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Supporting Indonesia's Renewable Energy Development in Remote and Rural Areas through Innovative Funding

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Abstract

With an expected 6.8% annual growth of electricity demand in coming years and some 30 million people without sufficient access to electricity, Indonesia faces an immense electricity challenge. Renewable energy is one of the solutions to address the growing electricity demand and increase the electrification ratio in Indonesia, especially in remote and rural areas where the national electricity grid is not yet available. However, despite the Government of Indonesia's efforts in promoting renewable energy technology, significant barriers remain which hinder widespread application of renewable energy technologies for generating electricity. Some of main barriers involve lack of access to affordable financing and sufficient investments in renewable energy projects due to their high initial cost, particularly for remote areas. To this end, UNDP has initiated a project that demonstrates innovative financing to tackle barriers to the sustainable market-based investment in renewable energy. Through a partnership between UNDP, the Ministry of Energy, Bank Jambi and the religious institution Badan Amil Zakat Nasional (BAZNAS), the project has financed the construction of one (1) micro hydropower plant and revitalization of three (3) existing power plants in Jambi province. Once installed and revitalized, the off-grid micro hydropower plants will provide electricity to approximately 806 households, benefiting people, businesses and public facilities in four (4) villages. These projects demonstrate a pioneering example of innovative public-private partnerships to finance development projects. At the same time, these projects also demonstrate the important role that Provincial Development Banks and Islamic finance at large can play in contributing to closing the development gaps in disadvantaged areas of Indonesia.

Keywords: Energy access, renewable energy, public-private partnership, innovative financing, rural areas, rural electrification

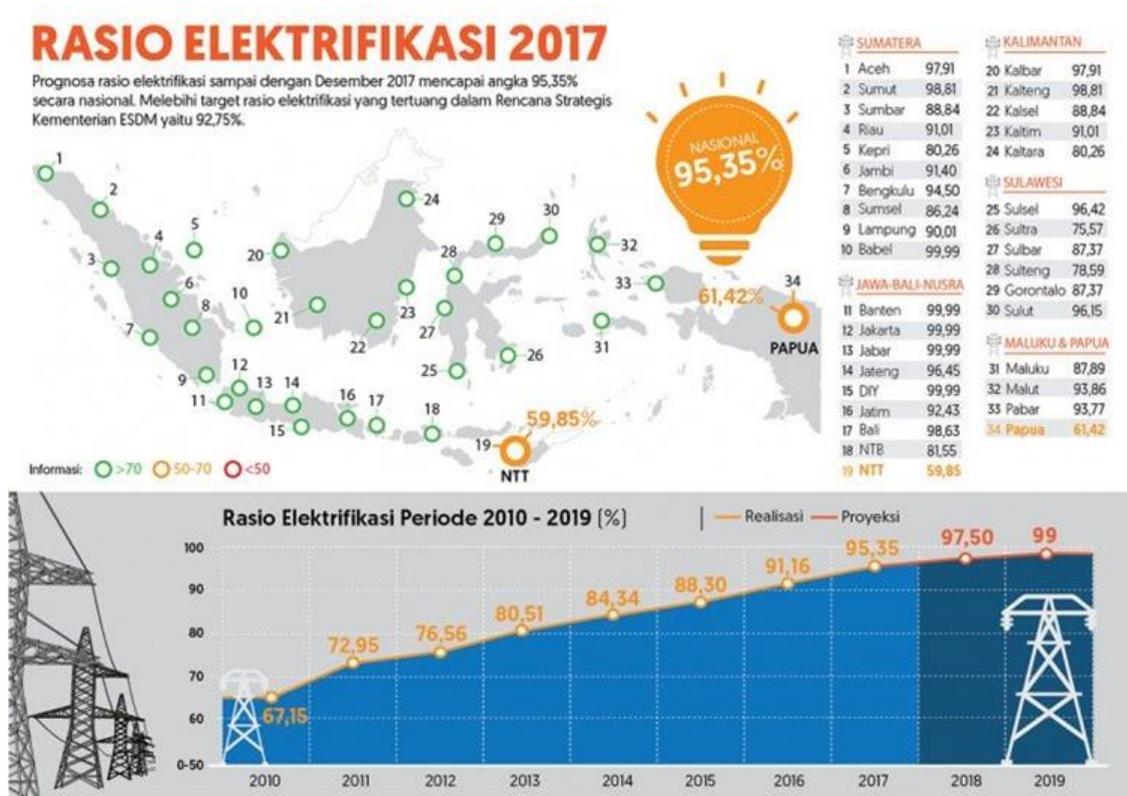
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1. Background

Indonesia is a nation that has many unique socio-economic, demographic, political and geographical characteristics each of which have direct implications on the country's overall development agenda. Comprised of over 17,000 islands, Indonesia is an emerging democracy and the 4th most populated country in the world. It is also one of the most culturally-diverse countries. Its economic development has flourished over the past 20 years or so and this has not only contributed to poverty reduction, but has also uplifted the status of the Republic of Indonesia to the 10th largest economy in the world (World Bank 2018).

