

Diversification of Climate Finance Instrument In the Perspective of Government Financing : Empirical Study 2007 – 2019 from Indonesia

Lilie Sofitri*, Haula Rosdiana** & Titi Muswati Putranti***

*PhD Student, **Professor, *** Lecturer

The Faculty of Social and Political Science,

University of Indonesia,

sofitri.sofitri@gmail.com

Abstract

Climate financing required a large scale of resources and The Government of Indonesia has taken initiatives on this issue since 2007. However, take into consideration that contribution from climate private finance has not shown encouraging results yet lead the Government of Indonesia to find alternate efforts. This research is intended to identify the diversification of instruments for climate finance through government financing in the scope of Public Financial Management. This study concentrates on the 13 years of experience in government financing for climate change since 2007 – 2019. The research data were collected through document review and interviews with the Ministry of Finance. The analysis using qualitative and simple quantitative approach. The results found that climate finance instrument from government financing for climate change has been progressively varied from year to year. Sharia Government Securities(SBSN) and Sovereign Sharia Securities (Green Sukuk) are the innovative climate government financing instruments. Hence, this evidence contribute to adds on the traditional government financing instruments and proved can be as a catalyst for leveraging private climate finance.

Keywords: *Government Financing instrument, Climate Finance Instrument, Sharia Government Securities /SBSN, Sovereign Sharia Securities (Green sukuk),*

1. INTRODUCTION

Most of the evidence on the scientific recommends strong action to reduce global greenhouse gas (GHG) emissions to reduce the risk of catastrophic impacts on ecosystems communities and economies of climate change. Simultaneously, vulnerable populations already experience the effects of a changing climate. Actions are therefore required to reduce and improve adaptation to these adverse effects of climate change (Harris. et.al 2007; ADB, 2009; World Bank, 2010; OECD, 2016; Lee, 2019). The Paris Agreement was adopted by the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change in 2015.

In order to reinforce the global response to the climate change challenge in the scope of sustainable development, the Paris Agreement sets three targets for low carbon and climate-resilient growth i.e (a) Keep global average temperature increases well below 2° C and try to manage them to 1.5° C above pre-industrial levels; (b) Increase the ability to respond to adverse weather impacts and encourage resilience and development of low greenhouse gas (GHG) without affecting food production; (c) Make financing flows consistent with a commitment to low emissions of GHGs and climate-resilient growth (OECD, 2016)

The achievement of these goals relies on the implementation of the nationally determined contributions of the countries and unique mechanisms under the convention. This implementation requires funding, so financing is essential to allow an efficient and inclusive global response to the urgent climate change challenge (ADB, 2009; OECD, 2016)

Indonesia 's climate change policy

Indonesia's climate change policy falls into two major categories: adaptation and mitigation. Mitigation refers to the actions related to the decreasing GHG emissions on the other hand adaptation implies actions, which will help societies and natural systems cope with the consequences of climate change. (MoE, 2007; Bappenas, 2014, MoEF, 2016).

National Action Plan on Climate Change (Rencana Aksi Nasional Perubahan Iklim, RAN-PI) was the first climate action plan issued in 2007, then in 2010, the Indonesian Climate Change Sectoral Roadmap (ICCSR) launched. Before that in 2009 in Pitsburg, Indonesia made a voluntary commitment to reduce its GHG emissions by 26% by 2020 with domestic support and by 41% with international support. The commitment the issued in the Presidential Decree of Indonesia (Keppres) No. 61 of 2011 about the National Action Plan for GHG Emission Reduction (Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca, henceforth RAN-GRK). RAN GRK covers five sectors i.e forestry and peatland, agriculture, energy and transportation, industry, waste.

On the other hand Indonesia launched the National Action Plan on Climate Change Adaptation (Rencana Aksi Nasional Adaptasi Perubahan Iklim, RAN-API) in 2014. The RAN-API cover five sectors: 1) Economic security consists of food security and sovereignty of energy; 2) Life system: Health, housing settlement & infrastructure resilience; 3) Ecosystem resilience; 4) Special territory resilience: Urban cities, coastal and small island; 5) Supporting system. Unfortunately, the sections on the food security and infrastructure sectors, however, do not mention water aspects.

