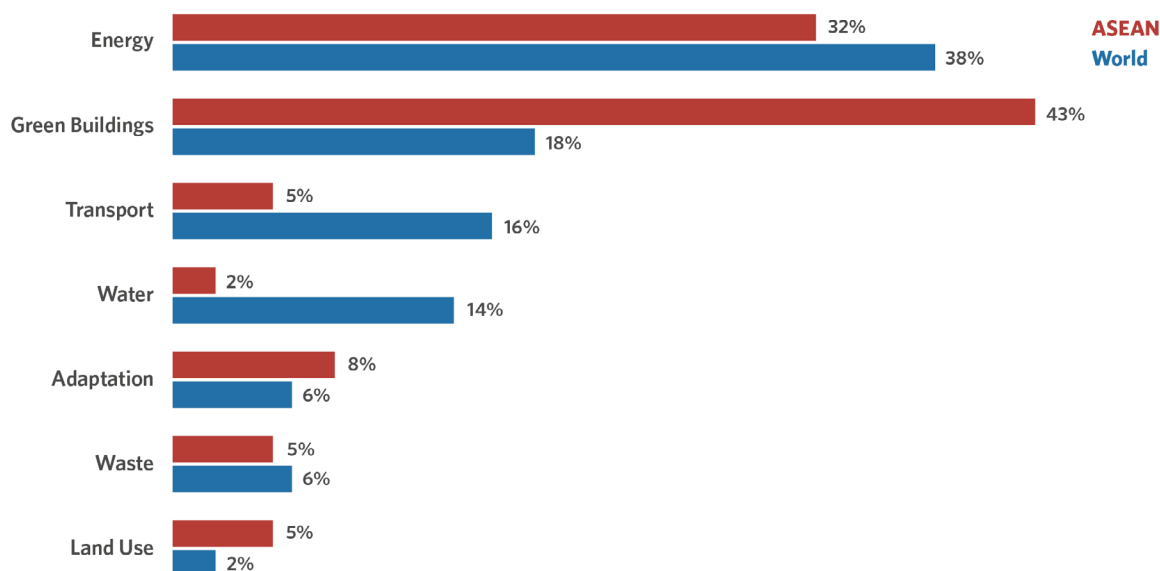
⁸ <https://www.thejakartapost.com/news/2020/12/08/ojk-expects-jobs-law-to-spur-municipal-bonds-issuance-amid-simplified-bureaucracy.html>

1. Overview of green bond trends in the SEA region and Indonesia impacting green bond attractiveness
2. The eligibility of local governments in Indonesia to issue municipal bonds
3. Market appetite for municipal bonds in Indonesia
4. Gap analysis of the existing regulatory framework and market appetite on municipal bonds in Indonesia

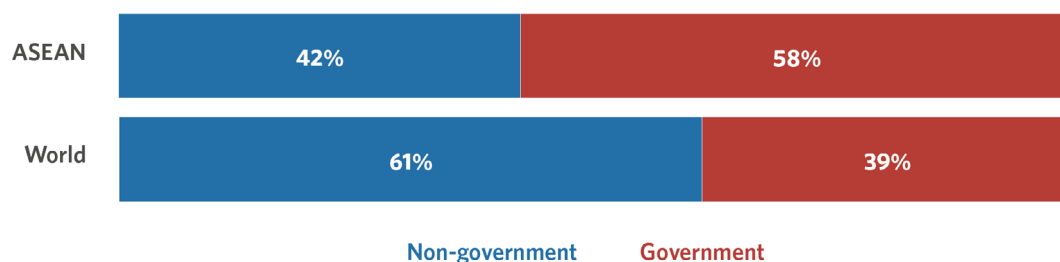
1.1 GREEN BONDS LANDSCAPE IN SOUTHEAST ASIA

More than two-thirds of green bonds issued in ASEAN⁹ countries were used to finance renewable energy and energy efficiency projects. This is different from the global trend, where green building projects make up the second highest target of proceeds at 18% of global green bonds after renewable energy generation. Meanwhile, in terms of issuers, the share of government bonds in ASEAN countries (58%) is higher than the global share (39%).

Figure 2: Use of green bonds proceeds in 2018



⁹ The Association of Southeast Asian Nations (ASEAN) is a regional grouping that promotes economic, political, and security cooperation among its ten members: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

Figure 3: Issuers of Green Bonds in 2018

Three South-East Asian countries – Malaysia, Singapore, and Indonesia – have already issued green bonds.. Each country has its underpinning objective for issuing green bonds. This includes specific activities that contribute to policies and guidelines regarding each country's domestic green bonds market, and how these activities have affected the state of their green bonds market. The comparison of the green bonds market in each issuing country is outlined in Table 1.

Table 1: Comparison of ASEAN green bond markets

Context		Action	Result
Malaysia	<ul style="list-style-type: none"> Malaysia aims to reduce 45% of its emissions by 2030 from its 2005 level. This is conditional on assistance from developed countries. It also aims to reduce its carbon intensity by 40% by 2020. 	<ul style="list-style-type: none"> The launch of the Sustainable and Responsible Investment (SRI) sukuk framework. SRI's eligible projects include those related to natural resources, renewable energy and energy efficiency, community and economic development, and waqf properties and assets. No municipal bonds were issued in Malaysia until Q1 2021. The government provides tax exemptions for recipients under the green SRI sukuk. The government also provides green bond grants, which partially cover the cost of the offering, particularly the cost of the external review up to USD 0.08 million. This grant applies to domestic and foreign issuers, and is also tax-exempt. 	<ul style="list-style-type: none"> The SRI sukuk is more attractive to domestic than international issuers. This is both due to the application of national standards and lack of internationally acknowledged guidelines for Islamic green bonds. Government bonds (PNB) dominate the issuance of green bonds. Underlying projects for green bonds go towards green building and solar projects.

Context	Action	Result
Singapore <ul style="list-style-type: none"> By 2030, Singapore aims to reduce its emissions intensity by 36% from 2005 levels, and make 80% of its buildings green. 	<ul style="list-style-type: none"> The Sustainable Bond Grant Scheme (SBGS) reduces the cost of the issuance of green bonds by covering the cost of the external review up to USD 0.07 million. It does not support the introduction of national green bonds standards, and instead acknowledges international green standards (e.g. ICMA, GBP, CBI). 	<ul style="list-style-type: none"> It is an attractive destination for the issuance of green bonds because it accepts existing international standards. The private sector dominates the issuance of green bonds, with tenures ranging from 2 – 15 years. Government green bonds were issued by City Developments Limited (CDL) to finance green buildings. Proceeds from green bonds issued in Singapore go towards low-carbon projects, such as green building and renewable energy in North America and Asian countries, including Indonesia.
Indonesia <ul style="list-style-type: none"> Indonesia aims to reduce 23% of its emissions between 2010 to 2030, and up to 41% with international assistance. It also aims for renewables to provide 23% of its total primary energy supply by 2025, and 31% by 2050. 	<ul style="list-style-type: none"> In 2017, the financial services authority (OJK) issued the sustainable finance framework, as well as the green bonds and green sukuk framework. Bonds or 'sukuk' issued by the government of Indonesia will utilize the climate budget tagging system to identify project pipelines that align with Indonesia's climate objectives. Indonesia's regulatory framework allows the issuance of municipal bonds with strict fiscal capacity standards and reserve fund requirement. 	<ul style="list-style-type: none"> The Ministry of Finance first issued green Islamic bonds (sukuk) in 2018, while PT. Sarana Multi Infrastruktur (SMI), Indonesia's infrastructure financing company, issued the first corporate green bonds in the same year. Government-issued bonds or even quasi-government issued bonds are considered to be safe investments with high credit ratings. For example, in 2018, PT. SMI obtained a AAA rating (by PEFINDO) with an aggregate size of USD 208 million (IDR 3 Trillion), 3-5 years of maturity and a coupon rate of 7.55% (3 years) and 7.8% (5 years). The government of West Java, one of Indonesia's most developed provinces, once attempted to issue municipal bonds but the attempt was vetoed by its house of representative as it coincided with the COVID-19 crisis. The issuance of green bonds in Indonesia is driven by the central government, but this has not yet permeated to local governments as no municipal bonds have been successfully introduced in Indonesia as of 2021.