In spite of the ongoing positive socio-economic developments, Indonesia faces immense electricity supply and distribution challenges. For instance, the near-term electricity demand in the coming decade is projected to grow at a rate of 6.8%, annually (ESDM 2018a, 4). In addition, it is estimated that some 30 million people have no access to electricity – the bulk of this unelectrified population resides in rural areas (UNDP 2017). As shown in the following figure, 21 provinces register near universal access to electricity (i.e. over 90%), while a number of provinces have considerably low electrification levels and this significantly undermines their economic development potential, particularly with regard to poverty alleviation (ESDM 2018b).

Figure 1 – Electrification Levels by Province in Indonesia (December 2017)



Source: ESDM 2018b

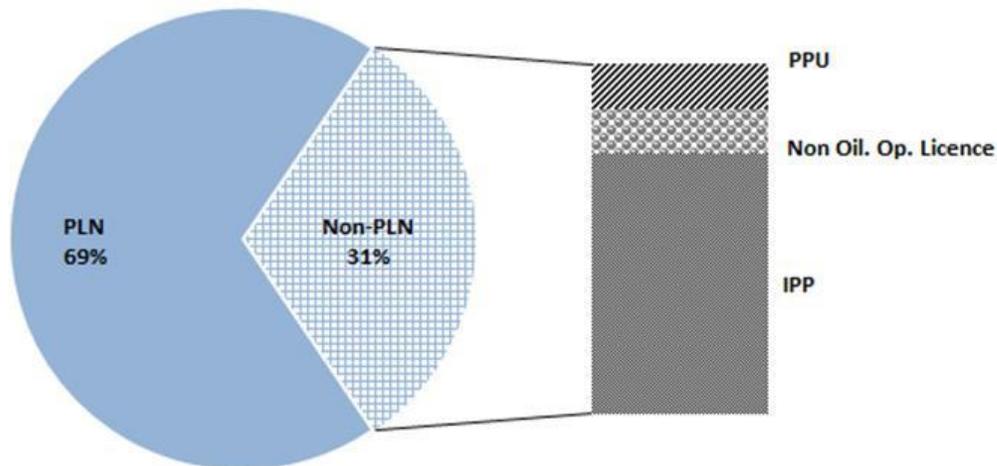
In response to the aforementioned challenges, the Government of Indonesia (GoI) has identified renewable energy as one of solutions to addressing the growing electricity demand and, at the same time, increase access to electricity in remote and rural areas where the national electricity grid is not yet available. Consequently, GoI has set the target for electrification to reach 99% by 2019 (ESDM

2018b). Furthermore, Government Regulation No.79/2014 on National Energy Policy sets a target by 2025 of a 23% contribution from renewable energy in the national primary energy mix in order to enhance energy security and reduce GHG emissions from the energy sector (IEA 2016).

In order to achieve all those targets, Gol recognizes that state budget alone will not be sufficient to cover all the cost considering the high initial capital investment in remote areas as well as for renewable energy. Rural electrification can be an expensive undertaking especially in islands which are sparsely populated. In previous years, the energy sector (including rural electrification) has enjoyed significant Government subsidies both at investments level and at end user prices. However, in the more recent years, Gol is increasingly hard-pressed to sustain the aforementioned subsidies. This is largely due to the fact that the national income has been declining due to dwindling crude oil exports and, at the same time, there has been a rapidly rising consumption of imported fuel. Consequently, rural electrification has suffered from decreasing Government investments.

Also, no longer is the state-owned power utility - Perusahaan Listrik Negara (PLN) - alone able to make electricity generation investments to bridge swiftly the gap between electricity supply and demand. Private sector investment is expected to play a much greater role in the development of the cleaner energy sector than it has in the past. However, as shown in the following figure, Independent Power Producers (IPPs) and Private Power Utility (PPU) account for only a quarter of the national electricity generation businesses. By contrast, PLN owns nearly 70% of the electricity generation capacity in the country (Wafa 2017, 13).