In November 2016 Indonesia submitted the first NDCs, with a set target of 29% unconditional and up to 41% by 2030with conditional target (depends on the availability of international support for finance, technology transfer and development, and capacity building). Indonesia's NDCs are committed to climate resilience and low carbon development.

2. CONCEPTUAL FRAMEWORK

The implementation of climate change policy in Indonesia requires funding, so financing is a very crucial and essential aspect. From the perspective of public funding particularly on government financing, basic principles, the government can finance its development plan programs in four aspects, it might tax it. It is able to borrow. It is capable of making money. And it can generate revenue through its business operations so-called State Own Enterprise (Richard E. Wagner, 2005) Those principles also applied for climate public funding. At this stage, budget balance, debts and also deficits are apart of courses in public sector economics particularly on public finance (Ulbrich, 2011).

Regardless of the relative standing of taxes and enterprises as sources of state revenue, borrowing and money creation treated as secondary forms of public finance. Indeed, borrowing and creating money

have often been characterized as instruments of extraordinary public finance, in contrast to taxes as being instruments of ordinary public finance (Richard E. Wagner, 2005). The deficit can occur if the revenue does not meet the target and spending exceeds revenue. Thus, there is a gap between spending and revenue in a particular year. The debt is the cumulative result of past surpluses and deficits, the stock of government that must eventually be repaid and that generates a debt service obligation in the current year's budget (Ulbrich, 2011).

Government Financing Instrument

limited to debt finance, government borrowing and government bonds, as explained below further. In the traditional public financing the instruments are:

1) *Debt finance*, Debt finance is the use of borrowed funds to finance government expenditures. Those who borrow funds under their own free will to the government for funding government spending usually do so. In return for the funds that they lend to the government, they receive a bond, or some other note of government indebtedness, that embodies the promise of the government to repay the loan with interest at some future date. The interest payment earned by these persons probably compensates them sufficiently for the consumption and alternative private investments they might have enjoyed if they did not purchase government securities. On the other hand, as the government pays off the debt, some sort of alternative funding is required, unless the government decides to withdraw the debt by issuing additional debt. If taxes are used to pay off the debt in future periods, citizens will be forced to reduce their consumption and save in those future periods to compensate those who in the past voluntarily gave up their income to buy securities from the government. In other words, debt financing can be used to postpone the tax burden. In other words, debt finance can be used to postpone the burden of taxation (David Hyman, 2010)

2) *Government Bonds*, Government bonds or state bonds are a significant and feasible source of funding without adding tax when there is insufficient funding of governments. Government bonds are a main financial instrument and ex-post funding in Level 2 countries (Michel-Kerijan *et al.*, 2011)

3) *Government borrowing*, Government borrowing is often used to fund state authorities' capital expenditures. Under these conditions, government borrowing enables programs to be funded with benefits that will accrue in the future, without unnecessary reductions in citizens' purchasing power in the current period. If these facilities were to be funded immediately by taxation, people would be required to forgo consumption and save resources equal to the entire cost of the facility's capital without any benefits until the facility was completely built and operated. The use of debt finance enables government authorities to tax residents in the future as the infrastructure is being designed and completed (David Hyman, 2010)

Green Bond and Global Sukuk

Nearly unknown a decade ago, green bonds now serve as a primary option for the private sector to help finance the transformation of the planet to a low-carbon future (IFC, 2018). Over the past decade, the green bond market has experienced massive growth, presenting a unique opportunity in climate finance. Annual issuance has now increased from zero to over \$155 billion worldwide, with much more growth ahead (IFC, 2018). But the green bond era is only starting in emerging markets. Green bonds raise funds for renewable energy projects, energy efficiency, sustainable housing and other environmentally friendly industries. Many green bonds are coming from developed nations around the world. Most investment has so far come from only two countries in emerging markets: China and India. But in emerging markets, most analysts see great growth for green bonds, pointing to some early examples. Brazil's BNDES development bank raised \$1 billion in one of Latin America's largest green bond offers in May 2017. In Brazil, a wide range of wind and solar projects are funded (IFC, 2018).