1.2 OPPORTUNITY FOR SUB-NATIONAL GOVERNMENTS TO FINANCE RENEWABLE ENERGY DEVELOPMENT USING MUNICIPAL GREEN BONDS

The study identifies three key factors, that already exist, and have the ability to enhance the mobilization of green bonds issued by municipal governments (hereafter referred to as 'municipal bonds') for renewable energy investments. These key factors are (i) energy transition target, or the existing policy goals to accelerate renewable energy and energy efficiency investments (including green building); (ii) fiscal capacity and legal underpinning, or the existence of localities with high fiscal capacity to issue bonds and the legal basis for them to do so, and (iii) existing appetite from both local governments and the market to issue

municipal bonds. In summary, these factors contribute to the opportunity to issue municipal green bonds in Indonesia.

The first key factor involves clear energy transition targets. Indonesia has a set of policies and market appetite that lay the groundwork for municipal bonds for clean energy transition. The first of these is an emission reduction target; Indonesia aims to reduce 29-41% of carbon emissions by 2030. The second target is renewable energy generation. Nationally, Indonesia aims to increase the renewable energy mix from 10.5% to 23% in 2025 by installing 45.2 GW of renewable energy.

The second factor is the existence of localities with high fiscal capacity and a regulatory framework to issue municipal bonds. The localities include DKI Jakarta, West Java, Central Java, East Java and Bali. The framework includes governmental regulation 54/2018 on local government loans and the Ministry of Finance's regulation 111/2012 on municipal bonds. The combination of high fiscal capacity localities indicates that there are municipalities that can meet the credit criteria for issuing bonds with the legal basis to do so.

The last factor concerns the existing appetite of the local governments and the market. Several localities in Indonesia have shown an interest and have made efforts to issue municipal bonds. However, some localities in the Java region including Jakarta, West Java, Central Java, and Banyuwangi (district level) were unable to issue bonds despite their efforts due to the bureaucratic procedures in the regions, part of the reason is regional legislative councils (DPRD) that often disapprove the plan. Market demand for municipal bonds exists because government bonds are regarded as a safe investment in the post-COVID period. Although they offer a relatively low return, government-issued bonds such as Indonesia's green sukuk and PT. SMI bonds both managed to secure a high number of subscribers. The same success can potentially be replicated with municipal bonds.

2. LOCAL GOVERNMENTS ARE ELIGIBLE TO ISSUE MUNICIPAL BONDS

2.1 EASIER PROCEDURES TO ISSUE MUNICIPAL BONDS

Regulations from the Ministry of Finance require local governments to meet certain conditions to be eligible to issue municipal bonds. There are a few fundamental differences between municipal bonds and central government bonds; municipal bonds are not guaranteed by the central government budget and they cannot raise funds in foreign currency.

Table 2: Key regulatory principles to issue municipal bonds in Indonesia.

Key principles	Definition
Sovereignty	Municipal bonds, by definition, are issued by regional governments and are loans sourced from the general public.
	Local governments can issue municipal bonds only if they meet the local government loan requirements set by the central government.
	The issuance of municipal bonds must have the consent of the Minister of Home Affairs and the Ministry of Finance.
	Municipal bonds are not guaranteed by the central government.
	Municipal governments must obtain a permit from the Ministry of Finance if the bond volume exceeds the maximum local budget (APBD) deficit limit regulated by the Ministry of Finance.
Bond profile	The local government must receive a fair with exception (WDP) or fair without exception (WTP) opinion on its previous year's financial statements from the audit board of Indonesia (BPK).
	Municipal bonds can be issued only on the domestic capital market and in Indonesia's Rupiah currency.
	The outstanding loan amount and the loan amount to be withdrawn (bonds volume) may not exceed 75% of the total APBD revenue of the previous year.
	Local governments must fulfil the minimum loan repayment capacity (Debt Service Coverage Ratio—DSCR) set by the central government ($DSCR \geq 2.5$).
Use of proceeds	The proceeds from the issuance of municipal bonds can be used only to finance investment in infrastructure or public facilities that generate revenue for municipal governments and provide benefits to the general public.
	Underlying projects must be in accordance with regional planning documents, and can build on the existing activities, financing partially or completely.
	The financial services authority requires at least 70% of the green bonds' proceeds to flow into green projects, despite investors might expect more (close to 100% of proceeds).

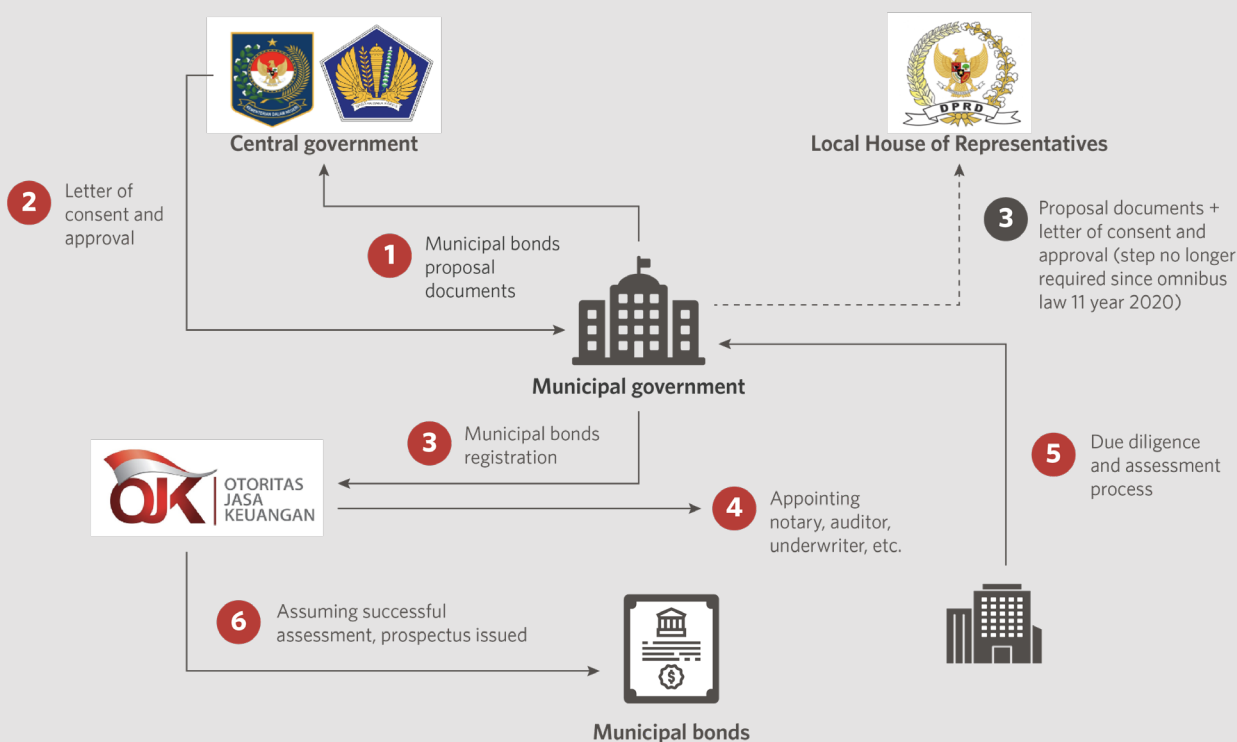
As a bond issuer, the local government is obliged to pay the principal and interest of each municipal bond at the time of maturity, and penalties for late payment on the principal and interest. Payments are budgeted in the APBD every year until the end of the repayment period. The sources of repayment originate from the income derived from all activities financed by the regional bonds. If the activities funded by the bonds has not generated

sufficient funds to repay the principal, interest, and fines, the payment obligation is paid from other sources of regional income. If the interest repayment exceeds the pre-budgeted funds, the governor or mayor will still need to make payments on the amount agreed. The realization of the regional bond interest repayment is budgeted into the APBD amendment and may be included in the budget realization report.