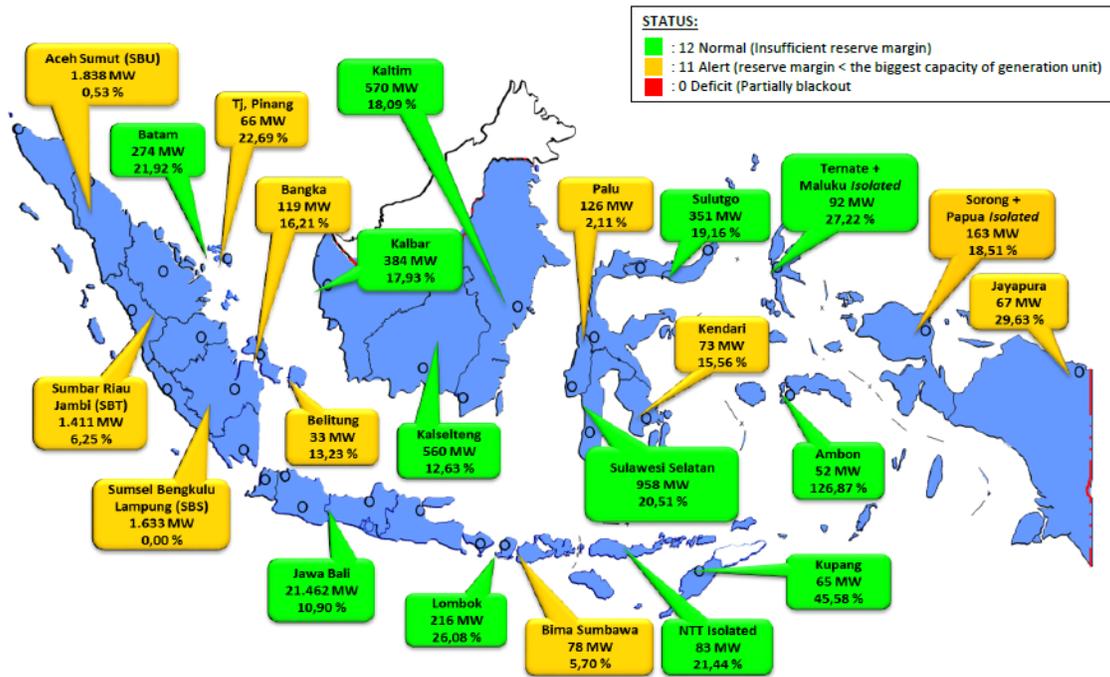
Figure 2 – Installed Electricity Generation Capacity in Indonesia



Source: Adapted from ESDM 2017a, 1 and, Wafa 2017, 13

As demonstrated by the following illustration, most provinces in Indonesia are facing insufficient reserve margins in electricity generation. This is a clear indicator of the urgent need for additional investment in electricity generation.

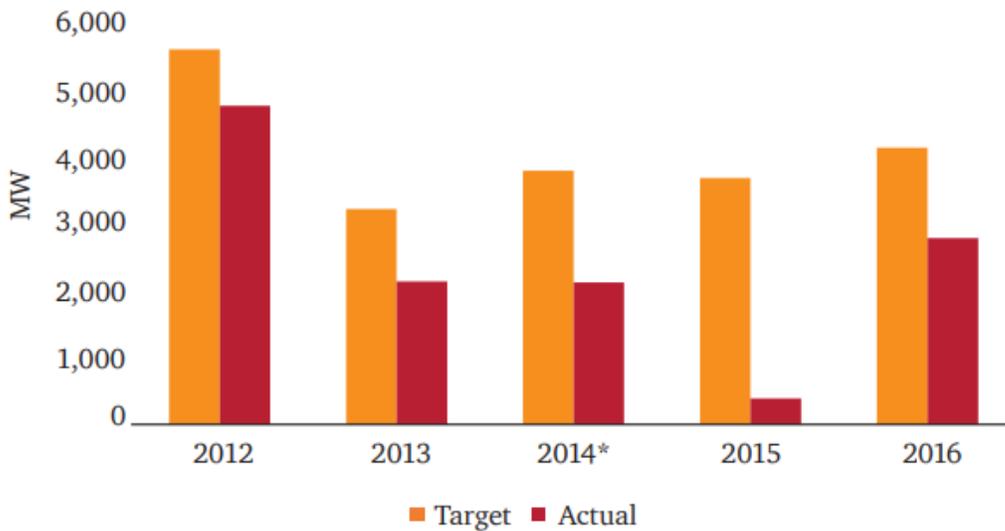
Figure 3 – Status of Electricity Generation Reserve Margin in Indonesia



Source: Wafa 2017, 14

Moreover, recent trends in power sector development appear to indicate that investment in new electricity generation facilities is below the planned level of investments. For instance, as shown in the following figure, in 2015, there was a massive gap between the planned and actual installed capacity – less than 10% of the planned investment was achieved (PWC 2017, 10). This development sets a clear role for the private sector to play in filling the existing electricity generation gap.