ADB Green Bonds, ADB released its first green bond denominated in euros in July 2018, with an issue volume of € 600 million (\$700 million equivalent) and maturity in July 2025. In 2018, a total of SKr2.5 billion (\$286 million) was also collected in Swedish kronor green bonds. The bank introduced its fourth benchmark issuance (after the inaugural 10-year bond in 2015, dual 3- and 10-year bonds in 2016, and dual 5- and 10-year bonds in 2017), raising a 10-year green bond of \$750 million in September 2018. ADB strives to maintain

a regular presence on the green bond market in line with its pledge to increase climate finance. The Center for International Climate and Environmental Research-Oslo (CICERO) independently verified the bank's inclusion criteria for qualifying investments. ADB energy, climate change, and environmental specialists continuously recognize eligible green bond projects. This is achieved using the Joint Multilateral Development Bank approach to monitor and report on climate change mitigation and adaptation financing, as well as additional selection criteria for "green" projects delivering environmentally sustainable development, as defined in the ADB Green Bond Framework (ADB, 2019).

Sukuk or Islamic bonds are governed by Islamic laws (sharia) that forbid paying or receiving interest. The Islamic bonds are structured as asset-backed securities of medium-term maturity that give investors a share of the profit associated with proceeds from such issuance. The international Islamic bond market is divided into sovereign (and quasi-sovereign) and corporate sukuk markets. In 2001, the Bahrain Monetary Agency was the first central bank to issue Islamic bonds with three- and five-year maturities. The German state of Saxony-Anhalt was the first non-Muslim issuer of sukuk bonds when it tapped the global Islamic debt market in 2004 for 100 million euros. The largest issue of Islamic bonds to date, with a seven-year maturity, was the sale of Qatar global sukuk for \$700 million (World Bank, 2008)

Combating climate change is one of major challenges, seeking much more resources than governments alone can provide (OECD, 2016; IFC, 2018; ADB, 2019). There's good news, though. Climate change is increasingly seen as an opportunity for companies, opening up some potential possibilities for investors to help protect the planet.

This research study is intended to fill in the gap to add to traditional government financing instruments in the context of Public Financial Management. The originality of this study is to date no study present diversification of climate finance instruments for climate change with a source of government financing. Even though, this study has a limitation that the scope of the instrument of climate finance in this research is limited to government financing. The research question raised in this paper is how the composition of government sources of fund Instruments for climate change in government financing? Indonesia is presented as the case of this paper. Nevertheless, this research is intended to identify the diversification of instruments for climate finance through government financing.

3. METHODOLOGY

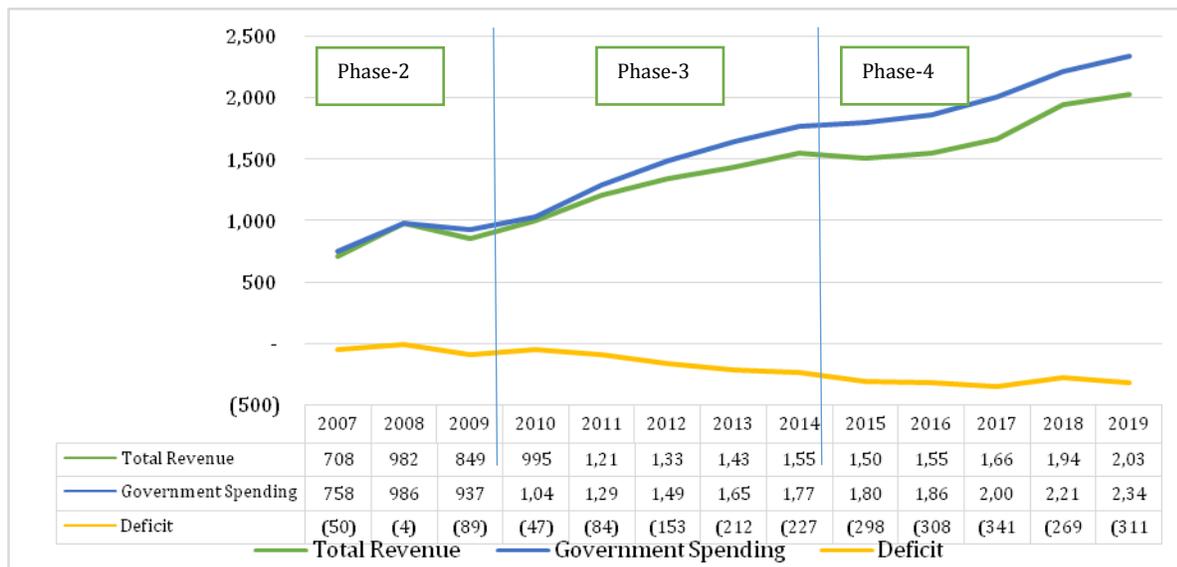
The research conducted using qualitative approach and quantitative with simple statistics on mode of climate instruments. Duration of this this is 2007 – 2019 within the timeframe over three phase of Medium Term National Development Planning henceforth RPJMN i.e RPJMN phase-2 (2005-2009) RPJMN phase-3 (2010-2014), RPJMN phase-4 (2015-2019). The data and information obtained through primary data from Ministry of Finance budget documents cover 24 line ministries and secondary data through publicly report from DG Budget Ministry of Finance, DG Debt Management and Risk Ministry of Finance and Ministry of National Development Planning (Bappenas). Interview also to government officer were conducted to gather more comprehensive information as well as data triangulation was conducted.