Box 1: Process to issue municipal bonds

In general, the process flow for municipal governments is outlined in the figure 4. It is important to note that municipal governments must obtain approval from the central government (Ministry of Home Affairs and Ministry of Finance). Prior to 2020, municipal governments had to obtain approval from the local House of Representative (DPRD) but with the issuance of the omnibus law 11 year 2020 on job creation, municipal governments are no longer required to do so.

Figure 4: Steps to issue municipal bonds in Indonesia



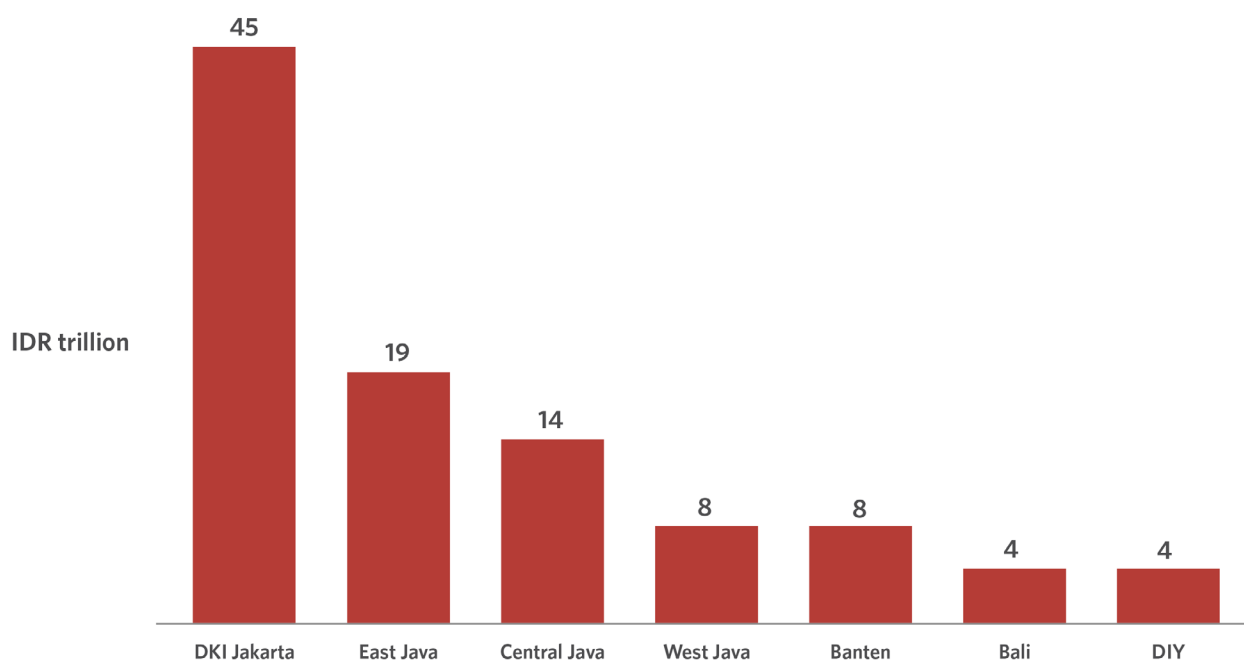
2.2 ELIGIBILITY REQUIREMENTS FOR PROVINCIAL GOVERNMENTS WITH HIGH FISCAL CAPACITY LIKE IN JAVA ISLANDS ARE LESS CHALLENGING THAN FOR OTHERS

Subnational governments wishing to issue bonds must fulfill four requirements as set out under the Ministry of Finance (MoF) regulation no. 146/ 2006 regarding issuance procedures, accountability, and publication of municipal bond information.

1. PRUDENT LOAN AMOUNT

As noted in the annual budget (APBD), the loan amount drawn must not exceed 75% of the previous year's subnational revenue. To exercise this requirement, we analyzed the potential loan amount for all provincial governments in Java and Bali, as this region contributes the most to the national GDP compared to other regions. Figure 5 summarizes the maximum available loan size for each provincial government.

Figure 5: Maximum Available Loan Size FY 2019 (IDR Trillion)¹⁰



DKI Jakarta has the largest maximum potential loans that can be accessed at IDR 44.6 trillion or USD 3.2 billion, followed by East Java at IDR 19.4 trillion or USD 1.4 billion (see Figure 5). The gap between these two provincial governments is due to Jakarta's ability to generate far more revenue than its peers in Java and Bali. Overall, each province has sufficient loan capacity to issue bonds.

2. DEMONSTRATED ABILITY TO REPAY DEBTS

The ability of the municipal government to repay debt is demonstrated through the Debt Service Coverage Ratio (DSCR). Local governments must maintain a minimum DSCR of 2.5 in order to access loans, in compliance with the Government Regulation No.56/ 2018 regarding municipal loan.

3. NO EXISTING ARREARS

The local government must not have any existing arrears on loan repayment to the central government.

¹⁰ Source: State Audit Agency (2020)

4. PASSED FINANCIAL AUDIT

Local governments must have passed their financial audit with a rating of fair with exception (WDP) or fair without exception (WTP) from the State Audit Agency (Badan Pengawas Keuangan). According to the state audit agency, 485 regional governments and all provincial governments received “WTP” in 2019, exceeding government mid-term planning goals.

Based on these four requirements, we assessed the eligibility of the seven provincial governments in Java and Bali according to these four requirements. Table 3 below summarizes the eligibility of those provinces.

Table 3: Eligibility assessment of the provincial governments of Java and Bali to issue municipal bonds

Provinces	DSCR	WTP/WP	Max Loan (IDR Tn)	No existing arrears
DKI Jakarta	27,1	WTP	44,6	✓
West Java	N/A	WTP	7,5	✓
Central Java	1,9	WTP	19,4	✓
East Java	106	WTP	7,5	✓
DIY	N/A	WTP	14,2	✓
Bali	N/A	WTP	4,2	✓
Banten	N/A	WTP	4,2	✓

Our assessment shows that all the provincial governments are eligible, except for Central Java, which has a lower DSCR than the Ministry of Finance’s requirement (Table 3). The DSCR for DIY, West Java, Bali, and Banten are not available due to the non-existence of interest-bearing liabilities. Therefore, the MoF will calculate their ability to repay the loan based on the issued bond amount and the DSCR following this. The number of non-eligible governments, besides Java Island that has a limited fiscal capacity, may increase significantly.

Box 2. Case study of solar rooftop implementation on government buildings in Central Java

The following case study builds on analysis of solar PV potential in Central Java recently conducted by the Institute for Essential Services Reform (IESR). Central Java has a solar PV potential of 4,05 kWh/kWp per day, which is above the national average potential, and is one of the three highest potential areas in Indonesia for solar PV deployment. The governor has issued an instruction to optimize solar PV installation in various sectors, such as on industrial, commercial, and public buildings.¹¹

The total investment required to install solar rooftops for all buildings would be IDR 143,1 billion, based on IESR’s estimation that 1 kWp requires IDR 18 million (Figure 6).