Figure 4 – Comparison of Planned and Realized Electricity Generation Investments in Indonesia



Source: PWC 2017, 10

In a bid to encourage private investment in the power sector, several policies have been passed over the past few years. The following outline describes some of the policy and regulatory instruments that have been enacted to promote private sector participation, particularly in the power sector both in terms of electricity generation (including renewable energy) for the national grid as well as for rural electrification:

- Government Regulation PP No.23/2014 previously PP No.14/2012 on Electricity Business that allowing private companies to participate.
- Regulation of the Minister of Energy and Mineral Resources - MEMR Regulation No. 50/2017 on Utilization of renewable energy in electricity generation.
- MEMR Regulation No. 35/2014 on establishment of “One stop service” on permit issuance for power sector.
- MEMR Regulation No.38/2016 on Acceleration of rural electrification in remote, border and inhabited small islands through small scale electricity supply business.
- Regulation of the Minister of Finance (MoF Regulation) PMK No.21/PMK.011/2010 on Granting of taxation and customs facilities for activities to make use of renewable energy sources.
- MoF Regulations on Public-Private Partnership financing scheme that provide facilities including Project Development Fund (PDF), Viability Gap Fund (VGF), Availability Payment (AP) and Government guarantee for infrastructure projects. PMK No. 223/PMK.011/2012; PMK No.190/PMK.08/2015 and PMK No. 95/PMK.08/2017.
- Government Regulation PP No.47/2012 on Corporate Social Responsibility for limited liability companies.

However, in spite of the various policies enacted, private investment in the renewable energy still remains abysmal and rural electrification is yet to attain universal electricity access. There are still over 2,500 villages in remote areas and outer islands of Indonesia that have never enjoyed modern electricity services.

Aligned with country's attempts to achieve Sustainable Development Goals (SDGs), particularly for SDG No. 7 on “Affordable and Clean Energy” through rural electrification, this paper attempts **to highlight the role of private sector in financing rural electrification and the barriers that hamper the realization of this potential.**

The following discussion highlights some of the key challenges that impede the private sector's involvement in rural electrification in the country.

2. Key Barriers to Private Sector Participation in Indonesia's Rural Electrification

There are several barriers that impede the private sector from participating in Indonesia's rural electrification. **First policy barrier is that the Indonesian economy is highly concentrated in Java Island, while majority of the un-electrified population is in the so-called outer islands of Indonesia.** These islands are perceived to have low economic potential which is partly due to their sparsely populations and, therefore, appear economically unattractive to private investors. Thus, investors will tend to focus on Java Island. In fact, investment in access to energy could stimulate economic development in the outer islands.

Second policy barrier to private investment in rural electrification is the Government's predominant focus on large scale renewable energy projects. This fixation comes at the expense of small to medium scale and decentralized renewable energy development. This is because the regulations set out for private investment in the energy sector do not differentiate the scale of the investment. As a result, the amount of time and financial investment in compliance becomes too high for small to medium scale private energy investors. In some of the countries in the South East Asian region (e.g. Cambodia, Bangladesh, Sri Lanka, Nepal and India), they have adopted "*light-handed regulation*" in order to attract private investment in small to medium scale renewable energy-based power investments for rural electrification (IRENA 2016, 54, 56 & 102; Bhattacharyya 2013, 18-20; Reiche, Tenenbaum and de Mästle 2006, 6). Under the light-handed regulation, retail tariff for micro/mini-grid is exempted from government review and approval. The space is provided for developers and electricity distributors to design cost-recovery tariffs and lower revenue risks, while the regulatory agency saves time and money. For example, in Tanzania no retail tariff approval is required for micro-grid below 100 kW (IRENA 2016, 8).

In terms of **institutional barriers**, the key barrier to private investment in rural electrification is **centralized energy development with PLN as main player in electricity off-taking, supply and distribution.** With respect to rural electrification, PLN will be prioritized to take up the business. This institutional arrangement with PLN playing multiple roles can propagate uncertainty among private investors especially in the absence of an independent appeal mechanism. To this end, rural electrification will suffer from lack of the much needed investment.

Another important institutional barrier to private investment is that there appears to be **limited data compiled by the relevant authorities that clearly keeps track of rural population that is electrified.** Therefore, it becomes difficult for an investor interested in rural electrification to assess market potential, to establish where to invest and how much of financial resources will be required as well as the requisite returns. Moreover, the estimated 2,500 villages without electricity access are still lacking baseline data which further minimises the opportunities for private investments in rural electrification.