4. FINDING AND DISCUSSION

The Case of Indonesia, Fact finding on the Fiscal Situation (Revenue, Government Spending and Deficit) 2007 - 2019

Indonesia has a rolling development plan every five years as Medium-Term National Development Planning henceforth RPJMN. Throughout RPJMN phase-2 (2005-2009) RPJMN phase-3 (2010-2014), RPJMN phase-4 (2015-2019) realization of revenue is always below government spending. As indicated in figure 4.1 below it tends to increase from year to year tend and the gap between revenue and government spending overall tends to wide. The condition of government deficit of state budget also tended to deep and wider since 2010 until 2017, negative balance a bit decrease in 2018 but increase again in 2019. Within this condition, the Government of Indonesia has to find the way how to finance all climate change activities both mitigation and adaptation as well as other government priority programs such as infrastructure, education, health, public service and so on.

Figure 4.1 Revenue, Government Spending and Deficit for Period of 2007 – 2019 (in trillion rupiah)



Source: Ministry of Finance, compiled by Author 2019

Note: 2007 – 2018 Audited figure, 2019 is current state budget

Source of fund to finance Indonesia’s development programmes.

During the period 2007 – 2019 phase-2 to phase-4 Indonesia development program are funded through various sources of fund, in total, there are twelve sources as listed in table 4.1. In the context of climate change, not all instruments were used to finance climate activities. Basically, the source of funds is coming from two major categories; 1) from the revenue side and 2) from the government financing side. These instruments are interconnected between fiscal policy e.i tax policy, government budget, government deficit and financing policy. Eventually, climate change programs and activities are going to affect in particular to the core business of finance ministry related to fiscal policy, government budgets, and public debt. Government financing instruments identified from table 4.1 are a foreign loan, domestic loan, government securities, sharia government securities, sovereign sharia securities (green Sukuk).

Tabel 4.1 Source of Fund Breakdown

No	Code	Description
1	RM	Tax Revenue
2	PLN	Foreign Loan
3	RMP	Counterpart fund
4	PNBP	Non Tax Revenue
5	PDN	Domestic Loan
6	BLU	General Service Agency
7	HLN	Foreign Grant - Planned
8	HLD	Direct Grant - Domestic
9	HLL	Direct Grant - Foreign
10	SBSN	Sharia Government Securities
11	SSS [GS]	Sovereign Sharia Securities/Green Sukuk
12	SUN	Government Securities

