



# Biogas Financing Options in Argentina, Ethiopia, Ghana, Indonesia, and South Africa

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## **Executive Summary of D3.4**

Many biogas projects are not reaching the implementation stage because of the lack of access to suitable financing. Understanding the drivers and barriers that the field of biogas faces within developing markets in Argentina, Ethiopia, Ghana, Indonesia and South Africa would help assist in assessing the viability and improving the attractiveness of biogas projects to financing stakeholders.

It is critical to engage with financing stakeholders to understand aspects such as the conditions for normal bank loans, equity funds, project financing, national subsidies, EU funds, or international funds (e.g. World Bank). These aspects provide insight for projects to be developed with the requirements of the available financing options in mind.

This report provides a holistic overview of the financing sectors within Argentina, Ethiopia, Ghana, Indonesia and South Africa with respect to biogas projects. In addition, a non-exhaustive list of identified financing options for these countries are highlighted.

### **Republic of Argentina**

The COVID-19 impact in addition to the previous economic situation of Argentina made up a very complex economic situation for 2020-2021. Although there has been progress with the private debt and international monetary fund arrangement are still pending. Economic variables are altered by a very high monetary emission.

Local law framework regarding biofuels is currently being debated as biofuels legislation and frameworks are reaching the end of their validity in May 2021. Within the discussions, there are three main positions;

1. oil companies want to minimize or fade away the law;
2. sectors promoting an extension form for a variable time;
3. biofuel sector and agricultural provinces are promoting a more aggressive and stricter law to be implemented.

There is also a lobby to promote and make bio methane a new source for biofuel as it has been listed in the current legislation, however no actions to encourage it has been implemented to date.

The current framework is more supportive for the electrical generation which could be highlighted by two main laws that could be interpreted to promote the construction of more biogas plants in the country. The two principal legislative acts are the Law 27191, National Development Regime for the use of renewable energy sources for energy production (which amended Law 26190/2006) and the distributed energy model sustained by law 27424 published in 2017.

Law 27424 establishes a promotional benefits regime promotional, including a Tax Credit Certificate, also creates the FODIS<sup>1</sup> in order to grant loans, incentives, guarantees, capital contributions and acquisition of other financial instruments, all intended to enhance the implementation of distributed generation systems from renewable sources.

Although there are some incentives and credit programs detected in Argentina all operations are in stand by waiting for a better economic panorama and following the pandemic evolution. At the present stage several biogas projects are in stand by waiting for a more favourable situation in order to reach finance assistance. While biogas projects with existing contracts of the RENOVAR program are still respected but there are some discussions on possible change from dollars to local currency.

## Republic of Ethiopia

The Ethiopian financial sector consists of 3 public banks, including the Development Bank of Ethiopia (DBE), 16 commercial banks, 14 private insurance companies, one public insurance company, 31 microfinance institutions and over 8200 Saving and Credit Cooperatives in both rural and urban areas.

One of the best options for future financing for biogas projects in Ethiopia is the DBE. The DBE offers three funding possibilities, viz. renewable energy finance, lease finance and project finance. Considering the amount of money required for large-scale biogas projects, the project finance option could be the preferred solution. Compared to other commercial and government banks, the DBE offers an improved equity debt ratio (25/75 to  $\approx$  40/60 in other banks), lower interest rate (11.5 % to  $\approx$  16 % - 20 % in other banks), longer grace period, and loan tenor.

In addition to the DBE, commercial and government banks in Ethiopia are potential financial sources for biogas projects. However, compared to the DBE, their interest rates are higher. Their major requirement is a 40-50 % debt-to-equity ratio, feasibility study and economic viability of the project.

International organizations play a significant role in developing renewable energy sectors in Ethiopia. Ethiopia is receiving funds from several international organizations as loan or in-kind donations and cash towards promoting renewable energy technologies in rural communities in Ethiopia. These include international organizations such as GEF grant funding, UNDP (United Nations Development Program), UNCDF (United Nations Capital Development Fund), Clean Start global Program, Humanist Institute for Cooperation with Developing Countries (HIVOS), Netherlands Development Organization (SNV), Africa Biogas Partnership Program (ABPP) United States Agency for International Development (USAID), GIZ – Energizing Development Ethiopia (EnDev), Japan International Cooperation Agency (JICA), World Bank, European Union, International Support Network for African Development (ISNAD), etc. Thus, these international organizations are great potential in financing Biogas projects as well in Ethiopia.

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<sup>1</sup> <https://www.argentina.gob.ar/economia/energia/generacion-distribuida/que-es-la-generacion-distribuida/beneficios-promocionales>

Finally, to increase access to energy, the Government of Ethiopia is promoting renewable energy projects through both national and international bids. More than 85 % of the rural population of Ethiopia does not have access to electricity and has a huge feedstock potential in those rural areas for biogas plants. Thus, biogas projects have the potential to be financed through the annual budget of the government.

## Republic of Ghana

Ghana's economy has been severely affected by the impacts of the coronavirus pandemic, including the energy sector. The International Monetary Fund (IMF) has predicted that growth in 2020 will barely reach 1%, down from a December 2019 projection of 5.8%. However, the government is committed to developing the energy sector, particularly the renewable energy (RE) industry, despite the sector saddled with huge debt as a result of the unused power purchase agreement signed by the government with production exceeding the current demand capacity. This is demonstrated in the ongoing renewable energy projects, programmes and plans coupled with the review of the Renewable Energy act of 2011 (Act 832), which is expected to drift from the current feed-in-tariff (FiT) system to a competitive bidding system. Necessary policies for the uptake of the renewable energy have all been put in place in addition to the Renewable Energy Master Plan to increase with the objective of increasing the proportion of renewable energy in the national energy generation mix; reducing the dependence on biomass as the main fuel for thermal energy applications; providing renewable energy-based decentralised electrification options in off-grid communities, and promoting local content and local participation in the renewable energy industry. To achieve this, the government has outlined strategies, including financial incentives and procurement preferences to private sector actors engaged in the local assembly and manufacturing of renewable energy technologies and related services.

Notwithstanding these government interventions, the RE sector in Ghana is still confronted with considerable challenges, including the macroeconomic situation, perceived risk by the financial sector, financing terms and conditions - high commercial interest rates, limited tenor loans, high inflation, and currency depreciation - decreasing the confidence of private sector investors. Consequently, the government has been pushed to postpone the 10% RE penetration target into the energy mix set by the government from 2020 to 2030.

Additionally, the challenges to RE financing has been categorised into three broad areas, i.e., economic, commercial and regulatory challenges. Within these broad constraints, long pay-back periods, limited track record, and high upfront cost are the most severe impediments to obtaining RE projects' financing opportunities for RE projects in Ghana.

Public financing in the RE sector is mainly via debt financing from the international financial markets, with most of these finances channelled to solar PV projects. Biogas technology is seen in Ghana as a waste management option in addressing sanitation and climate change related issues. The largest biogas project in Ghana, Safi Sana Ghana, was financed under a Public-Private Partnership Agreement (PPA). Other development partners including the World Bank, UNDP, DANIDA, EU, Agence Française de Développement (AFD), KfW, GIZ, Millennium Challenge Corporation (MCC) and Switzerland State Secretariat for Economic Affairs (SECO), Netherlands Development Organisation (SNV), and the Global Environment Facility (GEF)



are playing key roles in RE development in Ghana. In addition to this, the Ghana Investment Promotion Centre (GIPC) Act 1994 provides the import duty exemptions on renewable energy technologies and customs import duty exemption on plant, machinery, equipment and accessories imported specifically and exclusively to set up an RE enterprise. Other commercial banks, including Ecobank Ghana, Fidelity Bank and Cal Bank, have developed instruments to finance renewable energy projects in the country.

## Republic of Indonesia

In 2009, Indonesia stated the commitment to independently reduce Greenhouse Gas (GHG) emissions by 26% and 41% (with for foreign assistance) by 2020. To mitigate climate change risks, Indonesia's Renewable Energy National Plan (2017) also has stipulated the target of 5.5 GW or 23% of renewable energy distribution by 2025. These national targets are in line with Sustainable Development Goals (SDGs) and the Paris Agreement's Nationally Determined Contributions (NDCs), which sets the goal to hold the global average temperature to well below 2°C above pre-industrial levels.

To achieve these targets, financing in renewable energy has an important role. However, renewable energy financing is not common in Indonesia. There are several challenges, such as high collateral requirements, the absence of project finance, local content requirements and permitting and licensing procedures (ADB, 2019). The complexity of renewable energy business processes and its inconsistency (due to frequent regulatory changes) also hindered access to financing and negatively affected the market. In addition to this pre-existing condition, the COVID-19 pandemic has also impacted the financing space for renewables in the country, the perceived risk of RE projects, businesses, and the state electricity company (PLN) are now larger due to the underlying macroeconomic condition and the decrease in energy demands. In addition to this, higher perceived risk, higher liquidity risk, and exchange rates also impacted RE developers in gaining access to financing and procure assets.

Based on USAID (2018), there are three categories of potential sources of financing for renewable energy projects in Indonesia applicable also specifically for biogas: (1) Debt Financing; (2) Mezzanine and Sharia Financing, and; (3) Equity. All three financing sources, including foreign and local sources, can be seen in Indonesia's Financing options identified chapter.

In terms of public financing initiatives, the Government of Indonesia has several financing schemes for developing renewable energy projects, including budgets available in national government agencies and regional governments, available fiscal incentives, guarantees, capital injections into state-owned enterprises, financial intermediation, and feed-in tariffs. The MEMR Directorate General of New and Renewable Energy and Energy Conservations (EBTKE) State Budget in 2020-2024 has a total budget of IDR 99,127 million for the outcome/output of coaching, monitoring, and utilization of various new and renewable energies.

UNDP (2018) stated that local commercial banks still perceive renewable energy projects as too risky an investment in terms of commercial financing. Therefore, ADB (2019) advised project developers in Indonesia to seek funding from commercial sources and pair them with grant financing. For the record, commercial financing in Indonesia for climate change and climate mitigation is mainly from commercial banks or Shariah banks in the forms of principal loans or debt financing, which typically represents 65-80% of the total investment cost (OJK, 2014).



According to the International Energy Agency (IEA) (2020), a third of the financing source for power plants commissioned in Indonesia between 2016 and 2019 came from foreign sources. We found out that development organizations, development banks, as well as funds channelled as a result of initiatives from foreign embassies remained as the prominent source of foreign funds in the forms of direct investments, initial capital funds, and grants for project development by local actors. In comparison, global initiatives such as the ICCTF and GCPF are less focused on channelling direct investments but plays a key role in accelerating investment from local sources through technical assistance.

Regulations and policies provide the necessary context, guidelines, and orientation that may serve as a key consideration for commercial banks or other financial institutions when looking to invest in renewable energy projects. These regulations and policies are issued by the executive branch, legislative branch, Financial Services Authority (OJK), Indonesia Central Bank, Ministry of Energy and Mineral Resources, and the Ministry of Finance. Outlined below is the list of several key regulations essential for developers and investors to consider when looking at the aspect of RE financing. The complete explanation can be seen in Table 5-1.

### **I. Regulations Related to Climate and Renewable Energy Financing**

- a. **Financial Service Authority Regulation No.18/POJK 03/2016 on Risk Management for Commercial Banks**, obligates the effective risk management of banks, which could be adapted with the business goals, policies, size and complexion, as well as the capabilities of the bank.
- b. **Financial Service Authority Regulation No.51/POJK 03/2017 on Sustainable Financing by Financial Institutions** aims to encourage the creation of Sustainable Finance in the financial services sector that supports economic, social and environmental sustainability in the implementation of the development process in Indonesia.
- c. **Bank Indonesia Regulation No. 7/3/ PBI/2005 on the Legal Lending Limit for Commercial Banks** follows Law No. 3 of 2004 on Bank Indonesia. It limits a bank's provision of funds to any single "borrower", to a borrower group and a state-owned enterprise.

### **II. Regulations relevant to financing of project development phases**

- a. **MEMR No. 21/2016 on the Purchase of Electric Power from Biomass and Biogas Power Plants by PT. Perusahaan Listrik Negara (PLN)** stipulated matters related to electricity selling rates, several requirements for project developers to reach a power purchase agreement with the state-owned electricity company (PLN), and additional contracts regarding excess power selling price rates.
- b. **MEMR No.50/2017 on Renewable Power Generation** stated that PLN, as the government's own enterprise, has the responsibility to buy electricity from renewable energy power plants, including biogas power plants. The cooperation between power plant operators and the PLN refers to the Build, Own, Operate, Transfer (BOOT) scheme. Following this regulation, in **MEMR No.53/2018**, biofuel is added as a renewable source to generate electricity.
- c. **MEMR No. 4/2020**, superseding MEMR No. 50/2017, the cooperation scheme was changed into Build, Operate, Own (BOO) scheme.

### **III. Policies and Policy Orientation related to Renewable Energy Financing**



- a. **Strategic plan (2020-2024), Ministry of Energy and Mineral Resources**, Directorate of New and Renewable Energy, Energy Conservation, outlines incentive schemes from the MEMR to attract investments and support renewable energy market growth.
- b. **Financial Services Authority Sustainable Financing Roadmap (2015-2019)** outlines two strategic work plans for sustainable finance (SF), which are medium-term (2015-2019) and long term (2020-2024)

Currently, the revenues of renewable energy investments are based on a predefined tariff structure that, on the other hand, in many cases, is negotiable and therefore uncertain, and with a cap that in many cases is too low for investors to generate sufficient returns. In addition, Indonesia's electricity market is not competitive and, as long as the underlying power price (through PPA or concession tariffs) is not predefined, there is a risk that a premium grant can lead to "game-playing" where unnecessarily low tariffs/PPA prices emerge, with the anticipation of a viability gap funding scheme to cover a larger part of the revenues of projects.

To facilitate submission of this project funding, in section 5.4 in Indonesia's section, we also provided a list of potential financiers for RE development in Indonesia, along with its eligibility criteria, typical project size, which development phases are the financing types are most relevant with, type of the financing instrument, financing period, and contact details. Through available secondary data and data validation interviews, the available financing sources in Indonesia are available from commercial banks, International Development Financing Institutions, Local Financing Institutions, Private Equity, SPVs, and Public Funds. The list of financing sources is outlined below:

#### **A. Commercial Banks**

- a. *Bank Negara Indonesia (BNI)*
- b. *Bank Mandiri*
- c. *Bank BCA*
- d. *Bank BRI*
- e. *Bank BJB*

#### **B. International Development Financing Institutions (DFIs)**

- a. Green Climate Fund / Green Technology Fund
- b. Indonesia Climate Change Trust Fund (ICCTF)
- c. International Finance Corporation (IFC)
- d. Asian Development Bank (ADB)
- e. Private Financing Advisory Network (PFAN)
- f. Global Environment Facility (GEF)
- g. Japan International Cooperation Agency (JICA)

#### **C. Local Development Financing Institutions (DFIs)**

- a. PT. Sarana Multi Infrastruktur (Project Development Fund & PT. SMI Green Bond/Green Sukuk)

#### **D. Private Equity**

- a. Indonesia Infrastructure Finance (IIF)

#### **E. SPV (Public private partnership in the form of a Special Purpose Vehicle)**

- a. Indonesia Infrastructure Guarantee Fund / PT Penjaminan Infrastruktur Indonesia

#### **F. Public Funds**

- a. Regional Governments
- b. Ministry of Energy and Mineral Resources
- c. Ministry of Finance

### **Republic of South Africa**

Currently, landfill gas and biomass only make up around 1% of the renewable energy projects procured for delivering energy to the national grid. The low uptake for biogas in Renewable Energy Independent Power Producers Programme (REIPPPP) has been due to the high cost of preparing a tender, and the low bid price cap leads to implementing landfill gas/biomass projects that are not be financially feasible. In 2017, the South African Biogas Industry Association (SABIA) highlighted the need for a favourable biogas REIPPPP to further support the nascent industry and counter the delayed rollout of biogas related projects in the earlier bid rounds.

Commercial banks are lead debt financiers, and some observations suggest the pension fund market is better suited to finance the long-term infrastructure projects such as those procured through REIPPPP, since the pension funds have a long-term investment timeframe that is matched more closely to the long-term lifespan of these assets. In addition, banks are using portfolio debt funding of REIPPPP projects to strengthen diversification, thus lowering risk and funding costs. The banks are now empowered to comfortably reshape the lenders market due to the knowledge gained from renewable energy projects over the last ten years. The biogas market is still emerging in South Africa and has not yet shared similar benefits. Project preparation support for biogas projects would increase the available data in the local market that can inform financiers for future projects.

To attain bankability, i.e., reach financial close, in REIPPPP projects, a biogas project developer needs to go through a costly due diligence process. The steps include technical feasibility, model audit, environmental impact assessments, licenses and permitting, legal, resource assessment and insurance assessments. Project finance offered by lenders is structured in such a way that identified project risks are allocated to the parties most able to manage them. Banks mitigate risks through direct agreements with key project participants, such as feedstock suppliers, operators and off-takers. Due to the high risks associated with project development, developers ring-fence the risks within a Special Purpose Vehicle (SPV). The SPV has no assets/ historical cash flows, with future performance assessments and cash flow projections being based on the terms of the underlying contractual framework.

The biogas financing options available in South Africa are primarily available through the DFIs. DFIs, as government-owned entities, have relatively lowered risk exposure to biogas failure, and in addition, the funding requirements play a key role in coordinating key sector development targets through the catalytic projects that are awarded funding. DFIs can play a bigger role in developing financing solutions with potentially blended components provided by other domestic DFIs, continental and international DFIs. These solutions can include infrastructure funds, liquidity facilities, blended finance platforms or subnational financing models.



## Summary of the DiBiCoo Project

The *Digital Global Biogas Cooperation (DiBiCoo)* project is part of the EU's Horizon 2020 Societal Challenge ‘Secure, clean and efficient energy’, under the call ‘Market Uptake Support’.