With regard to **financial barriers**, there are, among others, two primary hindrances to private investment in rural electrification in particular. **The first one is lack of dedicated Rural Electrification Financing scheme that is attractive for private investors.** Considering the nature of remoteness, sparsely distributed population and initial cost for renewable energy development, a special financing scheme is required. Elaboration of Public-private partnership scheme for financing small-medium scale renewable energy and implementation regulation of the MEMR Regulation No.38/2016 on rural electrification tariff will be a potential starting point. The financing scheme shall also address the challenge that **energy investments are long-term projects of about 20 years and, therefore, require long-term financing.** Currently, local commercial banks in Indonesia tend to cap the loan tenor to about 8 years. This makes renewable energy investments difficult to manage in terms of servicing the loan as well as meeting the operation and maintenance costs.

Secondly, most financing institutions, especially local commercial banks, perceive renewable energy projects as being too risky an investment. In spite of various training activities undertaken by the financial services regulatory agency in Indonesia – *Otoritas Jasa Keuangan* (OJK) – and development agencies, the perception appears not to have changed. However, a closer examination of the training participants reveals that key decision-makers in the financing sector do not attend the training leaving it to their junior staff. The attendance of senior officials in financial institutions in such training events is crucial as they are responsible for identifying which type of investments their institutions can support.

3. Opportunities for Innovative Financing in Enhancing Rural Electrification

Globally, there is an annual investment gap of about US\$ 2.5 trillion to cover all sectors under SDGs including access to energy, healthcare, education, sanitation, etc. (UNDP 2018a). In the case of Indonesia, a significant proportion of the investment gap in financing SDG No. 7 is expected to be in rural areas where the over 2,500 villages without electricity are located. However, it is worth noting that the approaches discussed in this section can be replicated in financing the realization of other SDGs.

There are two (2) broad innovative approaches to financing SDG No. 7 addressing *Affordable and Clean Energy* which are relevant to Indonesia's rural electrification, which will be discussed in this paper, namely:

- Islamic financing
- Private sector financing

Blending of these two financing approaches has been successfully demonstrated through facilitation by UNDP under collaborative effort with the Ministry of Energy and Mineral Resources and the Provincial Government of Jambi with financial support from Bank Jambi and BAZNAS (See: Box 1).

Islamic Financing

As Indonesia is the country in the world with the highest Muslim population, it is only befitting that considerations are made on how to innovatively utilize available Islamic financing mechanisms to finance SDGs, including enhancing access to energy through rural electrification. It is affirming that the fundamental principles of SDGs i.e. allocating financial resources for the poor; promoting human dignity & social inclusion; and, leaving no one behind, are all completely aligned with the principles and objectives of development enshrined in *Maqasid Al-Sharia* – the Islamic perspective (IRTI 2017, 2; IsDB n.d.). Consequently, this forms the basis on which Islamic financing can play a role in financing SDGs through following three key mechanisms:

The first one is the use of Zakat¹ which, in Indonesia, is administered by Badan Amil Zakat Nasional (BAZNAS)². As mentioned earlier in this paper, most of the over 2,500 villages without electricity supply are in remote areas and the outer islands with limited economic development and high levels of poverty. As a result, the population in these villages can be considered to be disadvantaged and, therefore, Zakat – through investment in rural electrification - can be allocated to these vulnerable communities as a means of ensuring their social and economic wellbeing is uplifted. As demonstrated in the case study discussed in Box 1 below, UNDP Indonesia in partnership with BAZNAS has applied Zakat funds towards investment in renewable energy projects in underserved communities (UNDP 2018b).

Box 1 – Best Practice of Innovative Financing for Rural Electrification in Indonesia

The “*Development and Revitalization Micro Hydro Power Generation in Jambi Province*” is an initiative under the auspices of UNDP/GEF Market Transformation for Renewable Energy and Energy Efficiency (MTRE3) Project and is a collaborative effort with the Ministry of Energy and Mineral Resources and the Provincial Government of Jambi with financial support from Bank Jambi and Badan Amil Zakat

¹ Zakat refers to alms that the Muslim faithful offer for distribution to the poor in the community in accordance to Islamic Law.

² BAZNAS is the official Government agency with the mandate of collection and administration of Zakat in Indonesia.

Nasional (BAZNAS). PLN was also consulted in order to ensure that there were no immediate plans to supply electricity in the project areas.

In this project, UNDP facilitated implementation of an innovative approach in form of blended financing for rural electrification from Jambi Development Bank and BAZNAS, which have a common goal for local development and poverty reduction.

Under facilitation of UNDP in coordination with the Ministry of Energy and Jambi provincial government, Bank Jambi as a private sector entity supported the project through provision of its Corporate Social Responsibility fund. From BAZNAS, Zakat fund was utilized to procure micro-hydro power plant equipment. This project serves as an example of how Zakat can be utilized to support disadvantaged communities in improving access to modern energy services as a means of poverty alleviation thereby improving the livelihoods and quality of life of rural communities.