Source: DG Budget Ministry of Finance, 2018

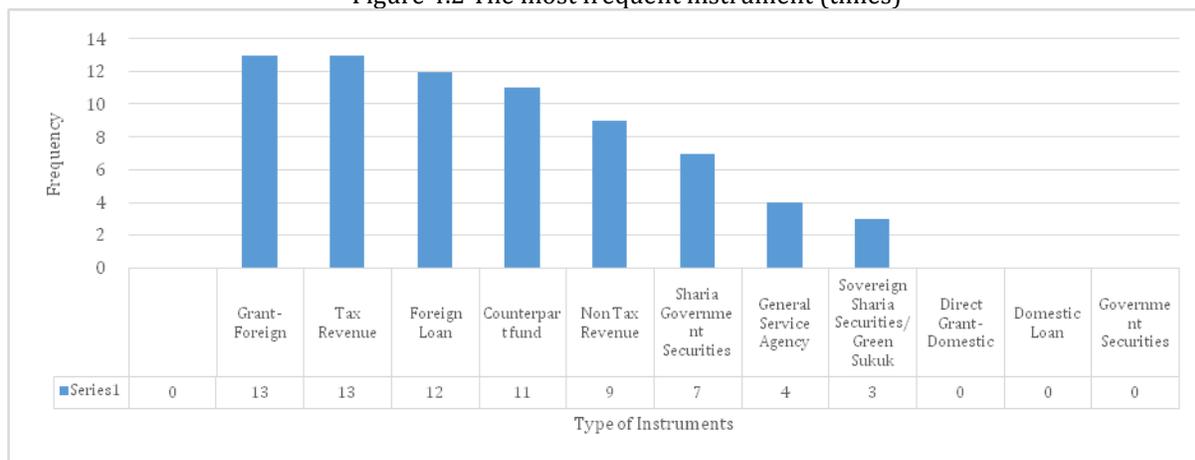
Diversification of climate finance instrument in the perspective of government financing

The deficit balance during the fiscal period cannot be distinguished coming from which sector included the climate change sector. It was blended with all of the government programs. Through the

realization then it can be identified later on, in which source of the fund has been utilized for specific sectors in climate mitigation and adaptation. This section describes the overall finding on Indonesia's climate finance instrument within the frame of public finance.

During the assessment in 2007 – 2019, it was found that the most frequent instrument source of funds is tax revenue, foreign loan, and foreign grant.

Figure 4.2 The most frequent instrument (times)



Source: Ministry of Finance, data processed by Author, 2019

As described in figure 4.1 above, when the tax revenue and non-tax revenue do not meet the expectation or target meanwhile the government spending is higher than revenue collected then deficit occurs. The government sets various strategies to overcome deficit balance with government financing policy e.i debt management. Various financial instruments, such as grants, concessional loans, SBSN and green Sukuk are used to deliver climate-related development finance (table 4.3 and table 4.4). Concessional loans were the form most used to deliver climate finance in Indonesia during 2007 – 2019. Mostly loans provided by MDBs and bilateral channels are the main providers of grants and concessional loans through technical assistance, capital investments and co-financing to projects supported by concessional loans from MDBs. Bilateral donors also provide financing through multilateral donors (e.g. voluntary contributions to climate funds). Some of the MDBs and climate funds (e.g. the International Development Association of the World Bank Group and the Global Environment Facility) also provide grants and concessional finance to Indonesia.

Table 4.3 Source of Fund for Climate Mitigation for period 2007 – 2019 (in billion USD)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018*	2019*
Tax Revenue	0.3759	0.2961	0.5097	0.1486	0.9366	0.8816	0.4847	1.2856	1.6526	0.4153	0.3672	√	√
Foreign Loan	-	0.1000	0.2575	0.5299	0.2946	0.3077	0.4159	0.1840	0.4947	1.3537	1.9158	0.6628	0.2064
Counterpart fund	-	-	-	-	-	0.0122	0.0222	0.0014	0.0009	0.0011	0.0357	-	√
Non Tax Revenue	-	-	-	-	0.0001	0.0614	0.1287	0.0408	0.0243	0.0307	0.0509	-	√
General Service Agency	-	-	-	-	-	-	0.0638	-	-	-	-	-	√
Grant	-	0.0010	0.0028	0.0037	0.0096	0.0424	0.0480	0.0029	0.0079	0.0104	0.0107	0.0253	0.0126
Sharia Govt Securities	-	-	-	-	-	-	0.0638	0.0772	0.0009	0.1827	0.7185	-	√
Green Sukuk	-	-	-	-	-	-	-	-	-	0.6376	-	0.4699	√

Source; Ministry of Finance, data processed by Author, 2019

*) Financing 2018 - 2019 projects will be reported in Green Sukuk Report of 2020

This research found that the source of funds for climate change (mitigation and adaptation) activities during 2007 – 2019 vary from year to year and tend to progressive. In early-stage 2007 tax revenue is dominant almost 99.9995% (Rp 11,444.32billion) both for mitigation and adaptation, meanwhile, the grant is very tiny amount 0.0005% (Rp 0.06 billion) for water sector from Danida, forestry sector from Japan Komatsu, ltd, DFID United Kingdom and Tropenbos lastly for energy sector from UNDP. The tiny amount is due to unreported direct grants from line ministries to the ministry of finance. After the administration reform on grant management policy beyond 2011, the contribution from direct grant increased. Another source of funds is coming from non-tax revenue. It found in 2011 for forestry to finance avoiding forest fire activities.