The target importing emerging and developing countries are Argentina, Ethiopia, Ghana, South Africa and Indonesia. Additionally, the project involves partners from Germany, Austria, Belgium and Latvia. The project started in October 2019 with a 33 months-timeline and a budget of 3 Million Euros. It is implemented by the consortium and coordinated by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

The overall objective of the project is to prepare markets in developing and emerging countries for the import of sustainable biogas/biomethane technologies from Europe. DiBiCoo aims to mutually benefit importing and exporting countries through facilitating dialogue between European biogas industries and biogas stakeholders or developers from emerging and developing markets. The consortium works to advance knowledge transfer and experience sharing to improve local policies that allow increased market uptake by target countries. This will be facilitated through a digital matchmaking platform and classical capacity development mechanisms for improved networking, information sharing, and technical/financial competences. Furthermore, DiBiCoo will identify five demo cases up to investment stages in the 5 importing countries. Thus, the project will help mitigate GHG emissions and increase the share of global renewable energy generation. The project also contributes to the UN Sustainable Development Goals (SDG 7) for ‘Affordable and clean energy’, among others.

Further information can be found on the DiBiCoo website: [www.dibicoo.org](http://www.dibicoo.org).

## Contents

Executive Summary of D3.4 .....	2
Republic of Argentina.....	2
Republic of Ethiopia.....	3
Republic of Ghana .....	4
Republic of Indonesia .....	5
Republic of South Africa .....	8
Summary of the DiBiCoo Project .....	9
Contents.....	10
List of Abbreviations (General) .....	12
List of Abbreviations (Country-Specific): Argentina.....	12
List of Abbreviations (Country-Specific): Ethiopia .....	13
List of Abbreviations (Country-Specific): Ghana .....	13
List of Abbreviations (Country-Specific): South Africa.....	14
List of Figures.....	16
List of Tables.....	17
1 Introduction .....	18
2 Impact of COVID-19 to the green financing space.....	19
2 Argentine Republic.....	21
2.1 Overview of financing space .....	21
2.2 Legislation and policies.....	21
2.3 Financing options identified .....	23
2.3.1 BICE Credits.....	23
2.3.2 Investment credits Central bank .....	24
2.3.3 Credits renewable energy in mendoza.....	24
2.3.4 Credits BICE renewable energy and energy efficiency projects .....	24
2.3.5 Cordoba program .....	25
2.3.6 Nation bank credits for renewable energy.....	26
2.3.7 United Nations Development Programme (UNDP) projects for the installation of biodigesters in schools .....	26
3 Federal Democratic Republic of Ethiopia.....	27
3.1 Overview of financing space .....	27
3.2 Legislation and policies.....	29
3.3 Identifying potential financing options .....	30
3.4 Financing sources for biogas projects.....	31





3.5	Financing options identified .....	33
4	Republic of Ghana.....	36
4.1	Overview of financing space .....	36
4.2	Legislation and policies.....	38
4.3	Identifying potential financing options .....	40
4.4	Financing options identified .....	41
5	Republic of Indonesia.....	43
5.1	Overview of financing space .....	43
5.1.1	Public Financing .....	45
5.1.2	Commercial financing .....	46
5.1.3	Foreign Sources of Financing .....	48
5.2	Legislation and policies.....	49
5.3	Identifying potential financing options .....	55
5.3.1	Internal financing .....	55
5.3.2	External Financing.....	55
5.3.3	International Development Finance Institutions.....	58
5.4	Financing options identified .....	59
6	Republic of South Africa.....	72
6.1	Overview of financing space .....	72
6.1.1	Private sector.....	73
6.1.2	Development Financial Institutions (DFIs).....	75
6.2	Legislation and policies.....	77
6.3	Identifying potential financing options .....	77
6.4	Financing options identified .....	79
6.4.1	Public sector.....	79
6.4.2	Private sector.....	82
7	Europe and global based support.....	83
8	Summary/Conclusion .....	83
9	References.....	86
	The DiBiCoo Consortium.....	0

## **List of Abbreviations (General)**

BOO	Build, Own, Operate
BOOT	Build, Own, Operate, Transfer
DFI	Development finance institutions
EU	European Union
GHG	Greenhouse gas
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent power producers
NDCs	Nationally Determined Contributions
PPA	Power purchase agreement
RE	Renewable energy
SDGs	Sustainable Development Goals

## **List of Abbreviations (Country-Specific): Argentina**

AFIP	Tax, Customs and Social Security Authority
BICE	Banco de Inversión y Comercio Exterior S.A. (Investment and Foreign Trade Bank)
CAMMESA	Compañía Administradora del Mercado Eléctrico Mayorista S.A. (Argentine Wholesale Electricity Market Clearing Company)
FODIS	Fondo para la Generación Distribuida de Energías Renovables (Fund for the Distributed Generation of Renewable Energies)
GCF	Green Climate Fund
GOA	Government of Argentina
GUH	Large Enabled Users
IDB	Inter-American Development
IFC	International Finance Corporation
MATER	Mercado a Término de Energía Eléctrica de Fuente Renovable (Term Market for Electric Energy from Renewable Source)
MEM	Ministry of Energy and Mining
SGE	Secretary of Government for Energy

SSERyEE	Secretariat of Renewable Energy and Energy Efficiency
TNA	Total net assets
UVA	Purchasing Value Units

### **List of Abbreviations (Country-Specific): Ethiopia**

CBE	Commercial Bank of Ethiopia
CO <sub>2</sub>	Carbon dioxide
DBE	Development Bank of Ethiopia
EnDev	Energizing Development Ethiopia
FDI	Foreign Direct Investment
FeMSEDA	Federal Micro and Small Enterprise Development Agency
HIVOS	Humanist Institute for Cooperation with Developing Countries
ISNAD	International Support Network for African Development
MoFECC	Ministry of Finance and Economic Cooperation
MoWIE	Ministry of Water, Irrigation and Energy Ministry of Water, Irrigation of Ethiopia
SACCO	Saving and Credit Cooperatives
SNV	Netherlands Development Organization
UNCDF	United Nations Capital Development Fund
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
USAID	United States Agency for International Development

### **List of Abbreviations (Country-Specific): Ghana**

FiT	feed-in-tariff
GIPC	Ghana Investment Promotion Centre
GOG	Government of Ghana
IMF	International Monetary Fund
SMEs	Small and medium-sized enterprises

## **List of Abbreviations (Country-Specific): Indonesia**

ADB	Asian Development Bank
AfDB	African Development Bank
CTF	Clean Technology Fund
ECA	Export credit agency
EnDev	Energizing Development
FI	Financial institution
GCPF	Global Climate Partnership Fund
GGGI	Global Green Growth Institute
GOI	Government of the Republic of Indonesia
IBRD	International Bank for Reconstruction and Development
ICCTF	Indonesia Climate Change Trust Fund
ICED	Indonesia Clean Energy Development
IDB	Islamic Development Bank
IKBI	Indonesian Sustainable Finance Initiative
L-CORE	Least Cost for Renewable Energy
POME	Palm mill oil effluent
PPCP	Public Private Community Partnership
PPP	Public Private Partnerships
PSP	Private Sector Participation
SF	Sustainable finance
SREP	Scaling-Up Renewable Energy in Low Income Countries programme
TA	Technical assistance

## **List of Abbreviations (Country-Specific): South Africa**

BRICS	Brazil, Russia, India, China and South Africa
DBSA	Development Bank of South Africa
DMRE	Department of Mineral Resources and Energy
ESG	Environmental, Social and Corporate Governance





IDC	Industrial Development Corporation
IFC	International Finance Corporation
IPPO	Independent Power Producers Office
IRP	Integrated Resource Plan
NERSA	National Energy Regulator of South Africa
O&M	Operations & maintenance
REIPPPP	Renewable Energy Independent Power Producers Procurement Programme
SSEG	Small scale embedded generation
UNFCCC	United Nations Framework Convention on Climate Change



## List of Figures

Figure 5-1: Energy and Mineral Investment Realisation (The Purnomo Yusgiantoro Center, 2020) ...	44
Figure 5-2: Source of finance of projects commissioned in 2016-2019 (public funds) (IEA, 2020b)....	46
Figure 5-3: Indonesia Private Climate Finance by Source 2015-2018 (CPI, 2020) .....	47
Figure 5-4: Sources of Finance of Projects Commissioned in 2016-2019 by Type of Funds (IEA, 2020a) .....	48
Figure 5-5: Biogas Power Plant Development Stages (OJK & USAID, 2016) .....	50
Figure 5-6: Recommended public finance levers to tackle challenges throughout project development cycle (National Energy Master Plan, Presidential Decree No. 22/2017) .....	57



## **List of Tables**

Table 3-1: Financing sources in Ethiopia .....	32
Table 4-1: List of policies and legislation that complement the development of biogas technology in Ghana .....	39
Table 5-1: Regulations and policies relevant for renewable energy financing in Indonesia .....	50
Table 5-2: Feed-in-tariffs for renewable energy from biomass and biogas (MEMR Regulation 21/2016) .....	54
Table 5-3: Advantages and disadvantages of internal financing (USAID & Winrock, 2015) .....	55
Table 6-1: Key elements on the financing structure that were essential from a risk perspective to ensure bankability of the REIPPPP utility scale projects (Corkin, 2018; Eberhard et al.,2014) .....	74
Table 6-2: Key strategies, policies and initiatives that provide a mandate for green economy development (DEA, 2012; Deloitte, 2014; Steenkamp, 2016) .....	77

## 1 Introduction

The urgency to mitigate the impacts of climate change has prompted governments around the world to step up on their ambitions to mitigate and adapt to climate change. This urgency to combat climate change has been previously accentuated by the published special report from the Intergovernmental Panel on Climate Change (IPCC) in 2018, which outlined that two-thirds of greenhouse gas (GHG) emissions originate from the energy sector-calling for immediate transformation in global energy systems and transition towards increasing the uptake of renewable energy and enhance energy efficiency (IRENA, 2019a). Efforts to accelerate this process have been done through the development of the Sustainable Development Goals (SDGs) and the Paris Agreement’s Nationally Determined Contributions (NDCs), which set the goal to hold the global average temperature to well below 2°C above pre-industrial levels by fostering low greenhouse gas emissions development, including emphasis on the flow of finance to support the fulfilment of this goal (UNFCCC, 2015).

It is well understood that financing is also key for renewable energy development, which is one of the key interventions needed to reach the 2°C goal. A cumulative USD 10 trillion of investment is needed worldwide to further jump-start new renewable generation capacity, energy efficiency electrification, power grids as well as energy flexibility measures. The private sector has played a major role by financing 90% of annual direct investments for renewables (IRENA, 2019b). However, tailored approaches in the energy sector and cooperation between public and private financial institutions are also needed to counter obstacles such as high CAPEX, long payback periods, low private sector participation, tariff structures, and other market barriers e.g. governance issues, lack of institutional frameworks, as well as low local capacities to plan, operate, and maintain electricity systems (IRENA, 2019a; 2020).

In addition, the IEA report of 2020 highlighted that Ethiopia currently has an electricity access rate of 45%<sup>2</sup>. This means less than half of the population of Ethiopia has access to electricity. Thus, the government of Ethiopia is looking for several opportunities to increase access to electricity. One of the potential areas to focus on is biogas for combined heat and power production, bio methane generation and bottling of biogas. All previous initiatives for biogas utilization in Ethiopia include cooking, baking and lantern applications. It is hard to find even one Biogas plant for generation of CHP or bio methane production for bottling purpose. Thus, there are great opportunities for future biogas investment. There is a huge feedstock potential for the biogas plant due to the poor management of waste that creates huge organic food waste all over the country. Besides, approximately 80% of the populations of Ethiopia are farmers where there is a large agro-waste potential for biogas production. Thus, considering the lack of access to electricity, poor waste management issues and large feedstock potential, there is a potential market for large scale biogas plants.

Furthermore, an estimated 80% of the international financing for clean energy in sub-Saharan Africa (excluding South Africa) is in the form of loans, with most of the lending dominated by multilateral and government development banks<sup>3</sup>. Ghana has recognized renewable energy

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<sup>2</sup> <https://www.iea.org/articles/ethiopia-energy-outlook>

<sup>3</sup>2. Bloomberg Climatescope 2017, “Emerging Markets Clean Energy Investment,” accessed at: <http://global-climatescope.org/en/insights/emerging-markets-investment/>.

as an important vehicle for achieving the sustainable development of the country through notable actions to support its development and deployment coupled with some initiatives to reform national fiscal policies for renewable energy finance. These initiatives are in line with national development priorities and global sustainability principles.

For the growth and development of nascent renewable energy markets across the world, it is important to understand the financing opportunities landscape available to these markets. Although biogas technologies are considered a renewable energy technology, the development of biogas projects are more complex and are deemed to be of a higher risk compared to other renewable technologies such as solar PV and wind. Understanding the landscape of available financing opportunities for biogas projects requires that the details of these opportunities are highlighted. These details include the type, stage of project development applicable, size, terms and conditions of the financing opportunities.

## **2 Impact of COVID-19 to the green financing space**

Globally, there have been aggressive fiscal and monetary policy responses as an attempt to tackle COVID-19 impacts on the world economies and stabilize the global markets. Specifically, the portion of the finance sector that focuses on infrastructure has observed increased project risks such as default events, termination, insolvency and government breach of contracts due to projects delays caused by lockdown regulations for the pandemic containment (World Bank, 2020).

For projects under construction experience supply chain interruptions and unavailability of components resulting in maintenance and infrastructure development challenges. This increased the construction costs as projects look to source components and services elsewhere at higher cost. It has been reported that projects are under pressure to use more expensive suppliers from markets such as the US or Europe to avoid delays of using the Chinese suppliers.

In South Africa, Eskom issued several force majeure notices to the 22 operational wind power plants, with the lower demand caused by the country's lockdown as a response to COVID-19. Eskom claimed it would not need wind power plants energy at certain time of the day. This was to cause severe revenue losses by the IPPs and real distress among investors, project sponsors and lenders. The wind operators sought legal advice as the claim made by Eskom may have fell outside the PPA's definitive list of force majeure events (Matarirano and Dyk, 2020). These are some of the ripple effects that can erode the profitability and investor confidence towards infrastructure projects, especially within the emerging markets and developing countries<sup>4</sup> (EMDEs) regions.

We can then anticipate increased caution from lenders to close new project finance deals. It is reported that number of project finance deals closed in Q1 of 2020 was 186, as opposed to 252 deals in Q1 of 2019 (World Bank, 2020). The infrastructure projects are to encounter lack of working capital structures and liquidity shortages from banks; and corporate financed projects are likely to encounter reduced liquidity in the market and tightened credit lines. Capital outflows to unplanned expenditures to circumvent the pandemic's impacts to project deadlines,

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<sup>4</sup> South Africa, Guatemala, Paraguay, Serbia, Egypt, Albania and Brazil.

and depreciation of the South African rand are also key contributors to the risk averse financing practices that may continue to further disrupt financing opportunities towards biogas projects. Subsequently, domestic financing solutions may provide balance to the matching currency exchange financing options and dilute the exchange exposure, especially with the repo rate down to 3.5% and prime lending rate at a historic 7%. In addition, The South African Reserve Bank (SARB) implemented the low interest rate to ease the financial conditions; and improve resilience of households and firms to the economic implications of COVID-19.

The EMDEs regions have managed to raise more than USD 83 billion through international bond markets since the beginning of April 2020. This indicates the investment appetite for long term income assets has not changed within the current context of historical low yields. There is a likelihood that the investment appetite will remain, however, investors will be more selective to countries that have stronger macro-fiscal frameworks and deeper financial sectors. With increased risk profiles among EMDEs there is likely to be a reduced availability of foreign financing or increased cost of foreign financing, this would lead to greater role to be played by domestic financiers.

Many countries, including South Africa have announced catalytic infrastructure led strategies to contribute towards the country's reconstruction and recovery plan. The infrastructure led recovery plan with key focus on water, energy, sanitation, housing, roads, health, education, and agriculture, agro-processing and public transport, would be driven by localisation using raw materials, suppliers and construction companies in South Africa. Other major areas of focus would be stimulating the green economies. The plan will be government led but funded by the private sector and the development banks; as the country's GDP-to-debt ratio is approaching 100%. This can be viewed an opportunity for the biogas sector, to compete and deliver some of the project's objectives towards economic recovery.

Going forward, PPPs will continue to play a key role in the recovery of the crisis. Although, the governments may be under resourced with the GDP-to-debt ratio approaching 100%, PPPs will be crucial to mobilise new sources of long-term financing and enable blended finance structures to support the recovery plan.

## 2 Argentine Republic

### 2.1 Overview of financing space

Argentina has implemented governmental policies that create an enabling environment for the conservation and promotion of small and medium enterprises. However, the private sector has gone into a state of caution and risk aversion because of the current local and global state. This is a result of the principal macroeconomic problems worsening since the beginning of the COVID-19 pandemic that included a long total lockdown followed by a partial lockdown. The Government of Argentina (GOA) has strived to improve the current situation by looking to reach an agreement with the principal debt holders of the country. Following this, the GOA is currently working towards finding an agreement with the International Monetary Fund (IMF) to further improve the current financial situation. The general perception is that an agreement will be reached and the external debt payments are going to be shifted for two or three years.

With the future policy framework of the new administration is still uncertain, the new government have sent a new budget to the congress with parameters that have caused doubt among many economists. The focus of economic incentives highlighted focused primarily of sustaining the population during COVID-19 crisis that has affected the country as a whole.

In early 2016, the GOA launched RenovAr to take advantage of the country's abundant clean energy resources by promoting private renewable energy generation via an auction<sup>5</sup>. According to the Secretary of Government for Energy (SGE), the RenovAr program will honour the last calls for projects and the contracts for these projects will be agreed and signed. However, no new programs have been launched but only one of the national companies has shown an interest in biogas. In addition, Santa Fe and Cordoba provinces are acting in promoting biofuels, mainly bioethanol and biodiesel, for local market uptake.

With the current biofuel strategy cycle ending at the beginning of 2021, there is a strong voice within the parliament and governmental offices for the development of enabling legislation and strategies for the uptake and growth of biofuel markets. Oil & gas businesses, with the support of the provinces that have oil-based economies, are satisfied with the current biofuel strategies and its cycle. However, there are sectors that are promoting an extension of the biofuel strategies while others have presented new laws more favourable for biofuels. The current discussion on the biofuel strategies is an opportunity to include financial institutions and promote investment in biofuel and biogas projects.