The project is comprised of an installation of a new 60 kW small hydropower mini-grid system and revitalization of three (3) small hydropower plants of 40 kW each. The revitalization of each of the small hydropower plants will involve repairing the civil works and powerhouse as well as replacing the electro-mechanical components. The existing power lines will be utilized except in one area where the grid lines will be improved. The local communities will be trained on the operation and maintenance of the small hydropower plants including revenue collection from end-users to ensure the project's sustainability.

This project will serve some of the rural communities far away from urbanization – one of the project sites is about 100km from the nearest city. Therefore, this initiative is expected to transform the lives of the over 800 households (approximately over 4,000 people) who will benefit from the project. In addition, the following institutions will enjoy electricity services:

- 8 Schools
- 23 Mosques/Mushollas
- 4 Village Halls
- 5 Security Posts
- 1 Nursing Home
- 2 *Balai Adat* Buildings



Apart from simply lighting homes and the above facilities and institutions, the project is expected to stimulate economic growth in the target rural communities. Presently, for their income, most of the households in these communities largely depend on small rubber plantations. This is supplemented by income from farming cocoa, coffee, patchouli and cinnamon. However, the advent of electricity could stimulate additional income opportunities from welding, hair salons, cold beverages, frozen foods, etc. arising from the ability to use electrical equipment.

The households will also greatly benefit from lower energy costs for lighting. Electricity supplied by the project will lead to savings of about 60% for households using kerosene lamps and massive savings of 91% for the few households using diesel generators. In addition, the end-user cost of electricity is expected to be lower than PLN's average domestic tariff by about 75%.

This project will serve as a replicable demonstration of innovative financing and how it can transform the lives of disadvantaged communities. It also has an important role in assisting Bank Jambi to better understand renewable energy investments. It is expected that after the completion and operation of the four (4) micro hydropower plants, Bank Jambi and other interested financial institutions will have a better understanding on the project risks during construction and operation of small hydropower plants in particular, to allow financing of other similar projects.

Source: UNDP and RPG 2018, 1-4 to 1-9; MTRE3 n.d.

The second Islamic financing mechanism that can innovatively finance SDGs is the Islamic sovereign bond otherwise referred to as *Sukuk*. Already, sovereign sukuk accounts for nearly a third of the Government's public debt which implies that it is a very important source of the Government's finances particularly for national development (IsDB-Indonesia 2018; BAPPENAS 2015, 15).

In Indonesia, UNDP has been supporting the Ministry of Finance in the development for issuance of the "Green Sukuk" worth US\$ 1.25 billion (UNDP 2018b). This is the first time in the world that any sovereign bond has been issued exclusively aimed at funding climate change-related SDG initiatives in compliance with Islamic law. It is worth noting that the Green Sukuk was oversubscribed which is a good indicator that SDGs are a huge investment opportunity (UNDP 2018b). Part of the proceeds of the Green Sukuk will be allocated towards financing the government's renewable energy projects – including those for rural electrification – as a means of meeting Indonesia's GHG emissions reduction target in the energy sector.

Development funding through the Islamic Development Bank (IsDB) is the third innovative Islamic financing mechanism that could support SDGs, including No.7 on "Affordable and Clean Energy". Although not originally linked to SDGs, since its inception, IsDB has financed renewable energy projects and other initiatives that contribute to climate change mitigation. To date, globally, the Bank has financed renewable energy projects worth US\$ 2.75 billion and has allocated about 6% of its resources to climate change mitigation initiatives (IRTI 2017, 13).

Based on its past experience and the aforementioned alignment of SDGs and *Maqasid Al-Sharia*, the Islamic Development Bank has recently committed to finance the realization of SDGs (UN ESCAP 2018). Therefore, as a Member Country of IsDB, Indonesia could make use of the financing window that IsDB has established which is dedicated to meeting SDGs.

Private Sector Financing

As investing in the requisite infrastructure and other facilities required to meet SDGs can be a capital intensive undertaking, the private sector can play an important role in supporting the Government of Indonesia in financing initiatives that contribute to meeting SDGs targets. This can be through two (2) main options, namely:

- Allocating Corporate Social Responsibility (CSR) funds in SDGs-related initiatives
- Direct investments as part of normal core operations