¹¹ Source: Powering the cities, potensi teknis plts atap di bangunan pemerintah Jawa Tengah, IESR 2021

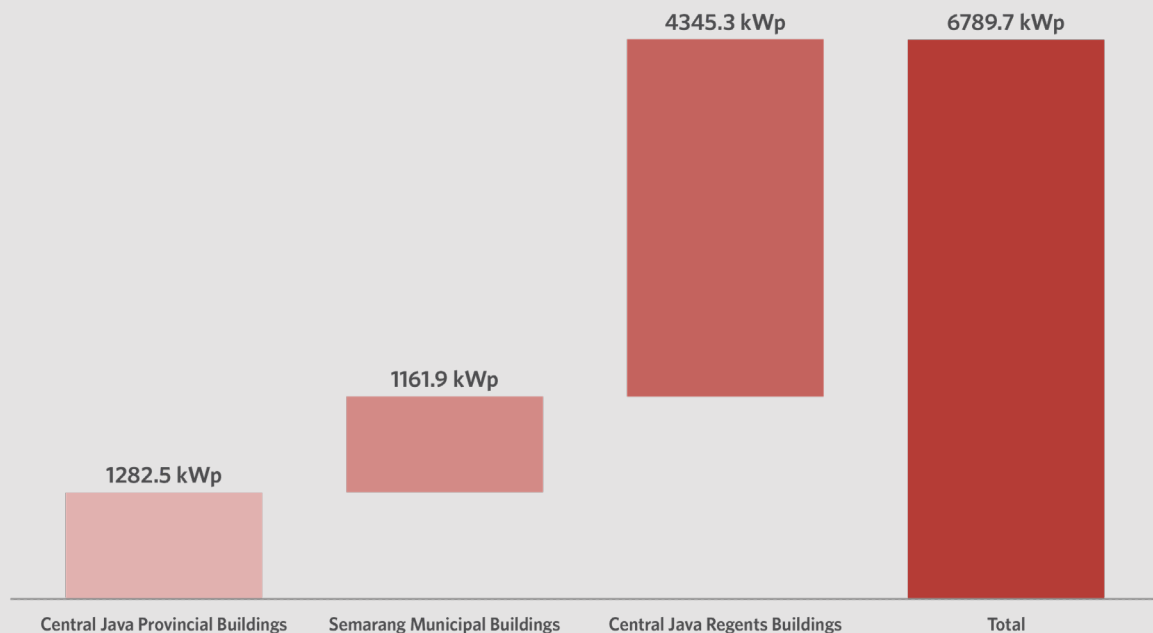
Figure 6: Solar rooftop capacity potential for government buildings in Central Java

Table 4 shows the result of the financing simulation for Central Java. The annual payment of interest and principal would be IDR 33.4 billion, adding to the existing debt payment of IDR 40 billion (2019)¹², so the total annual debt payment would be IDR 73.4 billion. The impacted DSCR decreases from 1.9 to 1.08.

Table 4: Rooftop solar financing simulation for government buildings in Central Java

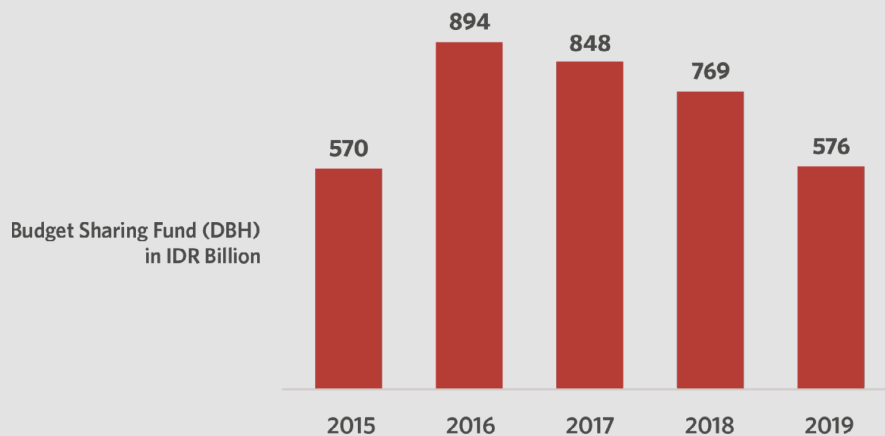
Buildings	Loan size (IDR)	Annual payment (IDR)	Total annual debt payment (IDR)	DSCR
Total buildings	143.123.400.000	33.403.733.517	73.740.184.061	1,08

Based on the simulation above, the financing needs for rooftop solar is still below the total maximum loan issued by the government of Central Java (IDR 14,2 Tn – Figure 4). However, despite the ability of the Central Java government to repay the loan, the DSCR is below levels required to issue municipal bonds. The low DSCR and low project costs are unattractive to investors given the size and the risk involved with the debt repayment.

As a common practice, financing risks are calculated every year. So, Central Java also needs to focus on maintaining the structure of the DSCR. The bond issuer/ borrower may need to maintain financial covenants that could also include the structure of DSCR. Therefore, it is essential to maintain steady revenue sources in order to access mid to long-term loan tenor. As one of the key elements in revenue structure, the budget sharing fund (DBH) of Central Java fluctuates every year, and this could affect the risk appetite of investors for loan repayment.

Other financing modalities such as municipal loans from PT SMI may be a better option for Central Java. Regional infrastructure financing through PT SMI is governed by MoF Regulation No.174/2016 regarding Guarantee to PT SMI for Assignment of Regional Infrastructure Financing, including energy-related projects such as rooftop solar.

¹² Interest and principal payment based on Central Java budget realization 2019

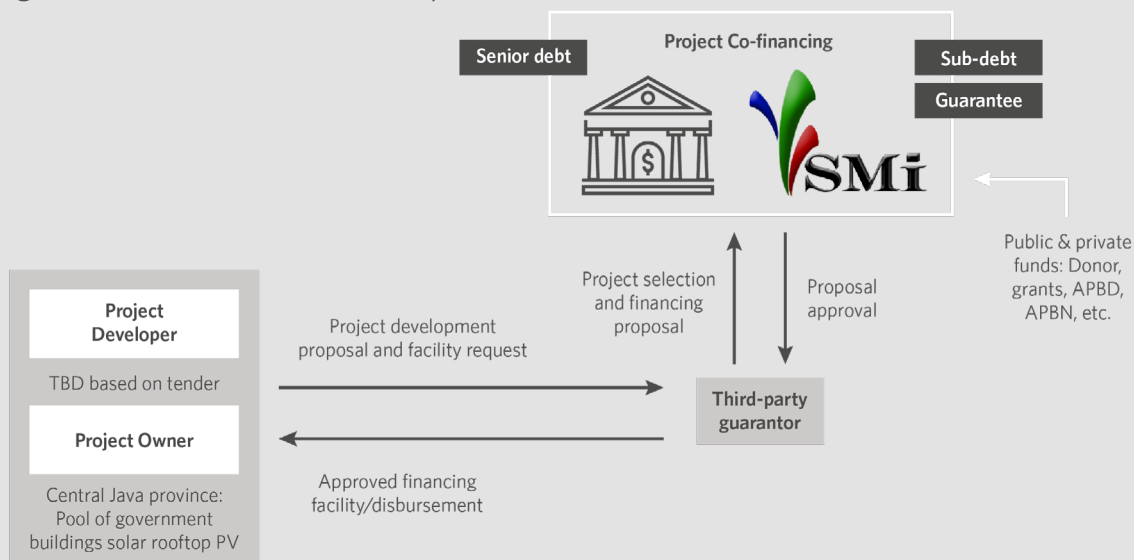
Figure 7a: Budget sharing fund to Central Java (2015-2019) – IDR Billion¹³

The key features of this regulation include:

- A capped interest rate on the loan provided by PT SMI to regional governments, equal to the yield of government bonds plus 0,75%, making it lower than the commercial interest rate.
- MOF provides a guarantee mechanism for PT SMI in case the subnational government defaults.

The general process to access municipal loans from PT SMI follows the same process and eligibility criteria with MoF regulation, however, PT SMI is able to absorb more risks due to the availability of the guarantee instrument. This is the reason why plenty of subnational government projects have been financed using this facility. As of 2020, PT SMI has mobilized IDR 10.67 trillion (USD 694 million) to 34 projects at subnational level to support their infrastructure projects, including hospitals (20% of the total commitment), road constructions (74% of the total commitment), and public market (6% of the total commitment).

Based on the municipal loan realization, currently, there is no financing for green sector projects. Therefore, given the adequate risk level of green sector investment, municipal loans through PT SMI should be an alternative source of finance especially for projects with low bankability. As a local development finance institution, PT SMI has also received an additional mandate as stipulated in Government Regulation (GR) 53/2020 juncto GR 66/2007 in October 2020 concerning the Establishment of PT SMI. Based on this GR, PT SMI can not only function as an infrastructure financing institution but can also provide financing to other development projects, including renewable energy and energy efficiency.