### 2.2 Legislation and policies

Although biogas and bio methane has been considered in several projects, as it was included in the current biofuel strategies, no concrete action has been taken. The promotion of biogas is more encouraged within the electric energy generation legislation. This can be seen with Law 27191, which was approved in September 2015 with a broad political consensus. Law 27191 set goals for the development of renewable energy projects, including biogas projects,

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<sup>5</sup> IFC – Scaling Infrastructure. RenovAr (Argentina): Scaling 'Express Edition' publication.

and created a legal framework allowing long-term market planning term, providing visibility to investments. The rule establishes two contracting mechanisms,

- 1) joint purchases through public tenders; and
- 2) free and direct contracting between generators and Large Authorized Users (GUH), defined as those whose power demand annual average is 300 kW or more.

Law 27191, the National Development Regime for the use of renewable energy sources for energy production (which amended Law 26190/2006), establishes that all users must contribute to the targets for increasing use of renewable sources in the generation and usage of electrical energy. This law sets the following goals:

- 1) 8% at the end of 2017;
- 2) 12% in order to 2019;
- 3) 16% by the end of 2021;
- 4) 18% by the end of 2023; and
- 5) 20% at end of 2025.

In addition, the law states in article 9 that self-generators (Large Users of the Market Wholesale Electric (GUMA and GUME) and the Greats Distribution Users (GUDI)) with demands for power equal to or greater than 300 kW, must individually meet these objectives. These users are called Large Enabled Users (GUH) and represent an average annual demand of 31.4 TWh.

In the third quarter of 2017 the Energy Term Market Regime disclosed MATER (Term Market for Electric Energy from Renewable Source), Resolution MEM 281-E / 2017 which establishes conditions for the management of contracts between the new generation or renewable self-generation and large users of Resolution MEM. CAMMESA (Argentine Wholesale Electricity Market Clearing Company) has defined that this regime reaches about 2,000 GUH (19 with power greater than 20 MW; 92 with power between 5 and 20 MW, and 1,959 between 0.3 and 5 MW), through a list that will be updated in February of each year.

According to the current national regulatory framework, generation distributed to electrical energy is considered generated by renewable energy sources, at both the point of consumption and by the users themselves that are connected to the electrical network of distribution. Distributed generation generally occurs through systems dimensioned for self-consumption with eventual injection of surplus energy to the existing distribution network. Users who adopt this generation modality have the capacity to produce electrical energy, remaining in turn connected to the supply provided by the electrical distribution network.

In early 2018, Decree 986 regulated the legislation, where the objective was to incorporate 1,000 MW of power from distributed generation installations by 2030. In addition, the SGE was designated as the regulatory authority. At the end of 2018, Resolution 314 of the SGE created the RENUGER, which is the National Registry of Users-Generators of renewable energy categorizing them in three groups small (up to 3kW), medium (up to 300 kW) and large (up to 2MW). This resolution established the procedure for User-Generator Connection and standards for basic contract between the stakeholders.

An additional incentive for the electric market could be highlighted within the distributed energy model covered by Law 27424, which was published in 2017. Law 27424 establishes a promotional benefits regime, including a Tax Credit Certificate. The law created the Fund for the

Distributed Generation of Renewable Energies (FODIS)<sup>6</sup> in order to grant loans, incentives, guarantees, capital contributions and acquisition of other financial instruments, all intended to enhance the implementation of distributed generation systems from renewable sources.

In order to implement one of these benefits, Provision 48 of the Secretariat of Renewable Energy and Energy Efficiency (SSERyEE) was implemented in April 2019. It provides that the SSERyEE and the Tax, Customs and Social Security Authority (AFIP) will be in charge of the instrumentation and application of the Certificates of Tax Credit under the Electronic Bonus modality, which may be applied to the payment of National Taxes.

Some provinces had already implemented their own regimes and laws as Mendoza (Law 7459), Salta (Law 7824 Net Balance), Santa Fe (Prosumers Program), San Luis (Law 921), Neuquén (Law 3006), Misiones (Law 97 of Net Balance), and Jujuy (Law 6023), which, in some cases, are already being applied. The different provincial regimes may vary conceptually in relation to the national Law.

## 2.3 Financing options identified

### 2.3.1 BICE Credits

A line of credit for investments, capital goods for micro, small and medium-sized enterprises.

**Financial Entity:** Banco de Inversión y Comercio Exterior S.A. (Investment and Foreign Trade Bank (BICE))

**Applicant type:**

- Micro, Small and Medium-sized Enterprises up to Tranche 1, considered in accordance with the parameters set out in Resolution No. 24 dated 15 February 2001 of the former Secretary of Small and Medium-sized Enterprises of the former Ministry of economy, and its amendments, complementary and those that in the future replace it, in any corporate or single-person form.
- Registered in the SME register under agricultural sector and are currently in acquisition of new capital goods and / or investment projects. This excludes;
  - the purchase of rural or other properties (fields, land), unless the acquisition of such property is strictly necessary for the development of the investment project concerned, and not in accordance with the main financing destination;
  - vehicles for the transport of persons, except those intended to energize and/or increase productivity in the main object of the undertaking. (Automotive, 4x4, urban, suburban and long-distance public transport are excluded);
  - construction of properties for housing;
  - refinancing of liabilities in arrears; and
  - capital goods intended for the production or provision of services with abundant supply or that do not add value, at the sole discretion of the bank.

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<sup>6</sup> <https://www.argentina.gob.ar/economia/energia/generacion-distribuida/que-es-la-generacion-distribuida/beneficios-promocionales>

**Size:** Up to \$5,000,000 (excluding Value Added Tax) for acquisition of capital goods, investments and other financing destinations or amount up to 80% of the purchase price of the capital asset or investment project.

**Term:** Up to 7 years

**Grace Period for Capital Amortization:** Up to 24 months included in the total term.

### 2.3.2 Investment credits Central bank<sup>7</sup>

The Central Bank (BCRA) enabled new financing lines at a subsidized rate of 24%, including the launch of a special tranche for investment in goods produced in Argentina.

This investment line will allow companies, regardless of their size, to access these **credits for the acquisition of capital goods manufactured by local MiPymes companies**. All equipment and machinery of national origin are reached.

### 2.3.3 Credits renewable energy in mendoza<sup>8</sup>

The Directorate-General for Sectoral and Special Programs and Projects (Diprose) of the Ministry of Livestock Agriculture and Fisheries of the Nation together with the Ministry of Economy and Energy of Mendoza, through the Provincial Agricultural Services Program (PROSAP), calls for the submission of investment proposals aimed at incorporating technologies for the generation of renewable energies applicable in agricultural exploitation and industrialization.

For this line of Non-Refundable Contributions (ANRs) investments associated with certifications, capital goods, works or infrastructure, technical assistance and training necessary for the implementation of the technology and / or process to be adopted, as well as its sizing and installation are also considered eligible expenses.

The project provides a total investment of \$35 million for the various proposals, with a limit of financial support under the Non-Refundable Contribution (ANR) modality of up to 60% of each beneficiary's investment, which may not exceed the equivalent of USD 30,000.

### 2.3.4 Credits BICE renewable energy and energy efficiency projects

Support Program for the Promotion of Risk Mitigation Instruments and Financing of Investments in Renewable Energy and Energy Efficiency for SMEs in Argentina, which is funded with resources from the Green Climate Fund (GCF)

The Inter-American Development Bank (IDB) is one of the main sources of long-term financing for economic, social and institutional projects in Latin America and the Caribbean. In addition to loans, grants and credit guarantees, the IDB conducts cutting-edge research projects to

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<sup>7</sup> <https://www.ambito.com/economia/creditos/el-banco-central-creo-una-linea-inversion-al-24-n5112633>

<sup>8</sup> <https://ecocuyo.com/lanzan-creditos-para-proyectos-para-energias-renovables-y-eficiencia-energetica/>



provide innovative and sustainable solutions to the most urgent problems in our region. Created in 1959 to help accelerate progress in its developing member countries, the IDB works every day to improve lives.

The GCF is a global fund created to support the efforts of developing countries to respond to the challenge of climate change. GCF helps developing countries limit or reduce greenhouse gas emissions and adapt to climate change. In addition, it seeks to promote the paradigm of switching to low-emission and climate-resilient development, taking into account the needs of nations that are particularly vulnerable to the impacts of climate change.

### **2.3.5 Cordoba program<sup>9</sup>**

The province of Córdoba created a program aimed at SMEs and micro-enterprise in the sectors of industry, trade and tourism, which aims to promote the efficient and rational use of energy, promoting the care of the environment and an improvement in the competitiveness of regional economies.

Since 2019, more than 450 organizations based throughout Córdoba territory were worked with, which agreed to a free energy survey, carried out by 154 energy managers who were trained, to determine measures and opportunities for improvements to optimize energy consumption and reduce the impact of energy on the cost matrix.

After the survey was executed, the Program Technical Committee evaluated it and issued an endorsement note certifying approval, so that interested companies could manage the application for a credit at a reward rate. The Government of the Province of Córdoba, the Federal Investment Council and Bancor had a common fund of \$600 million so that Córdoba SMEs can invest and promote the efficient and rational use of energy.

It should be noted that in order to carry this out, the Ministry of Public Services together with the Ministry of Industry, Trade and Mining; Ministry of Coordination; Ministry of Planning and Modernization; The Córdoba Turismo Agency; the Bank of the Province of Córdoba, the Federal Investment Council and the Technological University of Córdoba worked together to foster organizational consensus and synergy.

In the SME and micro-enterprise segment, Bancor provides soft credits for the purchase of clean energy generation equipment and energy efficiency improvements. Attendance is up to \$2.5 million or equivalent in Purchasing Value Units (UVA), with total net assets (TNA) of 0%, and amortization period of up to 60 months.

In the case of residential users, Bancor delivers loans in UVA, up to 250 thousand pesos, with a term of up to 60 months and fixed TNA of 5%. These lines have been in force since March last year.

For its part, the International Finance Corporation (IFC) made available to the productive sector two alternatives: credits of up to 500 thousand pesos with an interest rate of 15% (maximum cap), and credits between 500 thousand to 4 million pesos with interest rate of 30% (maximum cap). In both cases, the percentage of financing covers up to 80% of the investment.

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<sup>9</sup> <https://www.estaciones.com.ar/2020/05/22/cordoba-promueve-el-uso-de-energias-renovables/>

### 2.3.6 Nation bank credits for renewable energy<sup>10</sup>

**Applicant type:** Human or legal persons who own investment projects and/or concessionaires of new works of production of electricity from renewable energies.

**Destination:** Investment projects.

**Modality:** US Dollars or Purchasing Value Units (UVA).

**Term:** U.S. dollars up to 10 years; UVA up to 15 years.

**Size:** Up to \$6,000,000 or its UVA equivalent.

**Support Ratio:** Up to 80% of the project.

**Disbursements:** Multiple, at the Bank's discretion, being the maximum period between the first and last disbursement of 24 months.

**Grace:** Up to 24 months from the first disbursement.

**Guarantees:** To the satisfaction of the Bank.

**Fees:** "Transparency Regime" developed by the Central Bank of the Argentine Republic on the provides a basis of information by the subjects required in order to compare the costs, characteristics and requirements of financial products and services.

### 2.3.7 United Nations Development Programme (UNDP) projects for the installation of biodigesters in schools<sup>11</sup>

This contract aims at the provision, installation and commissioning of five (5) biodigesters for the treatment (on site) of organic waste generated by agro technical and industrial schools of the Province of Buenos Aires. Biodigesters to be installed, are demonstrative pilots of the technology, which must be scalable in order to allow the expansion of installed capacity. Each biodigester includes the provision of a generator to convert the generated biogas into electrical energy, to power at least an installed power of 160 watts, with their respective installation, boards and protections that will illuminate different areas to be specified from schools, such as exterior lighting, patios, or the like. The contractor must also provide all installation, boards and reflectors. In addition, it includes the logistics solution most suitable for the internal handling of the raw material that will feed the biodigester (along with the connection to feed the school's energy source), the solution for the necessary daily water supply, and the necessary administration to be able to use the liquid biofertilizer generated. This recruitment includes training for teachers, non-teachers and students from schools, which must be at least 12 hours (spread over the number of days considered by the school), which may be face-to-face or virtual.

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<sup>10</sup> <https://www.bna.com.ar/Empresas/Grandes/Creditos>

<sup>11</sup> [https://www.argentina.gob.ar/sites/default/files/sdp\\_02-2020\\_-\\_if-2020-65636662-apn-dpfemad.pdf](https://www.argentina.gob.ar/sites/default/files/sdp_02-2020_-_if-2020-65636662-apn-dpfemad.pdf)

### 3 Federal Democratic Republic of Ethiopia

#### 3.1 Overview of financing space

In analysing the financial options for biogas projects in Ethiopia, data were collected from government and private financial agencies, national and international funding agencies. The Ethiopian financial sector consists of 3 public banks including the Development Bank of Ethiopia (DBE), 16 commercial banks, 14 private insurance companies, 1 public insurance company, 31 microfinance institutions and over 8200 Saving and Credit Cooperatives in both rural and urban areas (Zwedu, 2014).

One of the options for financing biogas projects in Ethiopia is The Development Bank of Ethiopia. The bank provides three possibilities: renewable energy financing, lease financing and project financing. Considering the amount of money required for large-scale biogas projects, the project financing options is the most suitable solution. Compared to other banks the DBE offers an improved equity debt ratio (25/75 compared to  $\approx$  40/60 in other banks), lower interest rate (11.5 % compared to  $\approx$  (16 % to 20 %) and a longer grace period and loan tenor.

Currently, the government of Ethiopia is preparing a national as well as international bids for large-scale renewable projects to increase access to electricity based on competition, which provides an opportunity for a future biogas market in Ethiopia. In addition, there are international agencies that are supporting renewable energy projects in Ethiopia such as GIZ, UNDP, JICA, EU, UN and USAID. These international agencies may provide a viable option for facilitation of finance for biogas projects in Ethiopia.

Considering the price of electricity and LPG gas in Ethiopia, the generation of bio-methane has potential to be a very feasible and economical viable option. Furthermore, there is a large market for carbon dioxide (CO<sub>2</sub>) in Ethiopia. Thus, by using upgrading technology to generate bio-methane and CO<sub>2</sub> further business cases are possible.

Lastly, large-scale industries are increasing but are operating below their maximum capacity due to lack of electricity. Thus, by generating electricity through biogas, it may be possible to dictate the tariff through collaboration between industries and government as a way of making biogas projects economically viable and allowing those industries to operate at their full capacity. As long as biogas projects are feasible and economical viable, finding financing options in Ethiopia will not be a challenge considering lack of access to electricity, large feed stock potential and poor organic waste management.

The majority (83.3 %) of banks in Ethiopia are privately owned. The remainder are two state owned banks i.e. - Commercial Bank of Ethiopia (CBE) and DBE; and a cooperative bank, i.e., the Cooperative Bank of Oromia<sup>12</sup>.

There are 16 commercial banks consisting of around 100,000 shareholders currently operating in Ethiopia. These banks include the;

- Awash International Bank,
- Dashen Bank,
- Cooperative Bank of Oromia,
- Hibret Bank,

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<sup>12</sup> <https://asokoinsight.com/content/market-insights/ethiopia-banking>

- Wegagen Bank,
- Nib International Bank,
- Bank of Abyssinia,
- Oromia International Bank,
- Addis International Bank,
- Berhan Bank,
- Abay Bank,
- Dehub Global<sup>13</sup>,

Despite the dominance of private banks, public lenders hold the majority of capital in the sector, at 60.1% compared to 39.9% in 2017/18. The state banks' share of total banking sector capital fell by 4.3 percentage points from the previous year, suggesting the private sector is making some gains in the market. State-owned CBE is the market leader across various measures of market share. It is most dominant in providing credit, holding 66% of the nation's overall loan book, and deposits at 62 %.

In addition, there are 14 private insurance companies, 1 public insurance company, 31 micro-finance institutions and over 8200 Saving and Credit Cooperatives (SACCOs) in both rural and urban areas. The ownership structure of microfinance institution is mixed, with the big micro-finance institutions partially owned by regional states, some by NGO's and some by private stakeholders. The government-owned CBE is the dominant commercial bank and accounts for 70 % of total assets of banks in 2003 (Keatinge, 2014). In 2010, CBE alone held approximately 63.5 % of deposits and 38 % of bank loans in the country (Bezabeh and Desta, 2014). The balance, 30%, is accounted by the other 15 banks. Unlike many government-owned commercial banks, CBE is relatively well run and profitable (Zwedu, 2014).

The financial sector in Ethiopia is highly regulated and completely closed from foreign companies. The complete closure of the financial sector to foreign companies has limited the opportunities for competition in the financial sector. In addition, there will be a missed opportunity in terms of capital injection, foreign exchange access and banking technology and skills.

According to UNCTAD's World Investment Report 2020 (World Investment Report 2020), foreign direct investment (FDI) inflows to Ethiopia decreased to USD 2,5 billion in 2019, compared to USD 3,3 billion in 2018 (-24%). In total, FDI stocks were estimated at USD 25 billion in 2019<sup>14</sup>. FDI has been negatively impacted by instability in some parts of the country, including regions with industrial parks. Yet Ethiopia remained the largest recipient of FDI in East Africa, with investments in petroleum refining, mineral extraction, real estate, manufacturing and renewable energy. China was the largest investor in 2019, accounting for 60% of newly approved FDI projects, with significant investment in manufacturing and services. The other main investor countries are Saudi Arabia, the United States, India and Turkey. Agriculture (particularly horticulture), renting of agricultural land and leather goods are the sectors that traditionally

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<sup>13</sup> <https://newbusinessethiopia.com/finance/ethiopia-banks-capital-hikes-8/>

<sup>14</sup> <https://www.lloydsbanktrade.com/en/market-potential/ethiopia/investment>

attracted the most FDI. The country also took advantage of the crisis of the Bangladeshi textile sector to attract foreign companies to the textile industry.