Table 4.4 Mapping List of Instruments by Sectors in Climate Mitigation*

No	Sector	Tax Revenue	Foreign Loan	Counterpart fund	Non Tax Revenue	General Service Agency	Grant	Sharia Govt Securities	Green Sukuk
1	Forestry	√	-	-	√	√	√	-	-
2	Agriculture	√	√	-	-	-	√	-	-
3	Marine Coastal	√	√	√	-	-	√	-	-
4	Energy	√	√	√	-	√	√	-	√
5	Transportation	√	√	√	-	-	√	√	√
6	Industry	√	-	-	-	-	-	-	-
7	Waste	√	√	√	-	-	√	-	√

Source; Ministry of Finance, data processed by Author, 2019

*Notes: List of Instruments usually used over period 2007 – 2019

In 2008 despite tax revenue, non-tax revenue and grant, loan add on as the additional climate finance instrument. At that time loans mostly for infrastructure such as in the transportation sector i.e for railway doubletrack South Java, rehabilitation of irrigation for the agriculture sector, and sewerage in the waste sector. With dynamics and complexity of climate change activities nowadays loan covers almost all sector in climate mitigation and adaptation. The amount tends to increase year by year. Usually, the loan should be accompanied by counterpart funds but none in 2008. The counterpart funding just found in 2009 until now. On the other hand, the Sharia Government Securities (Surat Berharga Syariah Negara/SBSN) started to finance climate mitigation activity from 2013 until now for the Ministry of Transportation for the transportation sector and Ministry of Public Work and Housing, for the waste sector for building the TPA, IPAL. Recently, in 2018 – 2019 Sovereign Sharia Securities/Green Sukuk is nominated as the new of the innovative financing instrument for climate change activities in Indonesia. Even in the worldwide, this is the first green Sukuk ever for finance climate activities (Interview with Fiscal Policy Agency, MoF, August 2019). Overall the progressive evolution of source of fund for climate activities is presented in table 4.3 for climate mitigation and table 4.4 climate adaptation.

The two tables below table 4.5 and table 4.6 are refer to climate adaptation. In 2007 government financing instruments to support the implementation of 2007 climate change policy (RAN PI) begun, the diversification of instruments is increasing year to year. Similar with mitigation, on the adaptation, tax revenue is dominant instrument to finance all these sectors (economic resilience: a) food security; b) energy sovereignty; life system: health, housing settlement & infrastructure resilience; ecosystem resilience; special territory resilience: urban cities, coastal and small island; and supporting system). The loan was dominated by Public Work and Housing for building the infrastructure of the water sector. Meanwhile, the MDBs and bilateral channels are the main providers for loans and grants. Sharia Government Securities (SBSN) just identified one year used as an alternative source of financing for the technology of mitigation and adaptation on agriculture. Meanwhile for green Sukuk eligible for resilience to climate change for highly vulnerable areas

and sectors/disaster risk reduction; (iii) sustainable management of natural resource; green tourism and sustainable agriculture.

Table 4.5 Source of Fund for Climate Adaptation for period 2007 – 2019(in billion USD)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018*	2019*
Tax Revenue	0.83282	0.80864	0.97394	0.94685	1.51412	2.00917	2.01685	1.63834	1.22838	1.67831	2.15868	√	√
Foreign Loan	-	0.10000	0.20999	0.41623	0.17233	0.20835	0.21472	0.03361	0.04611	0.06597	0.25853	0.11725	0.04417
Counterpart fund	-	-	-	-	-	0.00726	0.00279	0.00763	0.01114	0.01522	0.00296	√	√
Non Tax Revenue	-	-	-	-	0.00005	0.00399	0.01195	0.01876	0.00115	0.00443	-	-	-
General Service Agency Grant	-	-	-	-	-	-	-	0.00006	0.00010	0.00021	-	-	-
Sharia Govt Securities	-	-	-	-	-	-	-	-	0.00007	-	-	-	-
Green Sukuk	-	-	-	-	-	-	-	-	-	-	-	0.31621	-