Figure 7b: Scheme to access municipal loans from PT SMI

3. MARKET PARTICIPANTS ARE STILL CONSERVATIVE ABOUT MUNICIPAL GREEN BONDS

While the previous chapters deal with the readiness or constraint from the government's supply side for municipal green bonds, it is necessary to understand the demand side of the market. CPI surveyed eleven market participants in Indonesia, which are securities companies and investment banks (either domestically owned or foreign owned), involved in the brokering and underwriting businesses. The survey collected information about their general attitude towards a hypothetical municipal green bond market that may exist in the future in Indonesia.

The survey asked the respondents to judge the degree of importance of internal and external considerations that may influence their corporate decision in subscribing and underwriting a municipal green bond. Internal considerations are considerations that relate directly with the bond itself, while external considerations are considerations that exist outside the bond. Both types of considerations affect the market participants' decision in subscribing and underwriting the bond. Each consideration carries different importance. Please refer to Appendix B for further explanation of each consideration.

Figure 8: The degree of importance of internal and external considerations for municipal green bonds

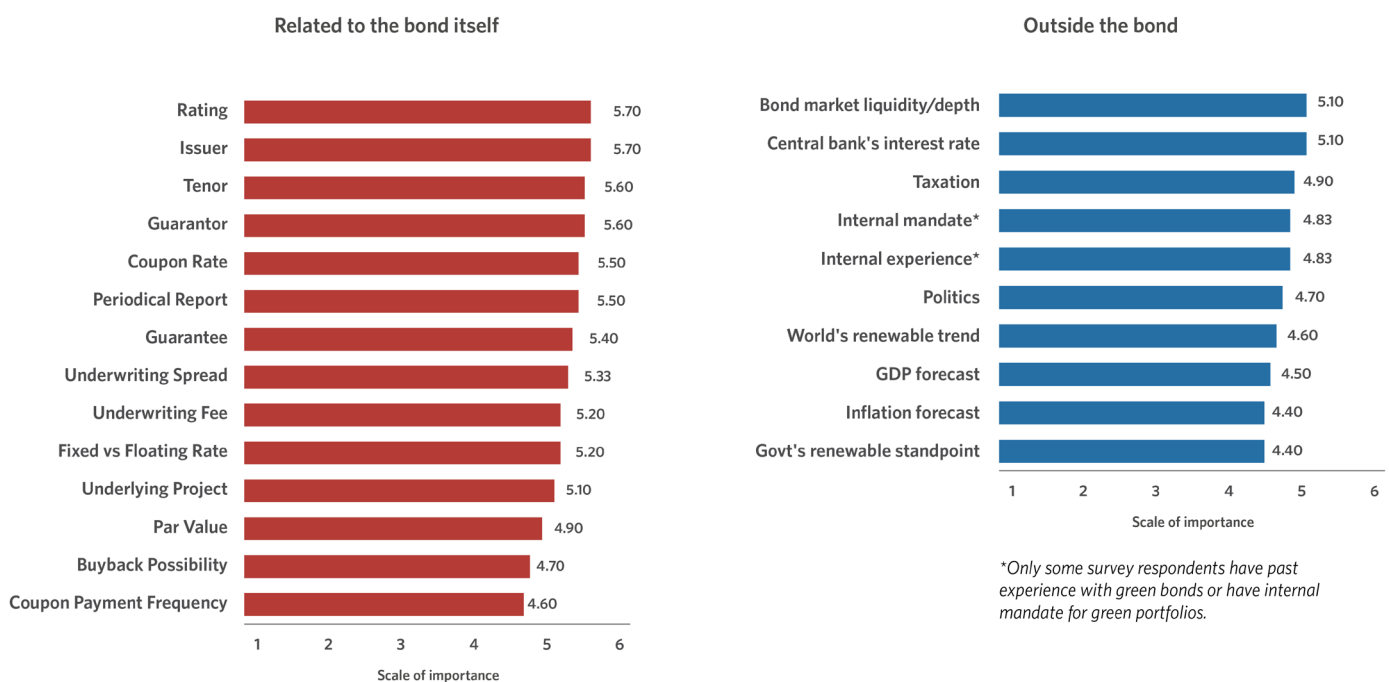
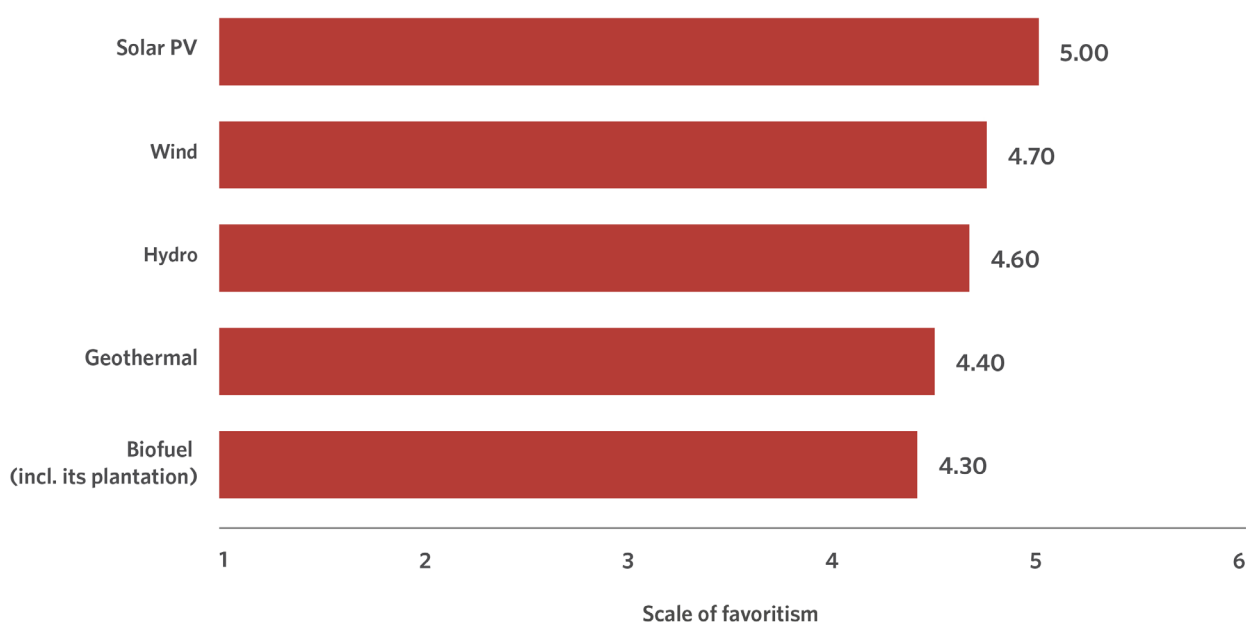


Figure 8 illustrates how the importance of each consideration is judged. The survey reveals that both the bond's rating and its issuer's reputation are the most important internal considerations. Meanwhile, bond market's liquidity or depth and the central bank's interest rate benchmark are the most important external considerations. The rating system, reputation, and liquidity will be discussed in greater detail in the following sections.

Most importantly, the survey finds that market participants do not actually care about the government's policy on renewables or global renewable trends. The respondents frankly stated that their calculation is typically conservative and conventional, and is mainly motivated by commercial interest.

As for their preference on different renewable energy projects, in general, the market participants mentioned that they are mainly familiar with and interested in solar PV, wind, and hydropower. Hydropower is rated next attractive, whereas geothermal and biofuel sources, including its plantation, have the lowest levels of attractiveness (Figure 9).