In Ethiopia, credit facilities are granted by banks for projects based on the technical feasibility of the project, financial analysis, investment license and demand for equity if it is a private limited company. As long as the project is feasible, securing funding from banks might not be a challenge. The financial agencies check the financial background of the borrower in order to decide on the reliability and risk of the engagement. Of particular interest for financial institutes are securities in case the project fails. Such securities consist of estate, components of the biogas plant, private company assets, and all other assets that cover the loan sum. Furthermore, the prospects of success of the project are analysed. The success is usually estimated by checking several criteria that influence the economy of the future biogas plant (Zwedu, 2014).

For banks, credits (loans) are related to specific financial risks. However, banks earn a significant part of their money by interest rates from credits. Therefore, the aim of banks is to minimize potential risks while offering an interest rate, which is competitive to other institutes. There are engagements with traditionally low risks for banks and others with an increased probability of default. The risk of investments in renewable energy projects depends on the technology<sup>15</sup>. Investment related costs for a typical biogas plant includes<sup>16</sup> costs for planning (engineering costs, costs for permits, certificates, taxes, etc.); costs for biogas plant equipment (investment costs), viz. technical equipment, storage facilities, buildings, infrastructure, grid connection, etc.; costs for biogas feedstock; operation and maintenance costs, viz. personnel, spare parts, repair, material, digestate management etc.; and costs of financing, viz. interest, fees, etc. The revenues of biogas projects are electricity and heat sale/savings, public subsidies, green certificates, revenues from tipping fees in biogas plants for waste and revenues from sales of digestate as organic fertilizer and savings from manure management (disposal fee). Considering Ethiopia, revenues would primarily consist of the selling of heat and electricity, this makes the return of investment quite challenging due to the low cost of electricity where available.

### 3.2 Legislation and policies

Foreign investors investing in an approved investment project may benefit from **tax incentives** depending on the type of investment they intend to make and the area in which the project will be located. An exemption from income taxation for a limited number of years is available to companies that are engaged in the generation of electricity in certain areas. **Companies that invest in generation may also benefit from customs duty exemptions for capital goods and equipment.** No incentives other than the foregoing are currently in place that would provide for additional incentives for investments in renewable energy projects<sup>17</sup>.

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<sup>15</sup> Ferber, E., Rutz, D., Kulisic, B. and Rose, E., 2011. Criteria to assess biogas investments: Guidelines for financing institutes and investors.

<sup>16</sup> Hahn, H., Rutz, D., Kirchmeyr, F. and Rose, E., 2010. Examples for financing of biogas projects in Germany, Austria, The Netherlands, Denmark and Italy. *IEE Project BiogasIN. Report no. D, 3.*

<sup>17</sup> <https://www.lexology.com/library/detail.aspx?q=59d998d8-a1a4-42ef-82eb-025b8a0c0aad>

The Investment (Amendment) Proclamation No. 373/2003 provides the possibility for private investors to engage in the generation of electricity in Ethiopia<sup>18</sup>. A power purchase agreement (PPA), or electricity power agreement, is a contract between two parties, one, which generates electricity (the seller), and one which is looking to purchase electricity (the buyer). The PPA defines all of the commercial terms for the sale of electricity between the two parties, including when the project will begin commercial operation, schedule for delivery of electricity, penalties for under delivery, payment terms and termination<sup>19</sup>. The following is a list of the principal legislation and policies governing the development of energy in Ethiopia<sup>20</sup>.

- Energy Proclamation No. 813/2013
- Ethiopian Energy Authority Establishment Council of Ministers Regulation No. 308/2014
- Electricity Operations Council of Ministers Regulations No. 49/1999
- Investment Proclamation No. 769/2012
- Environmental Protection Authority Establishment Proclamation No. 9/1995
- Environmental Impact Assessment Proclamation No. 299/2002; and
- Mini Grid directives of Ethiopian Energy Authority, 2020

### 3.3 Identifying potential financing options

The financial entities have been reviewed on how they are financing related projects and renewable energies especially the biogas sector.

**Development Bank of Ethiopia (DBE):** Compared to other banks in Ethiopia, DBE is a top priority in considering project financing due to several factors. The DBE has three categories related to the credit. Renewable energy finances, lease financing and project financing. Besides, the equity-to-debt ratio varies between 20/80 – 25/75 in DBE is an attractive beneficiary for the borrowers since other private and government bank request an equity debt ratio of approximately range from 40/60 – 50/50 (Workalemahu, 2015).

**Private and government banks:** These bank sectors are potential sources of finance for biogas projects. However, compared to DBE, their interest rate is higher. Their major requirement is 40-50% debt equity ratio, feasibility study and economic viability of the project.

**International organizations:** Ethiopia receives funds from several international organisations in a form of loan or in-kind and cash towards promoting renewable energy technologies in rural communities in Ethiopia. The allocation from international agencies for renewable energy projects in Ethiopia in 2016 is as follows:

- USD 4,091,781 of GEF grant funding,
- USD 900,000 from UNDP,
- USD 980,000 financing from UNCDF Clean Start global program,
- co-financing from the Government of Ethiopia (MoWIE, MoFECC, FeMSEDA) of USD 35,179,954 as well as further

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<sup>18</sup> <https://mehrteableul.com/index.php/component/k2/item/14-the-legal-basis-for-power-purchase-agreements-in-ethiopia>

<sup>19</sup> [https://en.wikipedia.org/wiki/Power\\_purchase\\_agreement](https://en.wikipedia.org/wiki/Power_purchase_agreement)

<sup>20</sup> <https://www.lexology.com/library/detail.aspx?g=59d998d8-a1a4-42ef-82eb-025b8a0c0aad>

- co-financing from the Development Bank of Ethiopia with a loan of USD 20 million,
- HIVOS, SNV, ABPP (in-kind) USD 6,185,945 and
- RET Enterprises (in-kind and cash) USD 6,000,000. United States Agency for International Development (USAID), GIZ – Energizing Development Ethiopia (EnDev), Japan International Cooperation Agency (JICA), World Bank, European Union, International Support Network for African Development (ISNAD), etc. The Private Infrastructure Development Group (PIDG) /InfraCo Africa and Climate Fund Managers have a permanent open window to apply for funding in Africa. In addition, The Renewable Energy Performance Platform managed by Camco Clean Energy also launched a call for utility-scale projects, including biogas. Thus, these international organizations are a great potential source for financing biogas projects as well.

**Renewable energy project initiatives by the Ethiopian government:** to increase access to energy the government of Ethiopia is promoting renewable energy projects. There are both national and international bids every year. Especially since more than 85% of the rural population of Ethiopia does not have access to electricity coupled with a large feedstock potential in those rural areas for biogas plant. Thus, biogas projects can be financed through the annual budget of the government.

### **3.4 Financing sources for biogas projects**

The list of financial sources for renewable energy projects including biogas in Ethiopia is shown in Table 3-1.



Table 3-1: Financing sources in Ethiopia <sup>21</sup>

Financing sources	Local	Local	Local	Local
Financing entity name	Development Bank of Ethiopia	Development Bank of Ethiopia	Development Bank of Ethiopia	Private and government banks in Ethiopia <sup>22</sup>
Name of the Fund	Project Financing	Lease financing	Renewable energy Financing	Project Financing
Financing instrument	Equity/debt	Equity/debt	Equity/debt	Equity/debt
Project phase	From land development and construction to final working capital funding	Financing solely machineries, plants and vehicle	For importing of devices related to renewable energy	From land development and construction to final working capital funding
Minimum project size	Starting from 25 million Eth Birr	1 mil to 30 million	500,000- 5 Million	starting from 1 million
Eligibility criteria	Capital registration above 7.5 million, willing to contribute 25 % in kind or cash, needed to acquire land & utilities	Capital registration from 500,000 to 7.5 mil, willing to contribute 20 % down payment, needed to acquire land & utilities	Willing to contribute 100 % or 50 % collateral with equity contribution of 25%	Feasibility, Financial analysis, Investment license, P.L.C (MoU) Contribution or Share company
Financing period/term	Financing depends on project nature and disbursement schedule	loan repayment period between 5 to 7 years	Financing depends on project nature and disbursement schedule	10 Years - 20 Years
Grace period	6 months	6 months	6 months	A maximum of 1 year
Interest rate	11.5 %	11.5 %	11.5 %	(10 – 20) %
Collateral requirement	25 %	20% down payment, collateral is the procured machine	100 or 50%	25 %
Equity : Debt ratio	25/75	20/75	25/75	40/60 - 50/50
Source of finance	25% of the project finance from owner and 75% from the bank	20% of the project finance from owner as in down payment and 80% from the bank in terms of machinery lease only	25% of the project finance from owner as in down payment and 75 % from the bank	40 % of the project finance from owner and 60 % from the bank
Type of Finance	Full-fledged financing, turn key projects	Capital goods lease; no liquid cash is involved	renewable energy related items import	Any feasible project
Contact details for more information	dbe@ethionet.et	dbe@ethionet.et	dbe@ethionet.et	-

<sup>21</sup> <https://ethiopia.financialadvisory.com/>

<sup>22</sup> Private and government bank (Bank of Abyssinia, Awash International Bank, Bank of Abyssinia, Berhan International Bank, Buna International Bank, Commercial Bank of Ethiopia, Construction and Business Bank, Cooperative Bank of Oromia, Dashen Bank, Lion International Bank, Nib International Bank, Oromia International Bank, United Bank (Ethiopia), Wegagen Bank, Zemen Bank)





### **3.5 Financing options identified**



Type of funder	Financing instrument	Main requirement	Stage of development	Size of financing	Financing period in years	Grace period	Interest rate (%)	Equity : Debt ratio	Sector	Type of finance	Biogas specific
Development Bank of Ethiopia	Project Financing	Capital registration above 7.5 million, willing to contribute 25 % in kind or cash, needs to acquire land & utilities	From land development/construction to final working capital funding	Starting from 25 million Ethiopian Birr	Financing depends on project nature and disbursement schedule	6 month	11.5	25/75	Agriculture, manufacturing, industrial sectors, tour, Agro processing	full-fledged financing, turn key projects	N/A
Development Bank of Ethiopia	Lease Financing	Capital registration above 500,000 to 7.5 mil, willing to contribute 20 % down payment, needs to acquire land & utilities	Financing solely machineries, plants and vehicle	1 mil to 30 million	loan repayment period between 5 to 7 years	6 month	11.5	20/80	Agriculture, manufacturing, industrial sectors, Agro processing	capital goods lease; no liquid cash is involved	N/A
Development Bank of Ethiopia	Renewable Energy financing	Willing to contribute 100 % or 50 % collateral with equity contribution of 25%	For importing of devices related to renewable energy	500,000- 5 Million Ethiopian Birr		6 month	11.5	25/75	Renewable energy	solar lanterns import, renewable energy related items import	N/A
Bank of Abyssinia	Project Financing	Feasibility, Financial analysis, Investment license, P.L.C - Contribution	From land development/construction to final working capital funding	Depends on the project	10-20	1 year	15.- 20	40/50	Any feasible project	Loan and contribution	N/A
National Bank of Ethiopia	Project Financing	>>	>>	>>	10-20	1 Year		40/60 - 50/50	Any feasible project	Loan and contribution	N/A
Awash International Bank	Project Financing	>>	>>	>>	10-20	1 year	15.- 20	40/60 - 50/51	Any feasible project	Loan and contribution	N/A
Bank of Abyssinia	Project Financing	>>	>>	>>	10-20	1 Year	15.- 20	40/60 - 50/52	Any feasible project	Loan and contribution	N/A
Berhan International Bank	Project Financing	>>	>>	>>	10-20	1 year	15.- 20	40/60 - 50/53	Any feasible project	Loan and contribution	N/A
Buna International Bank	Project Financing	>>	>>	>>	10-20	1 Year	15.- 20	40/60 - 50/54	Any feasible project	Loan and contribution	N/A
Commercial Bank of Ethiopia	Project Financing	>>	>>	>>	10-20	1 year	15.- 20	40/60 - 50/55	Any feasible project	Loan and contribution	N/A
Construction and Business Bank	Project Financing	>>	>>	>>	10-20	1 Year	15.- 20	40/60 - 50/56	Any feasible project	Loan and contribution	N/A



Type of funder	Financing instrument	Main requirement	Stage of development	Size of financing	Financing period in years	Grace period	Interest rate (%)	Equity : Debt ratio	Sector	Type of finance	Biogas specific
Cooperative Bank of Oromia	Project Financing	>>	>>	>>	10-20	1 year	15.- 20	40/60 - 50/57	Any feasible project	Loan and contribution	N/A
Dashen Bank	Project Financing	>>	>>	>>	10-20	1 Year	15.- 20	40/60 - 50/58	Any feasible project	Loan and contribution	N/A
Lion International Bank	Project Financing	>>	>>	>>	10-20	1 year	15.- 20	40/60 - 50/59	Any feasible project	Loan and contribution	N/A
Nib International Bank	Project Financing	>>	>>	>>	10-20	1 Year	15.- 20	40/60 - 50/60	Any feasible project	Loan and contribution	N/A
Oromia International Bank	Project Financing	>>	>>	>>	10-20	1 year	15.- 20	40/60 - 50/61	Any feasible project	Loan and contribution	N/A
United Bank (Ethiopia)	Project Financing	>>	>>	>>	10-20	1 Year	15.- 20	40/60 - 50/62	Any feasible project	Loan and contribution	N/A
Wegagen Bank	Project Financing	>>	>>	>>	10-20	1 year	15.- 20	40/60 - 50/63	Any feasible project	Loan and contribution	N/A
Zemen Bank	Project Financing	>>	>>	>>	10-20	1 Year	15.- 20	40/60 - 50/64	Any feasible project	Loan and contribution	N/A

## 4 Republic of Ghana

### 4.1 Overview of financing space

An estimated 80% of the international financing for clean energy in sub-Saharan Africa (excluding South Africa) is in the form of loans, with most of the lending dominated by multilateral and government development banks (Bloomberg, 2017). Ghana has recognized renewable energy as an important vehicle for achieving the sustainable development of the country through notable actions to support its development and deployment coupled with some initiatives to reform national fiscal policies for renewable energy finance. These initiatives are in line with national development priorities and global sustainability principles. The Renewable Energy Act 2011, Act 832 is one of the of the notable government policies, with the goal to scale up Ghana’s renewable energy capacity. Additionally, some necessary regulatory and policy instruments have also been established to facilitate the implementation of the Acts. The four key mechanisms established by the law are:

- **Mandatory purchase policy** - by which distribution utilities are obliged to procure a specified percentage of total electricity purchase from renewable energy (under the Renewable Energy Purchase Obligation);
- **Mandatory connection policy** – whereby the transmission and distribution system operators are obliged to provide connection services for electricity from renewable energy;
- **Feed-in tariff system**—where electricity from renewable energy is to be purchased by distribution utilities at higher rates, which are determined by Public Utilities Regulatory Commission (PURC); the rate is guaranteed for 10 years and subsequently reviewed every 2 years;
- **Renewable Energy Fund** - which offers financial support for activities for the promotion, development and utilization of renewable energy, such as financial incentives, feed-in-tariffs, capital subsidies, production-based subsidies and equity participation.

One of the major barriers to ready financing for renewable energy investments in Ghana is the poor creditworthiness of the major off-takers of electricity, particularly the state electricity distribution utilities i.e. Electricity Company of Ghana (ECG) and Northern Electricity Distribution Company (NEDCO). The current 10-year tenure of the feed-in-tariff (FiT) also tends to be a disincentive to renewable developers and financiers due to the low cost of electricity. Other barriers to renewable energy financing are the single borrower limit and security constraints posed by the financial institutions to renewable energy developers. Some potential renewable energy developers also lack the capacity to develop bankable projects to attract the necessary funding. Perception of lack of clarity of the regulatory framework for renewable energy has also impeded its development. Macroeconomic factors such as inflation, high interest rates, and foreign exchange volatility have also contributed to the risks for investment - decreasing the confidence of private sector investors. Consequently, the support of the financial institutions to renewable energy projects has been very poor, and a wide gap exists between available local financing options and the special financing demands of renewable energy projects, such as non-recourse financing, longer tenors and lower interest rates.

Investments in Ghana for biogas development are mainly through the private sector, although there have been pockets of investments from the public sector. Private sector funding consists of a wide classification as it includes non-governmental source of financing, while public sector funding constitutes of grants derived from the national budget. Furthermore, government has established the Ghana Renewable Energy Risk Capital (GRERC) as a financial instrument which seeks to assure project financiers and the investor community to invest in RE, with a focus on small and medium-sized enterprises (SMEs) and local green projects.

A major barrier to rapid development of renewable energy projects in Ghana is the lack of adequate financing mechanisms. This lack of financing in the renewable energy sector has derailed the 10% RE penetration target into the energy mix set by government in 2020 and has been extended to 2030. The RE financing space in Ghana is currently dominated by development partners including the World Bank, ARB Apex bank, the United Nations Development Programme (UNDP), Danish International Development Agency (DANIDA), European Union (EU), Agence Française de Développement (AFD), Kreditanstalt für Wiederaufbau (KfW), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Millennium Challenge Corporation (MCC) and Switzerland State Secretariat for Economic Affairs (SECO) Netherlands Development Organisation (SNV) and the Global Environment Facility (GEF). One example is the African Rural Energy Enterprise Development Programme (GEDAP) run by the United Nations Environment Programme (UNEP). The GEDAP is a USD 227.5 million multi-donor project involving the World Bank’s International Development Association, Global Environment Facility, African Development Bank, Global Partnership on Output Based Aid, Africa Catalytic Growth Fund and the Swiss Agency for Development and Co-operation with a renewable energy development subcomponent of USD 101.5 million.