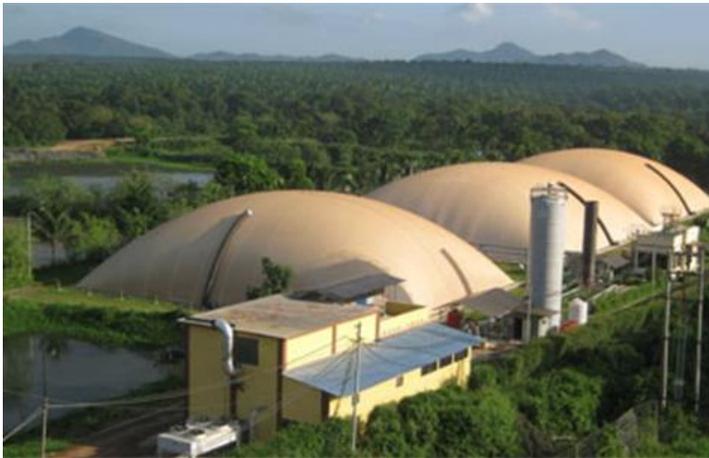
The first option for financing SDGs by the private sector is through Corporate Social Responsibility (CSR). The use of CSR to support the needy in the community is an age-old practice by the private sector designed to give back to the community but is also partly motivated by tax reduction opportunities. Nevertheless, regardless of the motive, SDGs offer a good opportunity for private sector entities to invest their CSR funds in high-impact socio-economic initiatives. A good example of this is highlighted in the case study discussed in Box 1 of this paper whereby Bank Jambi has contributed about 45% of the total cost for the micro hydropower project through its CSR funds (MTRE3 n.d.). In fact, some of the CSR investments could, in the long-run, contribute to businesses expanding their market base. For example, in case of Bank Jambi's CSR fund in providing access to electricity, the presence of electricity may further stimulate local economic activities, which will be potential market for microcredit lending line from the Bank. There are various examples on how the CSR funds go beyond CSR, if well planned and implemented.

In the second option, the Government of Indonesia can develop special incentive packages that could attract private businesses in currently underserved areas to offer affordable services as part of their normal operations. For example, several rural-based agro-industries have the potential for

converting their agro-processing waste products into renewable energy to meet their own electricity needs e.g. palm oil, rice, coffee, sugar, etc. Therefore, the Government could provide incentives to encourage these agro-industries to install larger-than-required electricity generation facilities with the excess electricity being supplied to nearby un-electrified rural communities or to be sold to PLN as excess power.

For example, although not developed specifically as a SDGs-related initiative, PT Austindo Nusantara Jaya Tbk (ANJ) – a palm oil producer in Belitung – can serve as a model of how rural-based agro-industries can contribute to meeting SDGs. Through its subsidiary PT Austindo Aufwind New Energy (AANE), ANJ developed a 1.2 MW biogas power plant to produce electricity for its own use. However, following a presumably attractive feed-in tariff and a 15-year power purchase agreement (PPA), in 2015, the power plant was expanded to 1.8 MW. These developments allowed the excess electricity generated to be supplied to PLN for rural electrification among 2,000 households in Belitung (Rajagukguk 2017; ANJ n.d.).

Figure 5 - Photo of AANE Biogas Power Plant in Belitung



Source: ANJ n.d.

The foregoing discussion demonstrates that the focus on financing SDG No. 7 through renewable energy-based rural electrification is suggested to have a multiplier effect as it acts as an enabler for meeting the other SDGs (McCollum, et al 2018, 7-12; Brent 2017). The following table provides examples of how renewable energy-based rural electrification can contribute to meeting SDGs in rural Indonesia:

Table 1 - Potential Impacts of Rural Electrification on Meeting SDGs in Indonesia

SDGs	Potential Impact of Rural Electrification
1. No Poverty	<ul style="list-style-type: none"> Increased income levels resulting from higher productivity and/or quality New business opportunities e.g. welding, cybercafé, etc.
2. Zero Hunger	<ul style="list-style-type: none"> Irrigation from deep wells can be made possible thereby enhancing food security and countering drought
3. Good Health & Well-being	<ul style="list-style-type: none"> Powering health centres attracts & retains doctors & other health providers in rural areas Allows for preservation of vaccines, blood and other