Figure 9: The degree of market favoritism of various renewable projects (from scale 1 to 6)



3.1 THE RATING, REPUTATION, AND LIQUIDITY OF GREEN BONDS ARE PUT TO THE SAME STANDARDS AS COMMERCIAL BONDS, WITH PERCEIVED INCREASE IN RISK FOR GREEN BONDS

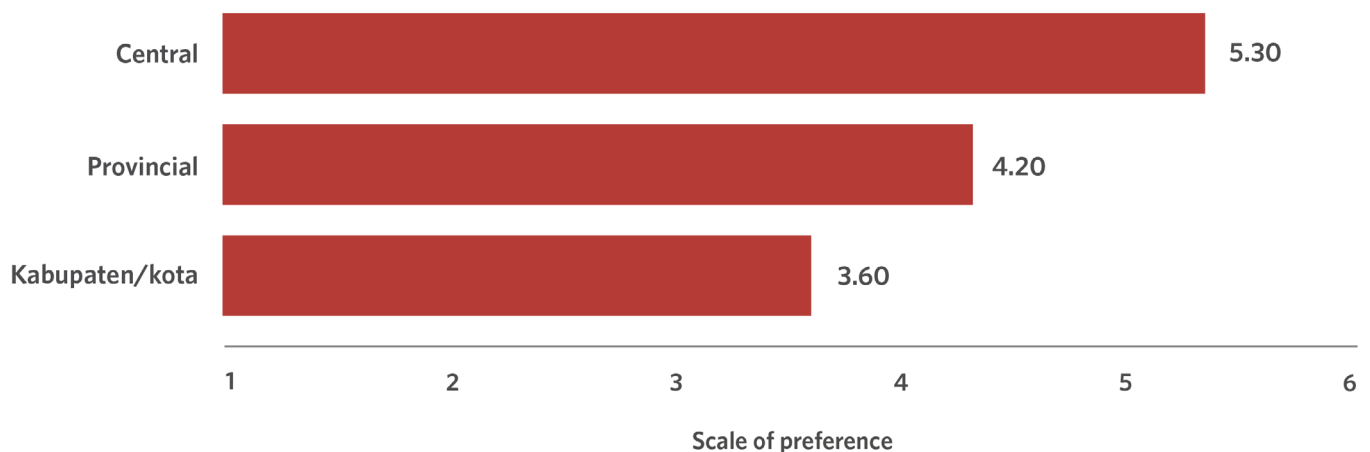
Market participants typically expect Indonesian bonds to be rated by Pefindo (a locally owned domestic credit rating agency). This is especially necessary for municipal green bonds, where some market participants expect the rating to deteriorate over time. They fear that municipal green bonds may come with obscure project characteristics and a high possibility of non-performing project, which can lead to default risks. Further, they believe

that renewable projects from the municipal government are just social development projects that do not generate profits. Thus, the bond may have low internal rates of return (IRR), leading to low coupon rates. Investors may accept low rates but they need better bond ratings to compensate.

Further, they require a minimum bond rating to subscribe or underwrite. Securities companies and investment banks that are domestically owned usually prefer AA- or A- rating as the minimum, while foreign-owned institutions can accept a BBB rating as the minimum. Foreign-owned institutions can tolerate lower ratings, or bonds with high risk in Indonesia, because they can offset them with low risk bonds from their global portfolio in exchange for relatively higher yield.

As for reputation, market participants expect any bond-issuing government in Indonesia to be audited by the Audit Board of Indonesia or BPK. The market participants also hope that these governments are audited by the big four financial auditing companies. The survey revealed that market participants would trust a green bond by default, if it is first issued by the central government, followed by the provincial government, and the district or kabupaten/kota government.

Figure 10: The degree of market preference by government hierarchy (from scale 1 to 6)



The market participants also named some of their favorite governments (Figure 10). The first takeaway is that the Jakarta and West Java governments are in the preferred group because they are thought to have strong fiscal capacity, professional human resources, and more potential projects. They were also in the news recently for their potential to issue bonds which market participants followed closely (although eventually this plan never materialized, see Box 3). The second takeaway is that any district or kabupaten/kota government would fall into the next group in the order of preference. The final takeaway is that any local government outside Java, tends to take last place. An additional concern is that the underlying project could be discontinued when the municipal government leaders change. This will contribute to the bond issuer's reputation from the market's perspective.

Figure 11: Favorite municipal governments in Indonesia, according to bond market participants

Market Favorites	Provincial Govt	Kab / Kota Govt
Best (usually those govts with past bond issuance plans)	 Jakarta  West Java	Any kab / kota government in Indonesia is less trusted than Jakarta and West Java provincial governments.
Second-best (where kab / kota govts start to be considered)	 Central Java  East Java	 Surabaya
Third-best (where non-Java govts start to be considered)	 Bali  East Borneo	 Medan

Domestic bond market liquidity is the most important factor, besides the bond itself, that affects how attractive it is to the investors to subscribe to or underwrite a bond. This means that when the market is not liquid, or when a bond is hard to resell in the market, the original bond buyer or owner will have to hold it until the bond matures. A green bond, where the underlying project is a long-term renewable project, and is likely to mature after more than five years, tends to be disliked by investors. Securities companies and investment banks, in particular, like to trade bonds rather than invest in them. Market liquidity becomes more important when the market participants underwrite the bond, because they may need to underwrite it based on 'best effort'.

Some market participants would like municipal green bonds to be issued in currencies other than IDR, and enable foreign investors to buy them. They believe that the penetration of foreign investors into the bond market can increase the market transaction volume, and help the market to become more liquid, and thus more attractive. Other than this preference, participants would like municipal green bonds to be available with shorter maturity periods of less than 5 years.

Box 3. Why municipal bonds issuance failed to happen in the past.

There are many reasons for failed municipal bond issuance in Indonesia. Some reasons are attributed to external factors (ADB, 2020). Shallow capital market in Indonesia means few potential buyers in the market. Apart from that, Jakarta government also mentioned the 2008 financial crisis as the reason of why they postponed issuing their bond in that year.

As for the municipal governments' readiness, low public financial management capability and low creditworthiness are the two frequently mentioned problems. The Audit Board of Indonesia or BPK said in 2008 that the Jakarta government's balance sheet at that time was not enough to achieve AAA rating. Therefore, market demanded high coupon rate to offset the risks, something which disincentivized the Jakarta government to issue the bond.

It is also common to witness a changing plan, which is caused by poor internal decision-making process within the municipal government itself, or by poor coordination with the central government. Jakarta government cancelled their bond issuance plan in 2012 after discovering that local budget reallocation was apparently enough to fund the projects they wanted. West Java government discontinued their bond issuance plan for Kertajati Airport after the central government unexpectedly decided to finance the airport development.

For other municipal governments in Indonesia, it is usually not convenient to conduct a public exposure or roadshow to potential investors, as they are not accustomed to being asked about their financial accountability. Also, there is poor common understanding among local bureaucrats themselves, whereby they are not sure how to effectively interpret and correctly implement the text of the regulation. Consequently, the investors are not convinced by the municipal governments.

3.2 THE NEED FOR SWEETENERS AND OTHER QUALITATIVE ENABLERS

To cope with these challenges, market participants require the presence of adequate collaterals or guarantees.

- The top two collaterals, in terms of preference, are the renewable project's physical assets with appreciable value, such as land and property, and convertible bonds (to project's equity).
- The reserve fund, and the direct automatic reallocation of Dana Alokasi Umum (DAU) or Dana Alokasi Khusus (DAK) by the central government to the bond holders, is the second choice. This is only in the event of a default.
- A few market participants also hoped that the municipal green bond could be used as an underlying repo with the central bank. Meaning, they would like the potential to sell the bond to the central bank and buy it back at a market price after some time.

Apart from collaterals or a guarantee, market participants said they would buy or underwrite municipal green bond under certain conditions. The conditions are:

- If the bond offers a higher yield or coupon rate (compared to plain bond)
- If they can get higher underwriting fees

- If the government gives some tax incentives to the bond holders

Market participants admit that green awareness in the industry is low. Some have begun to have green portfolios simply because of the regulation. Investors were also observed to have low knowledge or exposure to renewable technology.

In addition, participants pointed out instances of unclear or overlapping regulations from the government. These factors put off investors from including green investments in their annual portfolio mandate.

To tackle this, market participants hope for clearer, more consistent, and synchronized green regulations. They also want to see strong prospects for green projects in Indonesia, which is evidenced by more green bond issuance precedents from the central government. They said that this so-called signaling action from the government may boost their confidence to consider green bonds in Indonesia.

4. CHALLENGES FROM THE SUPPLY AND DEMAND SIDES IN MUNICIPAL BOND ISSUANCE

4.1 SKEPTICISM ABOUT MUNICIPAL GOVERNMENTS

In addition to the preference of the respondents, the survey also observed skepticism regarding the readiness of the government in issuing municipal green bonds. However, skepticism from some respondents was considered invalid as their feedback did not align with the new regulations. For example, the new regulation does not require municipal bond issuance to get local parliaments' approval anymore. But many respondents are not aware of this change, which led to their invalid responses. The list below contains the concerns that were considered valid.