Source: Ministry of Finance, data processed by Author, 2019

*) Financing 2018 - 2019 Projects will be reported in Green Sukuk Report of 2020

Table 4.6 Mapping List of Instruments by Sectors in Climate Adaptation*

No	Sector	Tax Revenue	Foreign Loan	Counterpart fund	Non Tax Revenue	General Service Agency	Grant	Sharia Govt Securities	Green Sukuk
1	Economic resilience : a) Food Security	√	-	-	-	-	√	√	-
2	Economic resilience : b) Energy Sovereignty	√	-	-	-	-	√	-	-
3	Life system : Health, housing settlement & infrastructure resilience	√	√	√	-	-	√	-	√
4	Ecosystem resilience	√	-	-	-	-	√	-	-
5	Special territory resilience : Urban cities, coastal and small island	√	√	√	-	-	√	-	-
6	Supporting system	√	√	√	-	-	-	-	-

Source: Ministry of Finance, data processed by Author, 2019

*Notes: List of Instruments usually used over period 2007 – 2019

Innovative Financing Instruments (Green Sukuk)

Green Sukuk is a sharia-compliant bond in which 100% of the exclusive proceeds go to fund or refinance green initiatives that contribute to climate change mitigation and adaptation and biodiversity conservation. The issuance of Green Bond/Sukuk is guided by the Green Bond and Green Sukuk Framework, reviewed by CICERO, an international independent reviewer and awarded medium green shade (MoF, 2018; UNDP, 2018)

The government has entered the international Sukuk (Islamic bonds) market and it became the first sovereign green Sukuk issuer in 2018 which raised \$1.25 billion. Recently, MoF Indonesia issued 2019 a US\$ 750 million green Sukuk with a five-and-a-half-year maturity period and a tenor of \$1.25 billion daily Sukuk, both of which have been oversubscribed. The Sukuk listed in the Singapore Stock Exchange and NASDAQ Dubai in the United Arab Emirates, a settlement date scheduled for Feb. 20. The 5-and-a-half-year Sukuk yield was penciled at 3.9 percent, while the 10-year Sukuk yield was recorded at 4.45 percent, which was 25 to 30 basis points lower than its initial price guidance. “The transaction was also in line with the goal of Indonesia to strengthen the global sharia financial market as well as its commitment to environmentally friendly green financing,” the statement read. The offering was oversubscribed 3.8 times, showing a relatively high demand for instruments by international investors

More than half of the value of the Sukuk was backed by state assets in the type of land and buildings as underlying securities, while 49% of the value of the Sukuk was backed by existing or future projects of

infrastructure. Deutsche Bank AG, Dubai Islamic Bank PJSC, Maybank Investment Bank Berhad, PT Mandiri Sekuritas and HSBC function as green structuring advisors, joint managers and joint bookrunners to issue the Sukuk.

Nine Eligible Green Sectors

There are nine eligible green sectors to receive the proceeds of green sukuk/bond refer to the the ROI's Green Bond and Green Sukuk Framework, as listed by MoF (2019) as follows:

- Renewable Energy
- Generation and transmission of energy from renewable energy sources: include offshore and onshore wind, solar, tidal, hydropower, biomass and geothermal. Research and development of products or technology (R&D) for renewable energy generation, include turbines and solar panels. (Dark green)
- Sustainable Management of Natural Resource
- Sustainable management of natural resources, which substantially avoids or reduces carbon loss/increases carbon sequestration (through planting of new forest areas, and/or replanting of degraded areas, the use of drought / flood / temperature resistant species). Habitat and biodiversity conservation (through sustainable management of land use change, sustainable management of agriculture/fisheries/ forestry, protection of coastal, and marine environments, pest management. (Light to dark green)
- Energy Efficiency
- Improvement of the energy efficiency of infrastructure, which results in an energy consumption of at least 10% below the average national energy consumption of an equivalent consumption of at least 10% below the average national energy consumption of an equivalent. Research and development of products or technology ("R&D") and their implementation that reduces energy consumption of underlying asset, technology, product or system(s); including LED lights, improved chillers, improved lighting technology, and reduced power usage in manufacturing operations. (Light to Medium green)
- Green Tourism
- Developing new tourism areas in line with Green Tourism Principles. Optimization of supporting infrastructure to support sustainable tourism (i.e. water treatment, energy efficiency). Developing tourism resiliency against climate change risk. (Medium to dark green)
- Resilience to Climate Change for Highly
- Vulnerable Areas and Sectors/Disaster Risk Reduction. Research leading to technology innovation with sustainability benefits. Food security. Flood mitigation. Drought management. Public health management. (Dark green)
- Green Buildings
- Developing green buildings in line with Green Ship developed by Green Building Council Indonesia ("GBC Indonesia"), which contains six categories: Appropriate Site Development, Energy Efficiency and Conservation, Water conservation, Material & resource cycle, Air quality & indoor air (water indoor health & comfort), Building & environment management. (Light green)
- Sustainable Transport
- Developing clean transportation systems. Transportation network upgrade to higher climate resilient design standards. (Medium to dark green)
- Sustainable Agriculture
- Developing sustainable agriculture management and methods, such as organic farming, less pesticides, Research and Development ("R&D") on climate resilient seeds, and energy efficient on agriculture. Subsidy mechanism for agriculture insurance. (Medium to dark green)
- Waste to Energy & Waste
- Management. Improving waste management. Transforming waste to renewable energy source. Rehabilitation of landfill areas. (Medium to dark green)