SDGs	Potential Impact of Rural Electrification
	<ul style="list-style-type: none"> perishable medical material • Enables establishment of surgery theatres, laboratories, in-patient facilities, telemedicine, etc. • Can transform health centres into 24-hour health facilities
4. Quality Education	<ul style="list-style-type: none"> • Attracts and retains teachers in rural areas • Facilitates studying after dark • Allows use of advanced teaching aids e.g. internet & visual audio equipment • Enables teaching of new technical skills in rural areas e.g. welding, electricals, electronics, etc.
5. Gender Equality	<ul style="list-style-type: none"> • Enhances incomes of women through use of machines to increase productivity and/or quality • Introduction of new revenue streams for women • Alleviates drudgery of household chores undertaken by women
6. Clean Water & Sanitation	<ul style="list-style-type: none"> • Enables pumping and treatment of clean water over long distances • Facilitates use of deep wells as a source of clean water
7. Affordable & Clean Energy	<ul style="list-style-type: none"> • Enables access to modern energy services for cooking, heating, lighting and entertainment
8. Decent Work & Economic Growth	<ul style="list-style-type: none"> • Increased incomes and new revenue streams • Enables use of equipment which makes some jobs more decent
9. Industry, Innovation & Infrastructure	<ul style="list-style-type: none"> • Facilitates emergence of small scale industries for semi-processing crops thereby enhancing value addition • Industries create new jobs in rural areas curbing rural-urban migration • Increases economic potential/value of rural areas
10. Reduced Inequalities	<ul style="list-style-type: none"> • Increased income & business opportunities reduce the income & employment gaps between rural and urban areas • Ability to use labour-saving equipment enhances social inclusion by enabling employment of persons with disabilities
11. Sustainable Cities & Communities	<ul style="list-style-type: none"> • Curbs rural-urban migration thereby reducing pressure on urban areas
12. Responsible Consumption & Production	<ul style="list-style-type: none"> • Reduces post-harvest losses through deployment of appropriate technology • At household level, fridges keep foodstuff longer
13. Climate Action	<ul style="list-style-type: none"> • Transition from use of kerosene and fuelwood for cooking and lighting reduces overall GHG emissions
14. Life Below Water	<ul style="list-style-type: none"> • Use of preservation technologies can marginally contribute to curbing overfishing by rural communities
15. Life on Land	<ul style="list-style-type: none"> • Switch to cooking with electricity can reduce demand for fuelwood and help preserve forests especially among

SDGs	Potential Impact of Rural Electrification
	institutions in rural areas e.g. schools, hospitals, prisons, etc.
16. Peace, Justice & Strong Institutions	<ul style="list-style-type: none"> • Economic development can enhance peace and minimize conflict • Enable Government services closer to the people e.g. online services • Street & domestic lighting enhances overall security • Attract and retain personnel in security forces
17. Partnerships for the Goals	<ul style="list-style-type: none"> • Enables partnerships with private sector to offer services that require electricity to meet SDGs • Encourages private sector to offer CSR funding in areas with potential for new customer base

Source: Adapted from McCollum, et al 2018, 7-12 and Brent, 2017

4. Conclusions and Policy Recommendations

- Focus on financing renewable energy-based rural electrification is highly recommended as it will achieve Indonesia's national targets and Sustainable Development Goal No. 7 while creating a multiplier effect for meeting the other SDGs.
- In order to attract private investment in rural electrification, the identified policy, institutional and financial barriers discussed in this paper will need to be overcome. Institutional and financial barriers removal can be prioritized as they are implementable in short/medium term.
- Having a common goal for development and poverty reduction, involvement of BAZNAS and Provincial Development Banks has significant potential for financing rural electrification programmes and localizing SDGs as demonstrated in the case of micro hydropower plants development in Jambi facilitated by UNDP.
- Diversification of fiscal instruments, such as issuance of Green Sukuk, to mobilize public resources for financing renewable energy projects is promising. Facilitation is required to ensure high-impact underlying projects are selected to be financed and monitoring is in place to safeguard accountability in the use of that public fund.

Based on the foregoing conclusions, the following policy recommendations are proposed for consideration of the Government of Indonesia, particularly Ministry of Energy and Mineral Resources and Ministry of Finance:

- Firstly, there is a need for a **"Rural Electrification Fund Facility"** whose mandate is to fast-track rural electrification through facilitation of project preparation, engagement of local stakeholders and facilitating public-private partnership financing scheme especially targeting the over 2,500 villages that presently do not have electricity services. The proposed Facility could serve as a platform for various financial resources including Islamic financing mechanisms, CSRs from private sector and Provincial Development Banks, commercial financing institutions lending services, national and sub-national Government budgets and other sources such as grants from development partners.
- Secondly, in order to encourage private investment in small to medium scale renewable energy development for rural electrification, it is proposed that the Government through the Ministry of Energy and Mineral Resources explores the introduction of **"light-handed" regulation. This is particularly to simplify the process of issuing business permits and retail tariff approval for**

smaller renewable energy-based power utility operators. In the Asian region, light-handed regulation has been adopted in Bangladesh, Sri Lanka, Cambodia, Nepal and India and has triggered participation of private investment in rural electrification.

- Thirdly, local governments can issue **regulations to encourage private sectors in their region to invest CSR funds in rural electrification initiatives.** Facilitation is required to sensitize private sector on the potential win-win options such as those where such investment could expand their market base. To begin with, the Government of Indonesia could target private entities near the over 2,500 villages that, currently, have no electricity services.

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