- Many market participants believe there may be not enough renewable projects in the municipal governments' pipeline, particularly profitable ones.
- They believe that the Indonesian financial service authority (or OJK) may require the underlying project to run first, even before the bond is issued, to make sure that the project is real.
- The bureaucrats of many municipal governments in Indonesia may be inexperienced in dealing with bonds.

These factors may hinder the supply side of the market.

Market participants believe that municipal governments, which are likely to have a tight budget, may still need to incur extra costs for several reasons:

- First, green bond labeling is necessary to emphasize the greenness of the bond, and this effort may come with some costs.
- Second, as municipal green bonds do not yet exist, people are uncertain about their selling price. Consultants may be invited to handle the bond pricing, but this can lead to expensive consultancy fees.
- Third, a massive green campaign may be required to raise market awareness and educate people.
- Fourth, municipal governments may need to conduct market due diligence processes to understand the demand for their green bonds, which can be expensive.
- Fifth, a project feasibility study may be necessary to understand whether the project has the capacity to repay the bond, and if it is worth issuing the bond in the first place.
- Lastly, capacity building is necessary to prepare or train the local bureaucrats.

To manage these obstacles, market participants offered certain recommendations to the municipal governments, as captured in Figure 12 below.

Figure 12: Recommendations to make a successful municipal green bond issuance, according to market participants

What does the market say about making municipal green bonds work?	
Green bonds should be issued only if the need for financing is large and specifically if foreign investors, who have more money and stronger appetite to actively transact, can enter the market. It is not worth issuing green bonds if the need for financing is small because the effort outweighs the benefit.	The municipal government should initially consider selling the green bond to its quasi-government institutions, such as the local state-owned banks. This may ensure a minimum number of bond buyers and may reduce the government’s concern about selling the entire bond.
Municipal governments should sell the bond to BPJS first, which is the largest state-owned national pension and insurance provider. BPJS should become the designated base investor. When there is a clear and large investor base, other smaller pension managers and insurance companies will be more encouraged to join the market.	Securities companies, banks, and investment banks tend to prefer bonds with short maturity periods. Therefore, the municipal governments should sell their green bonds to pension managers and insurance companies instead, because they are fine with bonds with long maturity periods.

4.2 EXISTING POLICIES AND REGULATIONS HAVE LIMITED ABILITY TO IMPROVE MARKET APPETITE

Existing policies and regulations can only improve the market appetite, to subscribe to municipal green bonds, only to a certain extent. Table 5 juxtaposes the market appetite for municipal bonds with the existing regulatory framework to identify the degree to which regulations can meet the appetite of the market. The results vary, with most of the positive results resting on the guarantee, as municipal bonds are mandated to have reserve funds to avoid repayment default. However, there are also negative results regarding the use of foreign currency, and the possibility of a convertible scenario, all of which are prohibited by law.

Table 5: How the existing municipal bond regulatory framework can meet the market appetite

Market Appetite	Key policies and regulations		Ability of policies to meet market appetite	
	Key points	Reference	Degree of Ability (0-5)	Notes
Bond Profile				
Reputable rating (e.g. PEFINDO)	The rating is not mandatory	POJK 61/2017 Municipal bonds registration		The market tends to pick up based on rating and yield
High yield/ coupon rate	N/A	-	N/A	Government regulations do not influence coupon rate, credit quality does.
Collateral/ guarantee	Reserve fund + project-backed guarantee, Bonds guaranteed by municipal govt. budget	PP 56/2018 Regional loan, PMK 180/2015 Municipal bonds	5	Mandatory reserve funds render municipal bonds almost zero-risk for default
Higher underwriting fee	N/A	-	N/A	Depends on the local government's fiscal capacity to pay for underwriting
Transparency of the underlying project	Disclosure requirement, Revenue-generating pipelines only, >70% of proceeds must go to green projects	PP 56/2018 Regional loan, PMK 180/2015 Municipal bonds, POJK 60/2017 Green bonds	4	Current regulatory framework clearly mandates full disclosure of underlying projects
Shorter bond tenor option	Only municipal government's long-term loan can be sourced from the public	PP 56/2018 Regional loan	0	Municipal bonds are categorized as long-term loans with a minimum tenor of 5 years
Non-IDR transaction	Only IDR and domestic market transactions allowed	PP 56/2018 Regional loan	0	The use of local currency is a pivotal monetary policy for local revenue
Public Policy				
Audit of the municipal govt (i.e., BPK + Big Four).	Only BPK audit required	POJK 61/2017 Municipal bonds registration	2	Only audits from BPK with high pass (<i>Wajar Tanpa Pengecualian</i>) are mandatory

Better government incentive (i.e., tax advantage)	Lower bonds tax rate (from 15% to 10%), OJK-issued incentives, such as lower listing fee	UU 11/2020 Omnibus law, POJK 60/2017 Green bonds	4	Low tax rate improves investor appetite, while lower listing fee improves the issuer's appetite
Foreign market participation	Direct foreign loans are prohibited	PP 56/2018 Regional loan	0	Only the central government has the authority to issue foreign loans
Base/ minimum investors as benchmarks	N/A	-	N/A	No legal mandates requiring base/ minimum investors as standby buyers
Clearer regulation/ policy synchronization	No house approval required	UU 11/2020 Omnibus law on job creation	4	The law can expedite the process of issuing municipal bonds, reducing cost
Precedent from central govt. issuance	Green sukuk and PT. SMI issuance	POJK 60/2017 Green bonds	4	The central government's precedence for issuing green bonds may improve municipal bond credibility
Strong prospects for green projects	N/A	-	N/A	No strong policy signal yet detected that command/ incentivize the market to subscribe to municipal bonds
Preferred Sweetener				
Physical assets with appreciable value	Only project-backed guarantee	PP 56/2018 Regional loan	1	While the project's asset can be used as a guarantee, it may not have appreciable value
Convertible bond (to stocks)	Only project-backed guarantee	PP 56/2018 Regional loan	N/A	Since there is no equity financing for muni, there is no legal basis for muni convertible bonds
Reserve fund	Principal + interest guaranteed	PP 56/2018 Regional loan	5	Mandatory reserve funds make municipal bonds almost zero-risk for defaults
DAU/DAK direct automatic reallocation	N/A	-	0	DAK and DAU are central government fiscal instruments that requires the center's authorization
Cashflow waterfall to secure payment	Allow municipal governments the right to repay the bond before the maturity date (call option)		2	While this offers more flexibility for local governments, investors may not favor the call-back option
Bond that can be an underlying repo	N/A	-	N/A	Not regulated

Adverse impact

Low-to-medium impact

Positive impact

No impact

5. CONCLUSION

Indonesia has set a target to increase its renewable energy mix to 23% by 2025 as mandated in its National Energy Policy. The government has also made a commitment to reduce greenhouse gas emissions by 29% by 2030, as pledged in its nationally determined contribution (NDC) document. These two policies encourage local governments in Indonesia to direct their regional energy plans (RUED) towards a renewable-energy transition. However, financing is the main challenge for local governments to develop more renewable energy.

This study highlights some of these issues and opportunities for Indonesia's municipal governments to issue green bonds to finance renewable energy projects:

1. Municipal bond eligibility requirements and issuance procedures are challenging. The combination of high fiscal capacity indicators should be fulfilled as the criteria for local governments to issue bonds. The Minister of Home Affairs and the Ministry of Finance must consent to issue municipal bonds. Further, municipal bonds are only available for the domestic market and are not guaranteed by the central government.
2. Our market survey reveals that local investors do not actually care about the government's policy on renewables or global renewable trends. These investors are typically conservative and tend to be motivated by commercial interest. The bond's rating, its issuer's reputation, the bond's tenor (short maturity), guarantor, and coupon rates are the most important considerations from their perspective.
3. Challenges arise from both the demand and supply sides to issue municipal bonds. The supply side suffers from a limited number of profitable renewable energy projects in the pipeline and inexperienced bureaucrats who deal with bonds. On the demand side, market participants admit to low green awareness in the industry and are uncertain about regulations from the government. These factors caused the investors to question the viability of including green investment in their annual portfolio mandate.