Additionally, the Government of Ghana (GoG) also borrows from the international financial markets to fund energy projects. For instance, the funding for the Bui Hydroelectric Project is a hybrid credit facility comprising of a concessional loan and a buyer’s credit facility between the GoG and Exim Bank of China. Besides this, the GoG has made some efforts to set up national funds into which levies on energy consumption are paid to finance specific development activities in the power sector. These include: (i) the Rural Electrification Levy paid into the National Electrification Fund, (ii) the Street Lighting Levy (iii) the Power Factor Surcharge Levy paid into the Electricity Demand Management Fund. This funding mechanism is slowly being applied for raising internal funds for renewable energy from conventional fuels. For example, a levy of 0.26 USD/litre on gasoline, kerosene and diesel fuel products supports research, development and promotion of Ghana’s natural energy resources — particularly renewable energy. The levy goes into a fund called the Energy Fund and yields an average USD 500,000 per annum.

As part of efforts to further stimulate private investment in the renewable energy sector, the Ghana Investment Promotion Centre (GIPC) Act was passed in 1994. The act provides for import duty exemptions on renewable energy technologies given that most of this technology and equipment is imported. For investors importing generators to invest in the renewable energy sector, the following specific incentives are available:





- Total exemption from import duty on renewable energy generators, including solar generators, wind turbines and technologies for generating energy from municipal waste;
- VAT exemption on imports of renewable energy products if the components are brought in as a single piece (i.e. not taken apart beforehand); and
- Customs import duty exemption on plant, machinery, equipment and accessories imported specifically and exclusively to set up an enterprise

Similarly, some local and international financial institutions have identified the lack of financing in RE projects and are in the process of developing instruments to make financing for renewable energy projects available under reasonable conditions. These include:

- Establishment of Renewable Energy Desks by local banks such as EcoBank Ghana Limited and Fidelity Bank, to offer mainly micro to medium scale financing (i.e. by Pro-Credit)
- Raising of Renewable Investment funds (i.e. by JCS Investment) to provide small to medium scale financing (GHS 500,000 to 3 million)

## **4.2 Legislation and policies**

Legislation and policy surrounding biogas technology in Ghana is still under development, however, there are policies and legislations that complement the development of the technology.

Table 4-1: List of policies and legislation that complement the development of biogas technology in Ghana

Year	Policy	Description	Ministry / Agency
1997	Energy Fund, EC Act 541	<ul style="list-style-type: none"> <li>promote the development and efficient use of renewable energy</li> </ul>	Ministry of Energy
2003	Public Procurement Act 2003 (Act 663)	<ul style="list-style-type: none"> <li>economic instrument to promote direct investment in REM</li> </ul>	Ministry of Energy
2011	RE Act 2011 (Act 832)	<ul style="list-style-type: none"> <li><b>Feed-in-tariff (FiT):</b> serve as a cap for the amount at which electricity from RE sources can be purchased</li> <li><b>Net metering scheme:</b> billing related mechanism designed to encourage electricity consumers to supplement their purchase of electricity with grid-connected renewable energy self-generation.</li> <li><b>Renewable energy funds:</b> offers financial support for activities for the promotion, development and utilization of renewable energy, such as financial incentives, feed-in-tariffs, capital subsidies, production-based subsidies and equity participation.</li> <li><b>Renewable energy purchase obligations:</b> Guidelines for the renewable energy purchase obligation (REPO) which mandates bulk customers to purchase its electricity from RE sources, has not yet been finalised. Per the RE act, electricity can be sold ONLY to either distribution utilities or bulk customers.</li> </ul>	Ministry of Energy
2007-2015	Ghana Energy Development and Access Projects (GEDAP)	<ul style="list-style-type: none"> <li>improve the operational efficiency of the power distribution system and increase the population's access to electricity and help transition Ghana to a low carbon economy through the reduction of greenhouse gas emissions.</li> </ul>	Ministry of Finance
2010	Energy sector strategy and development	<ul style="list-style-type: none"> <li>the policy sets the goal and strategies to increase (i) the percentage of renewable in the total national energy mix and efficient use of stoves and (ii) establish legislation to encourage the development of renewable energy technologies</li> </ul>	Ministry of Energy
2012-2020	SE4ALL Country Action Plan	<ul style="list-style-type: none"> <li>targets universal access to electricity to island and riverside communities in Ghana through both on- and off-grid systems and providing universal access to clean cooking solutions.</li> </ul>	Energy Commission
2013	Ghana Investment Promotion Council Act 2013 (Act 865)	<ul style="list-style-type: none"> <li>provides tax incentives for investments located outside industrialized centres;</li> </ul>	Ministry of Trade and Industry
2018	Renewable Energy Master Plan	<ul style="list-style-type: none"> <li>provide investment-focused framework for the promotion and development of renewable energy resources for economic growth, improved social life and minimise the adverse effects of climate change</li> </ul>	Energy Commission

### **4.3 Identifying potential financing options**

The financing approach for renewable energy projects in Ghana was adopted based on the dominance of the country’s development partners in the sector with some contribution from the private sector. Contributions from government is limited particularly in the biogas sector with majority of the government support going to the solar industry. State institutions and agencies are also more inclined to solar than bioenergy, with the two major public electricity distributions companies channelling finance to energy generation from solar with a current total of 10MW capacity. Additionally, a number of commercial banks have shown interest in the sector through the establishment of renewable energy desk to handle RE projects. However, there is yet an RE project to be financed by these banks due to the high risk investment in the sector.



#### 4.4 Financing options identified

Entity name	Type of funder	Financing instrument	Stage of development	Size of financing	Financing period	Source of finance	Sector	Type of finance	Technology	Biogas specific	Contact details	Website
JCS Investee Companies	Grant funder	Unspecified	Complete project implementation	> 2 million EUR	3 - 5 years	Local	Private	Green Economy	Renewable Energy	Biogas specific - no		<a href="http://www.jcs.com.gh/renewable-energy-fund.html">http://www.jcs.com.gh/renewable-energy-fund.html</a>
Climate Technology Initiative - Private Financing Advisory Network (CTI-PFAN)	Foreign Direct Investment (FDI)	Unspecified	Complete project implementation	> 2 million EUR	3 - 5 years	Foreign	Private	Green Economy	Renewable Energy	Biogas specific - no		<a href="https://pfan.net">https://pfan.net</a>
PROPARCO's 5th operation with the Ghanaian bank CAL Bank	Commercial bank	Loan	Complete project implementation		5 - 10 years	Local	Private	Green Economy	Renewable Energy	Biogas specific - no		<a href="https://www.proparco.fr/en/carte-des-projets/cal-bank-2018">https://www.proparco.fr/en/carte-des-projets/cal-bank-2018</a>
African Development Bank (AfDB)	Development Finance Institution (DFI)	Grant	Complete project implementation	500 000 EUR - 2 million EUR	3 - 5 years	Foreign	Private	Green Economy	Renewable Energy	Biogas specific - no		<a href="https://www.myjoyonline.com/business/energy/afdb-sustainable-energy-fund-for-africa-grants-760000-to-develop-small-scale-renewable-energy-projects/">https://www.myjoyonline.com/business/energy/afdb-sustainable-energy-fund-for-africa-grants-760000-to-develop-small-scale-renewable-energy-projects/</a>
Green Climate Fund	Grant funder	Grant	Complete project development	> 2 million EUR	3 - 5 years	Foreign	Private	Climate Change	Renewable Energy	Biogas specific - no		<a href="https://www.greenclimate.fund">https://www.greenclimate.fund</a>
Business Sector Advocacy Challenge Fund (BUSAC)	Grant funder	Grant	Feasibility (Project development)	100 000 EUR - 500 000 EUR	< 3 years	Local	Public	Green Economy	Renewable Energy	Biogas specific - no		<a href="https://www.busac.org">https://www.busac.org</a>
Skills Development Fund (SDF)	Grant funder	Grant	Feasibility (Project development)	100 000 EUR - 500 000 EUR	< 3 years	Local	Public	Green Economy	Renewable Energy	Biogas specific - no		<a href="https://www.sdfghana.org">https://www.sdfghana.org</a>





## 5 Republic of Indonesia

### 5.1 Overview of financing space

Indonesia, which has set its goal to produce 23% of total energy generation from renewables by 2025 (MoE, 2016) and Indonesia's Renewable Energy National Plan (2017) has set a target of 5.5 GW of renewable energy generation by 2025. Data from 2018 stated that Indonesia's renewable energy share is dominated by hydropower (83%), followed by geothermal (25%), small-scale hydropower (5%), while bioenergy has only reached 3% in the overall renewable energy share (IESR, 2018). Meanwhile, by late 2019, the total installed capacity of renewables is 10.17 GW, with hydropower ranked first (5.4 GW), followed by geothermal (2.13 GW), bio-energy (1.9 GW), mini/micro hydro (464.7 MW), wind (148.5 MW), solar PV (152.4 MW), and waste power plant (15.7 MW) (IESR, 2020). It is also worth highlighting that in terms of bioenergy, Indonesia is currently prioritising the acceleration of energy generation from biomass and biofuel (MEMR, 2020). Biogas remains a viable potential for Indonesia to harness as a source of energy and a promising driver for Indonesia to reach its target as stipulated in its 2017 Renewable Energy National Plan (MEMR, 2017). However, as outlined above, despite the huge potential that can be harnessed from the waste of several sectors, e.g. agriculture, food waste, urban waste, and livestock sectors, biogas has taken a backseat in Indonesia's renewable energy share.

As sustainable development initiatives gained momentum in the country, stakeholders looking into renewable energy's development should consider the significance of available sustainable finance models. Developers and/or business owners should adopt necessary mechanisms to align their business with available sustainability criteria to open up new funding opportunities from green financing programs—whether sourced nationally or internationally. In this context, top-down initiatives are required, such as national government facilitating the development and implementation of green financing mechanisms<sup>23</sup> by developing consistent, inclusive, fair and transparent policies. Indonesia's Financial Services Authority (OJK) has stipulated in its sustainable financing roadmap (2015-2019) a combination of environmental economic instruments include incentives and disincentives, financing (e.g. guarantee fund, trust funds), and planning (i.e. regulating national and regional GDP). Furthermore, it was also highlighted that regulatory support and oversight of financial institutions are essential to facilitating access to funding, including oversight towards the commercial and non-commercial financial industry sector (OJK, 2014).

It is worth highlighting that financing of renewable projects in the country faces several challenges such as high collateral requirements and absence of project finance, local content requirements, permitting and licensing procedures (ADB, 2019), high-interest rates, low number of bankable projects (influenced by low tariffs and low-quality of projects and project's sponsors, lack of renewable energy project financing models, and insufficient regulatory framework

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<sup>23</sup> Furthermore, at Copenhagen's 15th COP and Cancun's 16th COP, it was agreed that developed countries must provide new and additional fund sources to support developing countries in implementing mitigation actions and climate change adaptation. For a longer period of time up to 2020, around USD 100 billion per year must be mobilized from both public and private funds. International funds can take the forms of grants and loans. One of the loan forms is Debt to Nature Swap (DNS), a mechanism used for financing environmental management which can also be continued for GHG emission reduction financing purposes. (Ministry of National Development Planning, 2011)

to incentivise RE—in which referred heavily towards coal as the baseline of electricity price (IESR, 2014). All-in-all, financing costs for renewables remain high in Indonesia and presents a peculiar challenge for projects that come with long-term PPAs in ensuring the projects are financially viable for investors (IRENA, 2017). In terms of the scale of financing for the renewable energy sector, the realisation of investments for renewable energy in Indonesia throughout 2014-2019 can be seen in Figure 5-1 below.

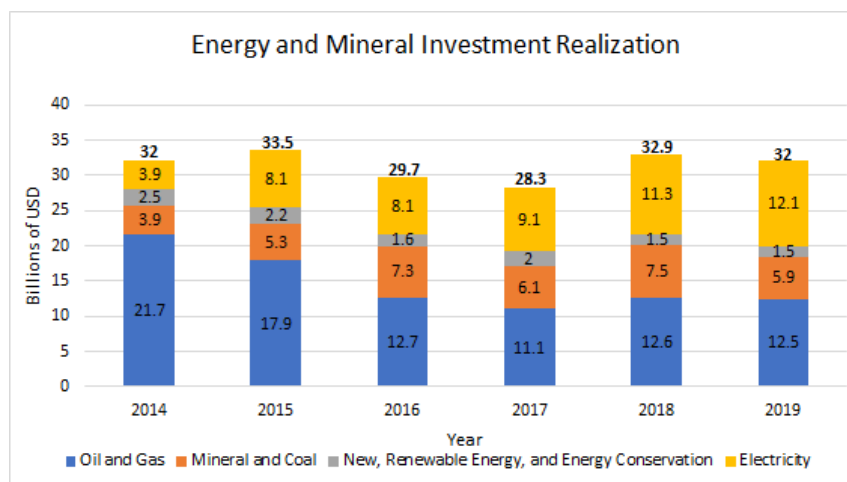


Figure 5-1: Energy and Mineral Investment Realisation (The Purnomo Yusgiantoro Center, 2020)

As seen in Figure 5-1, the overall realisation of the investments for new, renewable energy and energy conservation is minuscule compared to investment for oil and gas, mineral and coal, and electricity investment. With this evidence, it is well understood that renewable energy financing is not yet common in Indonesia. Furthermore, a survey conducted by IESR stated that 90% of IPPs that were surveyed deemed the regulatory framework to be lacking incentives, and a majority of these IPPs were also pessimistic towards these trends (IESR, 2018). However, it was found that the complexity of renewable energy business cases in the country was one of the factors hindering access to financing. The business development process can be inconsistent due to frequent regulatory changes, especially those that had impacted electricity tariffs –resulting in negative signals to the market (ADB, 2019).

USAID ICED (2014) has outlined potential sources of financing for renewable energy projects. Overall, financing options for renewables in Indonesia are divided into three categories: (1) Debt Financing; (2) Mezzanine and Sharia Financing and; (3) Equity. All three categories of financing sources include foreign and local sources, as can be seen in section 5.4. Similar to other countries, funding sources differ according to the types of projects in terms of partnerships, e.g. projects executed through Public-Private Partnerships (PPP) - with the typical implementation period of 1-2 years, acquire funding from the government to cover costs of contractors. Meanwhile, projects implemented through Private Sector Participation (PSP) gain investment from individuals or private entities. It is worth highlighting that in Indonesia, the PSP model is commonly implemented in projects that utilise previously non-operational or decommissioned power plants owned by agricultural producers who had previously faced difficulties

in meeting requirements of the PPA scheme agreed with the PLN<sup>24</sup>. Due to the aforementioned difficulties, operations of these power plants are then transferred to the PLN, which then operate the power plants. Lastly, projects implemented through the Public-Private Community Partnership (PPCP) model in Indonesia are commonly financed by private partners and the wider public, while the asset itself is owned by the government (Directorate of Bioenergy, 2016). These modes of partnerships in renewable energy financing highlighted the importance of the types of financial actors involved other than the types being ‘private’ and ‘public’ actors (Mazucato & Semieniuk, 2018). These different arrangements can also contribute to the reduction of risks attached to renewable energy projects while also complementing budgetary constraints of the public sector by mobilising private capital and vice versa (Cedrick et al., 2017).

### 5.1.1 Public Financing

In terms of public financing initiatives to meet the energy mix target, the government of Indonesia has several financing schemes to support the development of renewable energy projects, including budgets available in national government agencies and regional governments, available fiscal incentives, guarantees, capital injections into state-owned enterprises, financial intermediation, and feed-in tariffs. According to Climate Policy Initiative (2018), throughout 2012-2016, public finance has been provided by the Government of the Republic of Indonesia (GOI) to support clean energy development with an amount to at least IDR 12.4 trillion or IDR 2.5 trillion per year in average. This amount contributed to developing at least 2 140 MW of renewable energy power plants across Indonesia. Of this amount, around 62% of tracked finance was channelled via Government agencies (39% through the Ministry of Energy and Mineral Resources and 23% via Special Allocation Fund), 23% via State-Owned Enterprise<sup>25</sup> and 15% through tax incentives. From 2016-2019 public financing was dominated by funds for fossil fuel power (2.8 billion USD), with renewable energy projects received a total of 0.06 billion USD (0.04 billion USD for hydropower, 0.02 billion USD for geothermal power, and 0 billion USD for Utility-scale solar PV and wind; Figure 5-2 below (IEA, 2020).

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<sup>24</sup> ADB report (2019): “Renewable Energy Financing Schemes for Indonesia” (pg. 6) also stated that challenges which hinders the implementation of renewable energy projects specific to the issue of the PPA scheme are attributable with the State Owned Electricity Company’s performance in managing renewable energy projects.

<sup>25</sup> Guarantees and capital injections to state owned enterprise PT. SMI (public financing entity) have been more impactful in leveraging private investment than other investments. Since PT. SMI has the ability to attract capital from international DFIs (CPI, 2018)

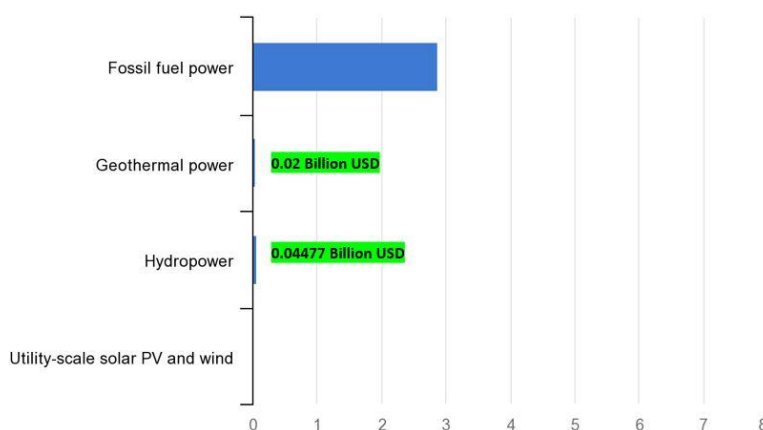


Figure 5-2: Source of finance of projects commissioned in 2016-2019 (public funds) (IEA, 2020b)

In addition, the MEMR Directorate General of New and Renewable Energy and Energy Conservation (EBTKE)’s State Budget in 2020-2024 for the outcome/output of training, monitoring, and utilisation of various new and renewable energies has a total budget of IDR 99,127 million. Meanwhile, for energy infrastructure planning, development, and supervision activities, the total budget is IDR 4,568 trillion. These activities include RE infrastructure output (such as new and renewable energy power plants, hybrid power plants, and solar panels), EBTKE infrastructure development services, energy efficiency equipment, rooftop solar power plants, and communal biogas construction in Islamic boarding school areas (MEMR, 2020).