Ministry of Finance Indonesia received eight award worldwide on the issuance of Green Sukuk

Refer to MoF (2019), the issuance of green Sukuk has been recognized worldwide and this is as the first green Sukuk for climate change. MoF Indonesia then received awards and media coverages as well as acknowledgements on this, they are coming from :

- Global Capital, The issuance wins Asia Pacific Green/SRI Bond Deal of the Year, at the Global Capital's Sustainable and Responsible Capital Markets Award 2018.
- IFR Asia, For this issuance, Indonesia received the IFR Asia Awards 2018 for SRI Bond, Islamic Issue from International Financing Review Asia (IFR Asia).
- FinanceAsia awards the Green Sukuk as the Best ESG Deal for the Achievement Awards Finance Asia

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- Sukuk, Feb 24, 2018 - Indonesia raises \$3bn in Sovereign Sukuk including \$1.25bn Green Sukuk
- Climate Bonds Initiative, "Bonds and Climate Change, the state of the market 2018" report, highlights growth of sovereign issuance and put Indonesia's Green Sukuk as key example.

A catalyst for leveraging private climate finance, Sarana Multi Infrastructure corporation (PT. SMI) issued the green bond and green Sukuk

The success of Government Indonesia issuing green Sukuk and SBSN then followed by PT SMI as a State Own Enterprises issued green bonds and green Sukuk. PT SMI released Indonesia's first Green Bond in 2018. Green Bond Berkelanjutan belongs to PT SMI has an IDR 3 trillion total worth. PT SMI released Stage I emissions of IDR 500 billion specially designed to fund environmentally friendly projects, encourage the transition process to climate resilience and low carbon development, and seek to protect, maintain and/or enhance quality and environmental functions.

The categories of projects eligible for funding from the Green Bond proceeds of PT SMI are projects designed to protect, conserve and/or improve the quality and work of the environment, including renewable energy, energy efficiency, sustainable pollution management and prevention, low emission transport, sustainable natural resources and land use management, sustainable water management.

Description	Value	Tenor	Coupon	Maturity	Rating
Tranche A	IDR 100 billion	3 years	9,60%	11-Jun-17	idAA+
Tranche B	IDR 900 billion	5 years	10,0%	11-Jun-19	idAA+

PT Pemingkat Efek Indonesia (Pefindo) act as rating agency and PT Bank Mandiri (Persero) Tbk act as trustee

5. CONCLUSION AND RECOMMENDATION

Instruments from government financing for climate change have been progressively varied from year to year. Despite concessional loans from Multilateral Development Banks (MDBs) and bilateral channels, Sharia Government Securities (SBSN) and Sovereign Sharia Securities (Green Sukuk) are innovative financing instruments for climate change. Hence, this evidence contributes to adds to the traditional government financing instruments and proved it can be a catalyst for leveraging private climate finance. As the recommendation, Sharia Government Securities (SBSN) and Sovereign Sharia Securities (Green Sukuk) should be continued to be utilized particularly for sectors in climate adaptation since in 2018 and 2019 mostly sectors in climate mitigation has utilized it.

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