To address these issues, this study offers several recommendations:

1. Uncomplicated issuance requirements and easier procedures will motivate local governments to use municipal bonds as an alternative financing option to develop renewable energy. This will also make the process of handling bonds easier for inexperienced bureaucrats.
2. Clear and consistent renewable energy policies from the central government will convince local investors to consider subscribing to municipal green bonds. A toolbox of policies, such as setting tariffs that match the economic price of renewable energy power generation, and offering tax incentives, will increase the number of profitable renewable projects. A toolbox will also convince the market to subscribe to municipal green bonds. The central government also needs to increase public awareness and offer information about green projects to persuade non-traditional investors to enter the market.
3. Local governments should consider selling green municipal bonds first to their quasi-

government institutions, such as local state-owned banks, state-owned national pension, and insurance providers. Once there is a larger investor base in the market, other smaller investors, pension managers, and insurance companies are likely to trust municipal green bonds and subscribe.

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APPENDIXES A: INDONESIA'S GREEN BOND FRAMEWORK

Green bonds issued in the ASEAN region, including Indonesia, follow the framework of the ICMA's Green Bonds Principles (GBP).

COMPARISON OF DIFFERENT GREEN BONDS FRAMEWORKS

	Climate Bonds Initiative Standards	EU Taxonomy – Green Bonds Standards	The Green Bonds Principle (GBP)	Indonesia Green Bonds and Sukuk Framework*	PT. SMI Green Bonds and Sukuk Framework**
Key components	<ol style="list-style-type: none"> 1. Use of proceeds 2. Process to evaluate and select projects and assets 3. Management of proceeds 4. Reporting 	<ol style="list-style-type: none"> 1. Green projects 2. Green bond framework 3. Allocation and impact reporting 4. Verification 	<ol style="list-style-type: none"> 1. Use of proceeds 2. Process to evaluate and select projects 3. Management of proceeds 4. Reporting 	<ol style="list-style-type: none"> 1. Introduction (background, mitigation, adaptation, biodiversity) 2. Use of proceeds 3. Process to evaluate and select projects 4. Management of proceeds 5. Reporting 6. Assurance for third-party review 	<ol style="list-style-type: none"> 1. Introduction and background 2. Application of POJK 60/2017 3. Use of proceeds 4. Process to evaluate and select projects 5. Management of proceeds 6. Reporting 7. Ensuring compliance
Eligible green projects	CBI TAXONOMY APPROVED <ol style="list-style-type: none"> 1. Energy (solar, wind, geothermal, bioenergy, hydropower, marine renewables) 2. Transport (private transport, public passenger transport, freight rail, water-borne) 3. Water (water monitoring, water storage, water treatment, water distribution, flood defense, nature-based solutions) 4. Buildings (residential, commercial) 5. Waste (preparation, reuse, recycling, biological treatment, waste-to-energy, landfill) 	EU TAXONOMY REGULATION <ol style="list-style-type: none"> 1. Climate change mitigation 2. Climate change adaptation 3. Sustainable use and protection of water and marine resources 4. Transition to a circular economy 5. Pollution prevention and control 6. Protection and restoration of biodiversity and ecosystem <p>The project must not significantly harm any of the EU taxonomy objectives, comply with minimum safeguards, and comply with Technical Screening Criteria (TSC)</p>	<ol style="list-style-type: none"> 1. Renewable energy 2. Energy efficiency 3. Pollution prevention and control 4. Environmentally sustainable management of living natural resources and land use 5. Terrestrial and aquatic biodiversity conservation 6. Clean transportation 7. Sustainable water and wastewater management 8. Climate change adaptation 9. Eco-efficient and/or circular economy adapted products, production technologies and processes 10. Green buildings 	INDONESIA CLIMATE BUDGET TAGGING (CBT) <ol style="list-style-type: none"> 1. Renewable energy 2. Energy efficiency 3. Resilience to climate change for highly vulnerable areas and sectors/disaster risk reduction 4. Sustainable transport 5. Waste to energy and waste management 6. Sustainable management of natural resources 7. Green tourism 8. Green buildings 9. Sustainable agriculture 	<ol style="list-style-type: none"> 1. Renewable energy 2. Energy efficiency 3. Sustainable pollution management and prevention 4. Sustainable natural resources and land use management 5. Clean transportation 6. Sustainable water and sewage management

Red indicates alignment with the GBP principles.

*) The framework also follows the financial services authority regulation (POJK) 60 year 2017 on green bonds, where a minimum of 70% from the green bonds' proceeds must go to green projects. In addition, Indonesia utilizes its climate budget tagging (CBT) in its process to evaluate and select projects.

***) 100% of SMI's green bonds proceeds will go to eligible green projects.

COMPARISON OF EXISTING GREEN BONDS FRAMEWORKS

Criteria	Climate Bonds Initiative Standards	EU Taxonomy - Green Bonds Standards	The Green Bonds Principle (GBP)	ASEAN Green Bonds Standards	Indonesia Green Bonds and Sukuk Framework*	PT. SMI Green Bonds and Sukuk Framework**
Reference for eligible green projects	CBI taxonomy	EU taxonomy	GBP green categories	GBP green categories	RAN-GRK, RAN-API, IBSAP	SMI Green Bonds
Green bonds framework document	Yes, required	Yes, required	Not required	Not required	Yes	Yes
External review	Required	Required	Not required	Not required	Yes, to assess compliance	Yes, CICERO and the World Bank
Accreditation of reviewers	Yes	Yes	No, but recommended	Not required	Not required	Not required
Impact reporting	Not required. allocation and eligibility reports required	Required, link to the EU taxonomy	Not required	Not required	Yes, an estimation of beneficial impact	Yes, annually published on its website
Use of proceeds in legal documentation	Required	Required	Required	Required	Yes, in the 'Register'	Not required

Indonesia's existing green bonds framework does not outline the required accreditation for independent external reviewers. Further, the impact report is not on a clear separate document, and it is unclear if the legal ownership of projects will be visible in the 'Register' and SMI annual report.

APPENDIXES B: MARKET SURVEY ON THE ATTRACTIVENESS OF MUNICIPAL GREEN BONDS

Appendix Figure 1. How should survey respondents and readers understand the intrinsic considerations?

Intrinsic Consideration	How important is this consideration for you to underwrite or subscribe to a municipal green bond ?
Rating	The bond's rating
Issuer	The bond issuer's reputation
Tenor	The bond's length of contract or maturity
Guarantor	Who guarantees the bond ?
Coupon Rate	The bond's coupon rate
Periodical Report	Does the bond issuer offer a periodical performance report about the use of finances ?
Guarantee	What is used as the bond's guarantee ?
Underwriting Spread	The underwriting spread (only if/when you are underwriting)
Underwriting Fee	The underwriting fee (only if/when you are underwriting)
Fixed vs Floating Rate	Does the bond have a fixed or floating coupon rate ?
Underlying Project	The underlying project for which the bond money is used
Par Value	The bond's par value
Buyback Possibility	Can the bond issuer buy back the bond from you ?
Coupon Payment Frequency	How frequently is the bond's coupon rate paid ?

Appendix Figure 2. How should survey respondents and readers understand the extrinsic considerations?

Extrinsic Consideration	How important is this consideration for you to underwrite or subscribe to a municipal green bond ?
Bond market liquidity/depth	The country's bond market liquidity or depth
Central bank's interest rate	The country's central bank's interest rate benchmark
Taxation	The country's taxation regulation/rate that is relevant to the bond market
Internal experience	Your institution's past experience with green bond (if any)
Internal mandate	Your institution's internal mandate to have a green portfolio (if any)
Politics	The country's political landscape and its dynamics
World renewable trends	Worldwide trends towards renewable issues
GDP forecast	The country's GDP forecast
Inflation forecast	The country's inflation forecast
Govt's renewable standpoint	The government's standpoint on renewable issues

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