### 5.1.2 Commercial financing

Typical commercial financing in Indonesia for climate change and climate mitigation is mainly sourced from commercial banks or sharia banks in the forms of principal loans or debt financing, which typically represents 65-80% of the total investment cost (OJK, 2014). These financial institutions are bound to maximise financial returns to their beneficiaries without taking excessive risks and meeting their liabilities over the long run. Highlighted also one of the factors influencing the question of why private finance for renewables has mostly financed geothermal and small hydropower plants, as these projects were perceived as less risky (CPI, 2020). The Indonesian Sustainable Finance Initiative (IKBI)<sup>26</sup> was founded on 31 May 2018 by eight national banks<sup>27</sup> representing 46% of Indonesian banking assets for business opportunities in the Indonesian economy that are resilient to climate change<sup>28</sup> and contribute to achieving the Sustainable Development Goals (SDGs). In addition, IKBI is expected to support implementing the sustainable finance roadmap and its implementation regulations established,

<sup>26</sup> Reported from WWF Indonesia, in November 2019, five national banks, namely CIMB Niaga, Bank Syariah Mandiri, OCBK NISP, Maybank Indonesia, and HSBC Indonesia, officially joined the Indonesian Sustainable Finance Initiative (IKBI). This means that as many as 13 IKBI member banks represent 60% of national banking assets. source: <https://www.wwf.id/publikasi/13-bank-besar-dorong-pembiayaan-ramah-lingkungan>

<sup>27</sup> Banks that were involved in the formation of IKBI were: Bank Artha Graha Indonesia, BRI Syariah, Bank Central Asia, Bank Mandiri, Bank Muamalat, Bank Negara Indonesia, Bank Pembangunan Daerah Jawa Barat dan Banten, and Bank Rakyat Indonesia, in cooperation with WWF-Indonesia.

<sup>28</sup> In response to this, Bank Indonesia demonstrated its commitment to participate in climate risk management by joining the Network for Greening the Financial System (NGFS), a global financial regulator platform to address climate change risks.

guided and monitored by the Financial Services Authority (OJK)<sup>29</sup>, as stipulated in Financial Service Authority Regulation No.51/POJK 03/2017. In addition, financial institutions and companies will report on the fulfilment of sustainable aspects on their portfolios by 2021, as mandated by the aforementioned regulation (CPI, 2020).

The banking sector in Indonesia is more accustomed to corporate (balance sheet) finance and has less familiarity with project finance (ADB, 2019; CPI, 2019). Furthermore, issues such as lack of competition among financial institutions due to the shallow domestic capital market have been among the main drivers of high-interest rates and short loan tenors. Local commercial banks in Indonesia tend to cap the loan tenor to a maximum of approximately eight years (ADB, 2019, pg. 14; UNDP, 2018, pg. 5), while the interest rates that local banks charge for renewable energy developers are 10% higher than the 3% interest rate charged by foreign banks (IESR, 2019b). In addition, access to long-term debt for renewable energy projects has also been hindered by strict capital and liquidity requirements by local banks<sup>30</sup> (CPI, 2019). Another common issue in Indonesia is the limited technical capacity of financial institutions, which poses a challenge in evaluating projects and the structuring of finance by financiers. Despite various training programmes conducted by Indonesia’s financial services agency (OJK), local commercial banks still perceive renewable energy projects as a high-risk investment, thus indicating the ineffectiveness of these training programmes (UNDP, 2018). Considering these underlying conditions, ADB (2019) highlighted that it is advisable for project developers in Indonesia to seek financing from commercial sources and to pair it with grant financing.

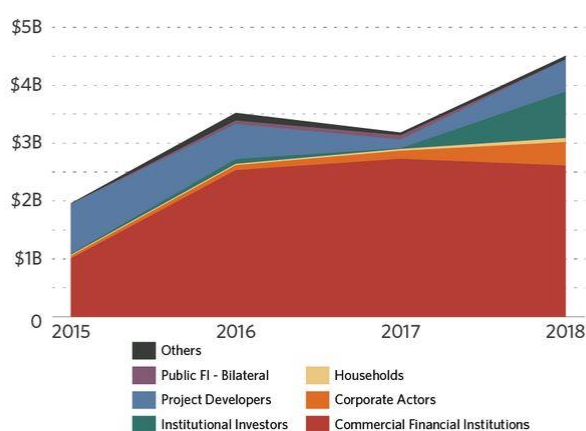


Figure 5-3: Indonesia Private Climate Finance by Source 2015-2018 (CPI, 2020)

Despite these challenges, as seen in Figure 5-3, commercial financing reached a total of USD 13.2 billion between 2015-2018, with commercial financial institutions (FIs) accounting for a majority (67%) of this. However, this data only accounts for 2.3% of commercial FIs’ total credit issuance (USD 378 billion), highlighting the big chasm between their total financing compared to their climate financing (CPI, 2020).

<sup>29</sup> The Financial Services Authority has full authority over the implementation of Sustainable Finance in Indonesia.

<sup>30</sup> As commonly practiced, banks also require project companies to fulfill the necessary due diligence criterias, these strict criterias can be accessed in OJK’s Clean Energy Handbook (2014): <https://www.ojk.go.id/Files/box/keuangan-berkelanjutan/buku-energi-bersih-en.pdf> (page 54-55) (English)

### 5.1.3 Foreign Sources of Financing

According to the International Energy Agency (IEA) (2020), a third of the financing source for power plants commissioned Indonesia between 2016 and 2019 came from foreign sources. Approximately 40% came from DFIs and ECAs (including export-import banks) as seen in Figure 5-4. Note that this amount is not exclusive to renewable energy power plants as only 10% of the total amount of international source of financing was channelled to coal-fired generation, while 43% of the total financing of power plants came from Chinese, 20% from regional financiers based on Southeast Asia (e.g. Bank of Malaysia), and private financiers were more limited; accounted only for 20% of the total financing (with 5% for coal power) (IEA, 2020a; 2020b).

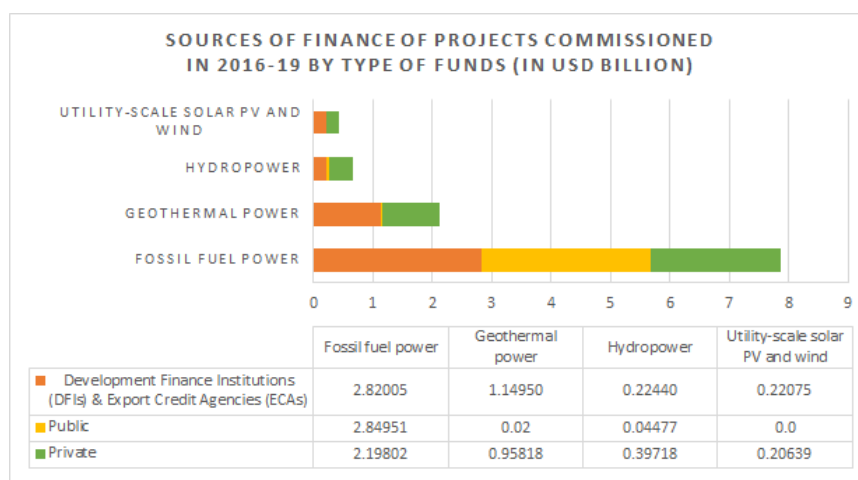


Figure 5-4: Sources of Finance of Projects Commissioned in 2016-2019 by Type of Funds (IEA, 2020a)

Specific to renewable energy financing, a common mode of financing came in the form of grants and technical assistance (TAs), channelled from international donors to the government or non-governmental stakeholders. Several grant or TA sources that had been involved in the development of renewables includes funds channelled through Energizing Development (EnDev)<sup>31</sup> with funds sourced from the Netherlands, Germany, Norway, United Kingdom, Switzerland, and Sweden. The Asian Development Bank (ADB) and Norway Embassy have also supported renewable energy development through channelling TA funds in the form of a grant for capital under several programmes such as the Clean Technology Fund (CTF)<sup>32</sup> (USD 5.5 billion) and Scaling-Up Renewable Energy in Low-Income Countries Programme (SREP) (USD 551 million) (WWF, 2014). CTF was channelled through multilateral development Banks, e.g. the World Bank, Asian Development Bank<sup>33</sup>, IBRD, IDB, and AfDB, targeting large scale

<sup>31</sup> EnDev provided technical support for Micro-Hydro Power Plant (MHPP) under Green PNPM program and technical review for solar power plant projects installed by the MEMR (WWF, 2014), see: [https://endev.info/content/Main\\_Page](https://endev.info/content/Main_Page) and <http://owt.or.id/program-lalu/pnpm-green/>

<sup>32</sup> ADB has also provided financing support through CTF to support the 320 MW Sarulla Geothermal Power Development Project in North Sumatera, Indonesia. the initial loan of USD 350 million from ADB further enables the project to leverage a USD 1.17 billion loan package from commercial banks (Hg & Tao, 2016)

<sup>33</sup> ADB has been investing more than USD 2 billion in clean energy projects each year since 2011. JICA has also made contribution to ADB's Leading Asia's Private Infrastructure Fund (LEAD) for USD 1.5 billion in equity commitment since its inception in August 2016 (GIZ Indonesia, 2017).



commercial and country-initiated projects for geothermal, solar, wind, small hydropower, biomass. Furthermore, several donor-funded programs are also prominent in Indonesia, especially for biogas project development from palm oil waste. Programs that provide technical assistance or grant funding for feasibility studies of palm oil mill effluent (POME)-to-energy projects include; the USAID-funded CIRCLE Program, USAID- Funded Indonesia Clean Energy Development (ICED), Energy and Environmental Partnership with Indonesia (EEP-Indonesia) funded by the Embassy of Finland<sup>34</sup>, and Least Cost for Renewable Energy (L-CORE) programme funded by GIZ.

On top of grant and TA funds, several investment schemes supported by foreign development institutions are also available, providing dedicated funding to local financial institutions or co-invest in renewable energy projects. These co-investments and dedicated funding are channelled, for example, through the Indonesia Climate Change Trust Fund (ICCTF) and the Global Climate Partnership Fund (GCPF). The ICCTF have been working with the European Investment Bank (EIB) along with Bank Negara Indonesia (BNI) for two hydropower projects (1.15 MW), which has reached the financing disbursement phase as of September 2019 (ICCTF, 2019a). In addition, the ICCTF has also been working with the Global Green Growth Institute (GGGI) in providing technical assistance in developing solid waste power plants that began construction in 2020. Progress has also been made between ICCTF and the World Bank to source grant financing from World Bank’s Public-Private Infrastructure Advisory Facility (PPIAF) for USD 250,000 to support renewable energy project developers (ICCTF, 2019b).

Meanwhile, the GCPF have also worked to channel direct investment funds during Q3 2019 (GCPF, 2019). In sum, development organisations, development banks, as well as funds channelled as a result of initiatives from foreign embassies remained as the prominent source of foreign funds in the forms of direct investments, initial capital funds, as well as grants for project development by local actors. In comparison, global initiatives such as the ICCTF and GCPF are less focused on channelling direct investments but play a key role in accelerating investment from local sources through technical assistance.

## **5.2 Legislation and policies**

Outlined in Table 5-1 are policies and regulations enacted by the Ministry of Finance, the Financial Services Authority, the Ministry of Energy and Mineral Resources, as well as the Government of Indonesia’s (GOI) executive branch. Although these regulations and policy documents do not affect developers directly—it provides the necessary context, guidelines, and orientation that may serve as key consideration for commercial banks or other financial institutions when looking to invest in renewables. These regulations and policies are relevant for project developers as well as private/public investments not exclusive to specific development phases of projects. In addition, the narration included in this sub-section also include limited elaboration on the specifics of electricity tariff system and rates in Indonesia, as well as its intricacies. Since information on this aspect—as one of the most prominent challenge for re-

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<sup>34</sup> EEP was previously implemented in the period of 2011-2014, see: [http://www.gbgingonesia.com/en/main/partners\\_updates/embassy\\_finland/the\\_energy\\_and\\_environment\\_partnership\\_with\\_indonesia.php](http://www.gbgingonesia.com/en/main/partners_updates/embassy_finland/the_energy_and_environment_partnership_with_indonesia.php)

newable energy project bankability in the country; are pivotal for policymakers, project developers, and potential investors. To provide further context and complement Table 5-1, an overview of the typical development phases of Biogas projects in the country can also be seen in Figure 5-5.



Figure 5-5: Biogas Power Plant Development Stages (OJK & USAID, 2016)

Table 5-1: Regulations and policies relevant for renewable energy financing in Indonesia

Regulation	Authority	Description
<b>Regulations Related to Climate and Renewable Energy Financing</b>		
<i>Presidential Directive No.61/2011 on Greenhouse Gas Emission Reduction</i>	<i>GOI Executive Branch</i>	<ul style="list-style-type: none"> <li>This regulation highlights the governmental commitment in reducing national greenhouse gas emission by 26% (independently, 41% if accounting foreign assistance) by 2020.<sup>35</sup></li> <li>Categorisation of project categories according to its funding source: a GHG emission reduction scheme with its own fund (26%/Unilateral NAMAs), international support (41%/Supported NAMAs) or carbon market (or Credited NAMAs).<sup>36</sup></li> </ul>
<i>Financial Service Authority Regulation No.18/POJK 03/2016 on Risk Management for Commercial Banks</i>	<i>Financial Services Authority (OJK)</i>	Obligates effective risk management of banks. All risk management must consist active monitoring from directors and board of commissioners, sufficient with risk management policy and procedure and establish risk limitation, sufficient with risk identification, measurement, monitoring, and control process, and complete internal management system. The risk management could be adapted with the business goals, policies, size and complexion, and also the capabilities of the bank.
<i>Financial Service Authority Regulation No.51/POJK 03/2017 on Sustainable Financing by Financial Institutions<sup>37</sup></i>	<i>Financial Services Authority (OJK)</i>	<ul style="list-style-type: none"> <li>Aims to encourage the creation of Sustainable Finance in the financial services sector that supports economic, social and environmental sustainability in the implementation of the development process in Indonesia.</li> <li>Obligates commercial and Sharia banks to: 1) achieve Sustainable Financing's application performance (economic, social, and environmental) compared to the target; 2) document accomplishments and challenges including essential events during the reporting period; (3) prepare Sustainable Finance Action Plans and work programmes for the short term (1 year),</li> </ul>

<sup>35</sup> The reduction will be achieved among them by sustainable peatland management, reduction of deforestation and land degradation levels, carbon sequestration development, promoting energy saving, alternative and renewable energy resource development, solid and liquid waste reduction, shift to low-emission transport modes.

<sup>36</sup> This grouping follows the provisions stipulating the implementation of 41% reduction in greenhouse gas emissions from BAU, which includes the planned trading schemes (or credited NAMAs).

<sup>37</sup> The application of Sustainable Financing principles by financial institutions in Indonesia as stipulated in Financial Services Authority Regulation No. 51/POJK 03/2017 is based on the implementation of Law Number 32 of 2009 concerning Environmental Protection and Management to develop and implement environmental, economic instruments including environmentally-friendly policies in banking, capital market, and the non-bank financial industry. Examples of projects that are in line with Sustainable Finance implementation include financing for renewable energy projects. (Financial Service Authority Regulation No.51/POJK 03/2017 - Explanation, Attachment 1)

		<p>and the long term (5 years) in line with prudential regulations and risk management criteria.</p> <ul style="list-style-type: none"> <li>The plan with a maturity of up to 5 (five) years is submitted once in 5 (five) years. (Financial Service Authority Regulation No.51/POJK 03/2017 - Explanation, Attachment 1).</li> </ul>
Bank Indonesia Regulation No. 7/3/ PBI/2005 on the Legal Lending Limit for Commercial Banks	Indonesia Central Bank	<ul style="list-style-type: none"> <li>This regulation follows Law No. 3 of 2004 on Bank Indonesia. It limits a bank’s provision of funds to 20% of the bank’s capital to any single “borrower” (the “legal lending limit”), 25% to a borrower group, and 30% if the borrower is a state-owned enterprise.</li> <li>If the bank has step-in rights as would be expected in under project finance lending, PLN, as the off taker of power produced, is considered a “borrower” even though the bank lends to the project developer (or several different developers for different projects).</li> <li>Lenders are exempted from the legal lending limit if the project receives a guarantee from the government of a multilateral development agency.</li> </ul>
Minister of Finance Regulation No. 21/ PMK.011/2010 on Tax and Customs Facilities for the Utilization of Renewable Energy	Ministry of Finance	<p><b>This regulation provides income tax facilities, including:</b></p> <ul style="list-style-type: none"> <li>A reduction of up to 30% of the investment (5% each year for 6 years)</li> <li>Acceleration of depreciation</li> <li>Lower tax tariffs for dividends</li> <li>Compensation of losses (5 to 10 years) depends on certain conditions</li> <li>Machinery and equipment, not including spare parts, are: <ul style="list-style-type: none"> <li>Free of income tax on import (Income Tax Clause 22)</li> <li>Free of value-added tax (sales tax)</li> <li>Free of import duty as per Finance Minister Decrees No. 176/011/2009 and No. 154/PMK.011/2008</li> </ul> </li> </ul>
<b>Regulations relevant to financing of project development phases</b>		
MEMR 27/2014 superseded by MEMER 21/2016	Ministry of Energy and Mineral Resources	<ul style="list-style-type: none"> <li>Previously implemented Feed-in tariff for renewable energy from biomass and biogas. The feed-in tariff is 1,050IDR/kWh for medium-voltage interconnections and 1,400 IDR/kWh for low-voltage interconnections.</li> <li>The regulation is no longer in effect, superseded by MEMR No.21/2016</li> </ul>
MEMR No. 21/2016 on the Purchase of Electric Power from Biomass and Biogas Power Plants by PT. Perusahaan Listrik Negara (PLN)	Ministry of Energy and Mineral Resources	<p><b>This regulation stipulated matters related to:</b></p> <ul style="list-style-type: none"> <li>Electricity Selling rates</li> <li>Outlines several requirements<sup>38</sup> for project developers to be</li> </ul>

<sup>38</sup> The requirement consists of corporation profile, feasibility study, and financial ability. All the requirements will be verified by PLN before gaining approval from the MEMR (Directorate of Renewable Energy and Energy Conservation). A biogas power plant should operate after 36 months after the signing of the agreement and the agreement will be valid for 20 years of operation with the possibility to be extended.

		<p>able to reach a power purchase agreement<sup>39</sup> with the state-owned electricity company (PLN)</p> <ul style="list-style-type: none"> <li>• Stipulates the need for additional agreements between PLN and developers regarding excess power selling price rates.</li> </ul> <p>Feed-in-tariffs prices as stipulated in MEMR 21/2016 correlates with how project developers assess the bankability of projects and thus affects their access to funding, considering that the project's bankability entails financial risks surrounding the project which also affects how the responsible stakeholders can ensure return payments of loans. According to USAID &amp; Winrock (2015), in determining the financial feasibility of a project, potential investors can conduct financial assessments using several methods: the payback period, net present value (NPV), and the internal rate of return (IRR). The IRR<sup>40</sup> for POME-to-viable energy projects varies from 11% to 23%. An elaboration of electricity selling rates/feed-in tariffs price in Indonesia are elaborated further below.</p>
MEMR No.50/2017 on Renewable Power Generation and MEMR No.53/2018	Ministry of Energy and Mineral Resources	<ul style="list-style-type: none"> <li>• PLN as the government's own enterprise has the responsibility to buy electricity from renewable energy power plants including biogas power plants. According to this regulation, cooperation between power plant operators and the PLN refers to the Build, Own, Operate, Transfer (BOOT) scheme with the addition of several terms and conditions regarding minimum feedstock rate and electricity selling rates.</li> <li>• Low cost of generation (BPP) makes renewables development in Java-Bali unattractive for investors, BOOT scheme for all renewables prevent power plant to be used as collateral (IESR, 2019)</li> <li>• MEMR No.53/2018 does not provide amendments in renewable prices and the BOOT scheme. In addition, Biofuel is added as renewable source to generate electricity</li> <li>• The upcoming Presidential regulation to be enacted in 2020 is likely to re-introduce the Feed-in Tariff policy, while also considering bankable financial return and a decrement of tariff over time for RE power plants</li> </ul>
Indonesia Ministry of Energy and Mineral Resource regulation No. 4/2020	Ministry of Energy and Mineral Resources	Superseding MEMR No. 50/2017, the cooperation scheme was changed into Build, Operate, Own (BOO) scheme.
Minister of Finance Regulation No. 260/2010 on Guidelines for the Implementation of Infrastructure Guarantees in PPP Projects	Ministry of Finance	<ul style="list-style-type: none"> <li>• Govern public-private partnerships (PPPs) for specified infrastructure projects, including power projects.</li> <li>• Projects may be developed on a solicited or unsolicited basis, but in all cases the selection of a business entity shall be conducted through an open tender process. A “solicited” project is one identified and prepared by the government, whereas an “unsolicited” project is identified and proposed to the government by a business entity.</li> </ul>

<sup>39</sup> ADB (2019), reported that funding requirements prior to the enactment of the agreement for electricity purchases should be eliminated because funding is needed long before the agreement of PPA with PLN. The loan tenor should be extended to increase the bankability of RE development projects. The exchange rates set in the power purchase agreement transaction also affects the cost of purchase or expenditure within a certain period.

<sup>40</sup> The financial results are influenced by the scenario of selling electricity to the PLN grid and replacing diesel generators. In addition, the financing structure, investment costs, and project location also affect IRR. In general, although the investment costs in the Kalimantan and Sulawesi regions will be higher due to transportation and procurement factors, the electricity tariff in these areas is also higher, which can increase project revenue compared to Java and Sumatra areas (USAID & Winrock, 2015).

Law No. 19 of 2003 on State-Owned Enterprises	Legislative Branch	<ul style="list-style-type: none"> <li>The government can assign state-owned enterprises to carry out public services. Since the law also stipulates that state-owned limited liability companies are established to be profitable, the government is obliged to subsidize state owned enterprises for the public service obligations they are assigned to ensure their profitability.</li> </ul>
Ministry of Finance Regulation No. 111 of 2007 on Procedure for the Budgeting, Calculation and Responsibility for the Electricity Subsidy	Ministry of Finance	<ul style="list-style-type: none"> <li>The government funds the difference between PLN's revenue and its allowable cost of production. The allowable cost of production includes the cost of all generation it purchases.</li> <li>This mechanism ensures that PLN is not financially disadvantaged if it purchases renewable energy, even if that energy is more expensive than conventional alternatives. However, since PLN is obliged to operate on commercial principles, it must have a justification for purchasing the more expensive power. The government can provide such a justification by instructing PLN to off take power produced from renewable energy.</li> </ul>
<b>Policies and Policy Orientation related to Renewable Energy Financing</b>		
Strategic plan (2020-2024), Ministry of Energy and Mineral Resources, Directorate of New and Renewable Energy, Energy Conservation	Ministry of Energy and Mineral Resources	<ul style="list-style-type: none"> <li>Outlines incentive schemes from the MEMR to attract investment, and support renewable energy market growth. These incentives include: (1) Property Tax Tariff Exemption; (2) Enforcement of Tax holidays; (3) Ease of transferring waste/unused materials to reduce procurement lead times; (4) Iron and steel import approval.</li> <li>Government's financial support for EBT development is channelled through the Utilization of Renewable Energy Funds and the Utilization of PISP<sup>41</sup> Funds (specific to geothermal) for private companies.</li> <li>The government contracting agency may be at the regional or national level. A PPP project may be based on either a government license or a cooperative agreement.</li> <li>The government may provide fiscal and/or non-fiscal support to improve the feasibility of an infrastructure project, including guarantees. Projects shall be structured to allocate risk to the party best able to manage the risk.</li> </ul>
Financial Services Authority Sustainable Financing Roadmap (2015-2019)	Financial Services Authority (OJK)	<p><b>Outlines two strategic workplans for sustainable finance (SF):</b></p> <ol style="list-style-type: none"> <li>Medium term (2015-2019): focused on the necessary regulatory framework and reporting system, increasing understanding, knowledge, and competence of human resources in the financial services industry, providing incentives, and coordination with related agencies.</li> <li>Long term (2020-2024), activities will focus on integrating environmental and social aspects in risk management, corporate governance, assessing bank capacities, and building an integrated sustainable finance information system.</li> </ol> <p><b>SF's strategic work plan covers three areas:</b></p> <ol style="list-style-type: none"> <li>Increasing the supply of environmentally friendly funding.</li> <li>Increased demand for environmentally friendly financial products.</li> <li>Improved supervision and coordination of the implementation of sustainable finance.</li> </ol>

## Electricity Selling Rate, MEMR Regulation No. 21/2016, and MEMR No. 50/2017

<sup>41</sup> For more explanation of PISP, see: <https://www.adb.org/sites/default/files/publication/635886/renewable-energy-tariffs-incentives-indonesia.pdf> (pg. 40)

Electricity selling tariffs specific to each region in Indonesia as stipulated in Indonesia Ministry of Energy and Mineral Resource regulation no 21/2016.<sup>42</sup> As shown in Figure 5-2 below.

Table 5-2: Feed-in-tariffs for renewable energy from biomass and biogas (MEMR Regulation 21/2016)

Regions	Multiplication factor (F)	Feed-in-tariff (IDR/kWh)	
		Medium voltage	low voltage
Java	1.00	1050	1400
Sumatra	1.15	1207.5	1610
Sulawesi	1.25	1312.5	1750
Kalimantan	1.30	1365	1820
Bali Island, Bangka Belitung Island, and Lombok Island	1.50	1575	2100
Riau Islands, Papua Island, and other Islands	1.60	1680	2240

ADB (2019) have proposed to establish three funding instruments under the Energy Resilience Fund (ERF) to address the specific barriers regarding financial interventions needed to offset the challenges surrounding the electricity tariff in place to support the bankability of projects. One of them is the Viability Gap Funding which consists of options, namely fixed tariffs, fixed premiums, a competitive auction of PPAs,<sup>43</sup> competitive auction of premiums, and investment grants.

There are several pros and cons related to implementing each of these options. Currently, the revenues of renewable energy investments are based on a predefined tariff structure that, in many cases, is negotiable and therefore uncertain, and with a cap that in many cases is too low for investors to generate sufficient returns. In addition, Indonesia's electricity market is not competitive and, as long as the underlying power price (through PPA or concession tariffs) is not predefined, there is a risk that a premium grant can lead to “game-playing” where unnecessarily low tariffs/PPA prices emerge, with the anticipation of a viability gap funding scheme to cover larger part of the revenues of projects (Asian Development Bank, 2019).

<sup>42</sup> Updated by MEMR No. 21/2016, MEMR No. 27/2014 previously stipulated that the feed-in tariff for biomass and biogas energy has a multiplier factor (F) that varies based on the project location. Also, since the beginning of the year, a Presidential Regulation on Renewable Energy Prices has been planned to regulate the feed-in tariff of electricity produced from renewable energy sources sold to the state-owned electricity company PLN.

<sup>43</sup> It was proposed that the competitive auctioning of premium payments would be selected for the main instrument and available for projects that already have secured a clear and fixed revenue stream. This would give the project developers an incentive to negotiate power purchase agreements or PPAs (or other revenue streams) as high as possible, enabling competitiveness in a subsequent (possible) competitive bidding of a premium tariff. The auction could either aim at maximal cost-efficiency, having all projects bidding in the same process or, for example, there could be location-specific priorities (or prioritization of certain technologies).

## 5.3 Identifying potential financing options

### 5.3.1 Internal financing

Despite internal financing not categorised as funding sources that are sourced from external entities, it is important to note that typically a company’s or group’s own equity is generally less expensive than external financing— since it does not involve costs for transactions or incur taxes. Table 5-3 outlines the advantages and disadvantages of internal financing.

Table 5-3: Advantages and disadvantages of internal financing (USAID & Winrock, 2015)

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• No interest payments incurred</li> <li>• No control procedures regarding credit worthiness</li> <li>• Funding is immediately available</li> <li>• Full control, no influence from third parties</li> </ul>	<ul style="list-style-type: none"> <li>• Probability of incurred opportunity costs</li> <li>• limited amount of funding, largely subjected to company’s financial capability</li> </ul>

### 5.3.2 External Financing

#### a) Local Commercial Banks

Project financing for biogas projects is not yet common practice for commercial banks in the country, especially for large-scale biogas power plants. As previously stated, commercial banks in Indonesia have high-interest rates (10%-12%), short tenors, and applies strict capital and liquidity requirements (CPI, 2019)—while also being less familiar with project finance and accustomed to corporate (balance sheet) finance (ADB, 2019; CPI, 2019). Commercial Banks in Indonesia still perceive Renewable energy investment as a high-risk investment. However, several commercial banks in Indonesia have started to channel credit investments for small-scale household biogas (120-130kg for 3 to 4 households) as part of their corporate social responsibility programme (BNI, 2018). In addition, Bank BRI has also financed one biogas project utilizing industrial waste from palm oil feedstock, tofu industry waste, and livestock manure (processed to replace LPG). Despite these two examples of biogas financing from commercial banks, compared to other renewables energies, commercial financing for biogas is limited and has been minuscule, especially when compared with geothermal and small-hydro power plants—due to lower risk (CPI, 2020).

When considering financing for general renewable energy development or specific to biogas, developers must consider criteria established by local banks, based on the ICED approach, to fulfil both: (1) technical aspect and; (2) financial aspect of the proposed project—other than the typical review of project company and sponsors. For the **technical aspect** of a renewable energy project, the following due diligence criteria must be taken into account and fulfilled:

- a. Review of project layout and general design, banks will also review the detailed engineering design—banks may hire independent engineers to conduct the review

- b. Review of the feasibility study and technical design, banks may require FS to be reviewed by independent/third-party engineers. The feasibility study must also be updated.
- c. Project management and organization review
- d. Review of technological aspects, including choice of feedstock, choice of equipment suppliers, choice of contractors, choice of hydrology. Again, lenders may hire third parties for the review due to a lack of capacity to review technical aspects.
- e. Adequate insurance or warranty programme
- f. Environmental and social issues include compliance with environmental requirements and licenses (AMDAL/UKL/UPL), review of public concerns, benefits gained by local communities, and review of the general project facilities.

For the **financial aspect** of a renewable energy project, the following due diligence criteria must be taken into account and fulfilled:

- a. Review of the typical aspects of costs (investment and operation), divided into project preparation cost, civil construction cost, machinery and equipment cost, and operating expenses.
- b. Possibility of cost overruns (for contingencies to be prepared):
  - I. underestimation of geographical and geological context (e.g., for hydropower) and incorrect assessment of effluent characteristics (i.e., for a POME plant)
  - II. underestimation of inflation and/or currency exchange rate
  - III. underestimation of expenses due to lack of knowledge of the project's cost structure
- c. Review of financing plan, including terms for the subscription of shares by any other shareholder, terms of proposed bridge financing (if any), and terms of proposed senior debt financing. Bank will ensure that it has the strongest lender security in financial terms.
- d. Macroeconomic assumptions (including references for the assumptions used). Recommended references for assumptions are from reliable sources such as the State Expenditure Budget (APBN), Indonesia Central Bank (BI), the Central Bureau of Statistics (BPS)
- e. The typical review of financial aspects related to the financial model, capital cost, project profitability and debt service capacity.
- f. In the specific local context, applicable Power Purchase Agreement tariff (PPA) for local issues surrounding the PPA agreement process and its subsequent consequence to project's bankability. The bank will review the agreed PPA tariff with the PLN, and the bank would want to ensure that the PPA tariff would be able to cover the project costs and provide a return on equity to the project sponsor during the term of the PPA. In addition, the PPA tariff should be able to cover the operational and maintenance costs, and this aspect is also influenced by inflation.

## **b) Public funds**

Public finance in the Indonesian context mostly comes from eight prominent sources:

- a. Budget appropriation to the Ministry of Energy and Mineral Resources (MEMR)





- b. Funds available from regional governments, namely the Special Allocation Fund for Physical Development (DAK)
- c. Fiscal incentives
- d. Guarantees
- e. Capital injection to state-owned enterprises
- f. Finance intermediation
- g. Viability gap funding
- h. feed-in tariffs

From these available sources of public funds, it has been identified based on the finance channelled in 2012-2016 that guarantees and capital injections to state-owned enterprise have the highest impact on leveraging private investment. While on the other hand, budget appropriations to line ministries and fiscal transfers to regional governments showed no direct impact on renewable energy investments. (CPI, 2018) Typically, these sources are more suitable for small-scale renewables in remote areas lacking private investment opportunities.

On the contrary, public funds can help address the barriers available, which have hindered growth in private financing. Firstly, public financing can address the high-interest rates faced by project developers and allowing them to meet their target of financial returns. Secondly, public financing can provide long-term funding—where long-term debt financing faces challenges for clean energy development due to structural issues in Indonesia’s financial system. Thirdly, public financing can support project developers in its risk-return profile and bypass the pre-existing inefficient tariff design. Lastly, project developers can gain better access to funds by accessing public funds since the financial sector is still risk-averse and reluctant to provide funding in a project finance scheme, including for clean energy projects.

In Figure 5-6, we highlight the recommended public finance instruments aligning with its respective challenges of financing barriers which typically arose across the life cycle of clean energy projects.



Figure 5-6: Recommended public finance levers to tackle challenges throughout project development cycle (National Energy Master Plan, Presidential Decree No. 22/2017)

Furthermore, it was also found that fiscal incentives and Viability Gap Funding (VGF) have good potential to improve the risk-return profile of medium to large scale renewable energy projects—by lowering tax rate or deferred tax expenses to subsequently lower generation

costs. Meanwhile, guarantee instruments typically channelled through business viability guarantee letter (BVGL) and Indonesia Infrastructure Guarantee Fund (IIGF) can foster project bankability by guaranteeing PLN’s business viability and ability to fulfil its financial obligation as an off-taker and borrower. Guarantee instruments are typically implemented through the PPP scheme. Although, it must also be noted that guarantee instruments are currently still limited in coverage, although its potential remains viable. Similarly, capital injection to PLN and SMI are also critical to strengthen the financial foundation of both institutions. Injections to the SMI, in particular, is essential for high impact potential since SMI has the ability to blend public capital with external sources (including from private, commercial, foreign sources) as well as the flexibility to develop financial instruments to fulfil the needs of clean energy projects.

### **5.3.3 International Development Finance Institutions**

As previously elaborated, financing instruments typically utilized by international development finance institutions include the channelling of grants and technical assistance (TAs). However, it must be emphasized that debt financing is also one of the financing options offered by development finance institutions. These potential sources of debt, based on the latest clean energy handbook released by the Financial Services Authority, are outlined as the following:

- I. International Finance Corporation (IFC) “A” Loan
- II. Asian Development Bank “A” loan
- III. Asian Development Bank “B” loan
- IV. Japanese International Cooperation Agency (JICA)
- V. Export-Import Bank of the United States

Debts sourced from the International Finance Corporation (IFC), exposure is limited to 25% of the overall project cost up to a maximum of USD 100 million with an appropriate tenure in line with the project’s cash flow two-year grace period during construction build-out. While the interest rate is based on the 6-month LIBOR rate (350-500 basis points for corporate-backed projects and 500-600 basis points for projects backed by start-up companies). It is also possible for debts sourced from the IFC to be coupled with a risk guarantee from the world bank<sup>44</sup>— which subsequently enables the tenures to be stretched out to another 1-2 years. Similarly, debts from the Export-import Bank of the United States are also LIBOR-based, and the amount of loans can be equal to 85% of the export content exclusively from the United States and 15% of local costs. This U.S.-based debt financing source is prominently compatible with the capitalization of exposure fees and capitalized interest during construction for new projects with minimal environmental impact. Lastly, ADB’s “A” and “B” loans come with a tenure of 10-12 year and 5-7 year respectively while debts sourced from JICA is deemed as extremely attractive especially for long-term debt which includes a 20-year tenure with 5-years of a grace period and a low-interest rate of 6%-8% for interest-only construction and 9%-10.5% after the completion of the construction.

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<sup>44</sup> risk guarantee requires a sovereign guarantee from the host government

## 5.4 Financing options identified

Financing sources specific to biogas					
Commercial Banks					
Financing entity name	BNI	Bank Mandiri	Bank BCA	Bank BRI	Bank BJB
Name of the Fund	Common Corporate Loan	Common Corporate Loan: Capital credit, investment credit	Common Corporate Loan	Common Corporate Loan: Capital credit, investment credit, guarantees, supply chain financing, Food and Energy Credit (Kredit Pangan dan Energi/KKPE)	Common Corporate Loan <b>(including project financing)</b> , Corporate capital credits for developers, Food and Energy Credit (Kredit Pangan dan Energi/KKPE)
Financing instrument	Corporate Loan	Corporate Loan, Debt, green credits	Corporate Loan: Investment Credits, Capital Credits, Guarantee. Corporate Interest Rate of 8.25%	Corporate Loan	Corporate Loan, investment credits
Project phase	N/A	N/A	N/A	N/A	N/A
Minimum project size <sup>45</sup>	N/A Previous biogas financing of IDR 116.36 million (2018) <sup>46</sup>	N/A, although mandated to finance renewable energy initiatives by POJK 51. 2017, there were no documented precedents of biogas financing.	N/A, although mandated to finance renewable energy initiatives by POJK 51. 2017, there were no documented precedents	N/A, although mandated to finance renewable energy initiatives by POJK 51. 2017, there were no documented precedents of biogas financing. Although BRI has channelled US \$ 197,000,000 in total in 2018 for the RE sector, especially hydro power and solar panel projects. ( <a href="#">Link</a> . Bank BJB	N/A, although mandated to finance renewable energy initiatives by POJK 51. 2017, there were no documented precedents of biogas financing. Although Bank BJB has channelled USD 7,703.64 (in 2017 for KKPE program –

<sup>45</sup> Amounts indicated are either for the overall project size, or the minimum amount that the finance institution will commit to the project

<sup>46</sup> MEMR (2016): Indonesia Minister of Energy and Mineral Resources Regulation No. 21 of 2016 concerning the Purchase of Electricity from Biomass Power Plants and Biogas Power Plants by PT Perusahaan Listrik Negara (Persero)

			of biogas financing. Although BCA has channelled Rp 2,35 trillion in 2018 for the RE sector (eight Mini Hydro Power Plants and one Hydro Power Plant) ( <a href="#">link</a> )	has channelled USD 3,542,852.09 (in 2017 for KKPE program – a Non-RE program, although this program is for biogas feedstock producers) <sup>47</sup>	a Non-RE program, although this program is for biogas feedstock producers) <sup>48</sup>
<b>Eligibility criteria</b>	<ul style="list-style-type: none"> <li>- ISPO &amp; RSPO certification for palm oil debtors, including verification thereof (<a href="#">Source</a>, pg.75)</li> <li>- Minimum PROPER standard of Biru (Blue) and Maximum PROPER Standard of Emas (Gold)</li> <li>- Social and Environmental Screening</li> <li>- Adherence of GRI G4 (2016)<sup>49</sup>, GRI 103 (2016), and GRI (302)</li> <li>- Criterias stipulated in: Technical Handbook on the implementation of POJK No. 51/2017<sup>50</sup> (Pg. 34 for small-medium enterprises); page</li> </ul>	<ul style="list-style-type: none"> <li>- Criterias stipulated in: Technical Handbook on the implementation of POJK No. 51/2017 (Pg. 34 for small-medium enterprises), and page 37-40 for criterias based on the SDGs, including waste-to energy and Palm Oil/agriculture waste-to-energy companies; page 22-37 for definition of sustainable businesses</li> <li>- Adherence of GRI 102 (2016), product and loan quality refers to GRI G4 (Financial Sector)</li> </ul>	<ul style="list-style-type: none"> <li>- Criterias stipulated in: Technical Handbook on the implementation of POJK No. 51/2017 (Pg. 34 for small-medium enterprises), and page 37-40 for criterias based on the SDGs, including waste-to energy and Palm Oil/agriculture waste-to-energy companies; page 22-37 for definition of sustainable businesses</li> <li>- Adherence of GRI 102 (2016), product and loan quality refers to GRI G4 (Financial Sector)</li> </ul>	<ul style="list-style-type: none"> <li>- Maximum of Rp. 100 million for individuals and a maximum of Rp. 500 million for group</li> <li>- Criterias stipulated in: Technical Handbook on the implementation of POJK No. 51/2017 (Pg. 34 for small-medium enterprises), and page 37-40 for criterias based on the SDGs, including waste-to energy and Palm Oil/agriculture waste-to-energy companies; page 22-37 for definition of sustainable businesses</li> <li>- Adherence of GRI 102 (2016), product and loan quality refers to GRI G4 (Financial Sector) (<a href="#">Source</a>: pg. 124,126)</li> <li>- The types of WtE development are the development of a biogas reactor from tofu industrial waste and from cow farm waste where development costs less than Rp. 100 million for each unit</li> <li>- The feasible potentials are the development of clean products and biogas from tofu industrial waste (development of tofu</li> </ul>	<p>General:</p> <ul style="list-style-type: none"> <li>- Maximum of Rp. 100 million for individuals and a maximum of Rp. 500 million for the group</li> <li>- The maximum tenor of 5 years</li> <li>- The types of WtE development are the development of a biogas reactor from tofu industrial waste and from cow farm waste where development costs less than Rp. 100 million for each unit.</li> </ul> <p>Legal documents of applicants, and legal documents of business (<a href="#">Link</a>) (<a href="#">link</a>)</p>

<sup>47</sup> Ibid.

<sup>48</sup> [https://www.djpb.kemenkeu.go.id/kppn/investasi/images/title/kppnki/Materi-Sesi-I\\_Evaluasi-Penyaluran-Subsidi-Bunga-KP\\_Lumire-2018.pdf](https://www.djpb.kemenkeu.go.id/kppn/investasi/images/title/kppnki/Materi-Sesi-I_Evaluasi-Penyaluran-Subsidi-Bunga-KP_Lumire-2018.pdf)

<sup>49</sup> Source: [https://www.bni.co.id/Portals/1/BNI/Perusahaan/Docs/BNI\\_SR2016\\_INA.pdf](https://www.bni.co.id/Portals/1/BNI/Perusahaan/Docs/BNI_SR2016_INA.pdf) (pg. 134-135)

<sup>50</sup> Based on OKJ Handbook: <https://www.ojk.go.id/id/kanal/perbankan/berita-dan-kegiatan/publikasi/Documents/Pages/Pedoman-Teknis-Penerapan-Kuangan-Berkeselamatan-bagi-Sektor-Perbankan/Pedoman%20Teknis%20Bagi%20Bank%20terkait%20Implementais%20POJK%20Nomor%2051%202017.pdf>



	37-40 for criterias based on the SDGs, including waste-to energy and Palm Oil/agriculture waste-to-energy companies; page 22-37 for definition of sustainable businesses	(Source: pg. 124,126)	(Source: pg. 124,126)	industrial biogas coupled with clean product development), development of biogas from cow farm waste / manure (especially for replacement of LPG gas, while replacement from wood fuel is highly dependent. from the price of firewood in the area), the development of biogas power plants from palm oil industry waste (POME) (mainly for replacing diesel, not for selling electricity products), power generation from palm fronds, and the use of rice husks for heating / drying in silos rice / corn. ( <a href="#">Link</a> )	
<b>Financing period/ term</b>	<5 Years	Capital Credit: Max 1 Year  Investment Credits: Performance-based	Investment credits: Max. 7 Years  Capital Credits: 1-5 Years	Capital Credits: 10-15 Years  Supply Chain financing: <5 Years	Corporate capital credits for developers: Max. 3 Years  <b>Common Investment Loan (Including for project financing):</b>  12 years max. of credit facility
<b>Contact details, position of persons for more information</b>	Pgs Corporate Secretary PT Bank Negara Indonesia (Persero)  Phone : (+62) 21 2511 946, 572 8387  E-mail: investor.relations@bni.co.id	Investor Relations Group  Tel: 021 524 5085  Email: <a href="mailto:ir@bank-mandiri.co.id">ir@bank-mandiri.co.id</a>  Website: <a href="https://www.bank-mandiri.co.id/web/ir">https://www.bank-mandiri.co.id/web/ir</a>	PT Bank Central Asia Tbk  Phone: +62 21 235 88 000  Emai: <a href="mailto:investor_relations@bca.co.id">investor_relations@bca.co.id</a>	Investor Relations BRI  Email: <a href="mailto:ir@bri.co.id">ir@bri.co.id</a>  Tel: +62 21 575 2019  +62 21 575 2010	Telp : 022-4234868  Fax : 022-4206099  Email Investor information : <a href="mailto:ir@bankbjb.co.id">ir@bankbjb.co.id</a>

**Fls (International)**

Financing entity name	Green Climate Funds / Clean Technology Fund	ICCTF	International Finance Corporation (IFC)	Asian Development Bank	PFAN	Global Environment Facility (GEF)	JICA



<b>Name of the Fund</b>	N/A	N/A	“C” Loan	“A” Loan, “B” Loan	N/A	Adaptation fund	N/A
<b>Financing instrument</b>	Channelled through PT. Sarana Multi Infrastruktur / funds channelled to PT. SMI are from The Ministry of Finance, as GCF funds sourced from Asian Development Bank, World Bank, other DFIs.	Grant	Loan	Loan guarantees (channelled through govt. agency)	Investment	Trust Funds	<p><b>A. Debt</b></p> <ul style="list-style-type: none"> <li>- Amount: Max. 70% of total project cost</li> <li>- Currency: JPY, USD, EUR, local currencies</li> <li>- Pricing: funding cost + credit spread</li> <li>- Security: Secured/unsecured</li> </ul> <p><b>B. Equity</b></p> <ul style="list-style-type: none"> <li>- Share: 25% of total equity</li> </ul> <p><b>C. Bonds</b></p> <p><b>D. Impact Investment</b></p>
<b>Project phase</b>	Initial phase	Applicable for all project phases	Project Initiation	Project Initiation	<ul style="list-style-type: none"> <li>- In-between feasibility study and demonstration and initial operation of project.</li> <li>- First round of external financing, green field, scale-up.</li> </ul>	From project design support through implementation	Project initiation
<b>Minimum project size</b>	N/A	N/A Previously: - IDR 996.730.000 or USD 67,105.45 (2017-2018) for SESAMI biogas	25% from total project costs for greenfield projects up to a maximum of USD 100 Million	Typical ceiling of 25% of the overall project cost up to a maximum of USD 100 million	<p>Sweet spot of USD 1-50 million</p> <p>Micro projects of &lt;USD 1 million</p>	<ul style="list-style-type: none"> <li>• <b>Full-sized Project (FSP):</b> GEF Project Financing of more than two million US dollars.</li> <li>• <b>Medium-sized Project (MSP):</b></li> </ul>	<p><b>Debt</b></p> <ul style="list-style-type: none"> <li>- typical size of \$10M-\$150M</li> </ul> <p><b>Equity</b></p> <ul style="list-style-type: none"> <li>- typical size \$3M-\$10M (PE)</li> </ul>



		project (2017-2018) <sup>51</sup>				GEF Project Financing of less than or equivalent to two million US dollars.	/ \$10M-\$50M (Fund) - Exit strategy required at time of participation
<b>Eligibility criteria</b>	<p>There are six criteria of GCF's investment:</p> <p>a. Climate impact potential;</p> <p>b. Paradigm shift potential;</p> <p>c. Sustainable development potential;</p> <p>d. Effectiveness and efficiency;</p> <p>e. Needs of recipient;</p> <p>f. Country ownership.</p> <p>Complete list: <a href="https://www.greenclimate.fund/sites/default/files/document/investment-criteria-indicators.pdf">https://www.greenclimate.fund/sites/default/files/document/investment-criteria-indicators.pdf</a></p>	<ul style="list-style-type: none"> <li>Project period: 1 - 2 years</li> <li>Project Value Per Activity: 1 M</li> <li>Maximum duration 18</li> <li>This program is for NGOs, non-governmental groups (KSM), universities, research institutes, and non-government research institutions.</li> <li>The proposer must have a legal entity status as well as an established work management and financial system.</li> <li>The proposer must come from the province or location where the activity will be carried out. External program implementers can form a consortium with institutions at the program location in order to fulfill these prerequisites.</li> </ul>	<p>Varies between listed companies, family or founder owned companies, financial institutions, state-owned enterprises, small and medium enterprises (SMEs), fund governors.</p> <p>For complete documents/criterias and instructions for each category, See: <a href="https://www.ifc.org/wps/wcm/connect/topic_ext_content/ifc_ext_ernal_corporate_site/ifc+cg/investment+services/corporate+governance+tools">https://www.ifc.org/wps/wcm/connect/topic_ext_content/ifc_ext_ernal_corporate_site/ifc+cg/investment+services/corporate+governance+tools</a></p>	<p>Information unavailable for public, for description see: <a href="https://www.adb.org/what-we-do/private-sector-financing/commercial-cofinancing#accordion-0-1">https://www.adb.org/what-we-do/private-sector-financing/commercial-cofinancing#accordion-0-1</a></p>	<p>A. Typical Criterias:</p> <ul style="list-style-type: none"> <li>Commercially viable</li> <li>Technically viable</li> <li>Growth Potential</li> <li>Experienced management team</li> <li>Climate impact</li> <li>Development and gender impact</li> </ul> <p>B. Project Portfolio</p> <p>C. Desktop due diligence</p> <p>D. Comprehensive Due Diligence</p>	<ul style="list-style-type: none"> <li><b>Eligible country:</b> Countries may be eligible for GEF funding in one of two ways: a) if the country has ratified the conventions the GEF serves and conforms with the eligibility criteria decided by the Conference of the Parties of each convention; or b) if the country is eligible to receive World Bank (IBRD and/or IDA) financing or if it is an eligible recipient of UNDP technical assistance through its target for resource assignments</li> </ul>	<p><b>Debt:</b> N/A</p> <p><b>Equity:</b> N/A</p> <p><b>Bonds:</b></p> <ul style="list-style-type: none"> <li>Evaluation based on OECD-DAC Criteria for Evaluating Development Assistance</li> <li>Review by external experts</li> <li>Approval by the Government of Japan</li> </ul> <p><b>Impact Investment:</b></p>

<sup>51</sup> <https://www.icctf.or.id/portfolio/annual-report-2017/> pg. 25: SESAMI Project

		<ul style="list-style-type: none"> <li>• <i>Unable to fun:</i> <ul style="list-style-type: none"> <li>- <i>Management fees or fees for institutions / organizations.</i></li> <li>- <i>Large scale infra-structure develop-ment.</i></li> <li>- <i>Activities with signifi-cant negative envi-ronmental and social impacts, including threats to important species of flora and fauna, and programs requiring involuntary resettlement.</i></li> <li>- <i>Activities that are against the ICCTF En-vironmental and So-cial Safeguard (ESS) principles</i></li> </ul> </li> <li>• <i>More at:</i>  <a href="https://adoc.pub/indonesia-climate-change-trust-fund-icctf-undangan-untuk-mem40c92884e6604cca9add097cef2f809814882.html">https://adoc.pub/indonesia-climate-change-trust-fund-icctf-undangan-untuk-mem40c92884e6604cca9add097cef2f809814882.html</a> </li> </ul>				<p><i>from the core (specifically TRAC-1 and/or TRAC-2).</i></p> <ul style="list-style-type: none"> <li>• <b>National pri-riority:</b> <i>The project must be driven by the country (rather than by an external partner) and be consistent with national priorities that support sus-tainable de-velopment.</i></li> <li>• <b>GEF priori-ties:</b> <i>it is re-quired that the GEF sup-port country priorities that are ultimately aimed at tack-ling the driv-ers of environ-mental degra-dation in an integrated fashion. For this reason, the focal ar-eas (Biodiver-sity, Climate Change Mit-i-gation, Land Degrada-tion, International Waters and</i></li> </ul>	<p>Adherence to JICA’s Operating principles for Impact Manage-ment</p>
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						<p>Chemicals and Waste), which remain the central organizing feature in the GEF-7 Programming Directions, provide countries with the opportunity to participate in selected “Impact Programs” focusing on 1) Food Systems, Land Use and Restoration; 2) Sustainable Cities; and 3) Sustainable Forest Management (for more details, see annex A of the GEF-7 Programming Directions Documents).</p> <ul style="list-style-type: none"> <li>• <b>Financing:</b> The project must seek GEF financing only for the agreed incremental costs on measures to achieve global environmental benefits.</li> </ul>
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						<ul style="list-style-type: none"> <li>• <b>Participation:</b> The project must involve the public in project design and implementation, following the Policy on Public Involvement in GEF-Financed Projects and the respective guidelines.</li> <li>• Requires completion of different templates, each differs for full-sized projects, medium-sized projects, enabling activities, and programmatic approaches, see: <a href="#">link</a></li> </ul>	
<b>Financing period/term</b>	<ul style="list-style-type: none"> <li>- Regular loan: 40 Maturity years / 10 years of grace period</li> <li>- Blended: 25 Maturity Years / 5 grace period</li> </ul>	< 5 years (no more than 18 months)	In line with project's cashflow	Loan A tenor of 10-12 years; payback period of 2 years. Loan B tenor of 5-7 years, interest rate according to monthly LIBOR 6 + 5%-6% for Indonesia	N/A	N/A, dependent to project types and other modalities.	<p><b>Debt</b></p> <ul style="list-style-type: none"> <li>- Tenor: Max. 20 Years with 5 years of grace period</li> </ul> <p><b>Equity</b></p> <ul style="list-style-type: none"> <li>- Return: same IRR with other common investors</li> </ul>



<b>Contact details, position of persons for more information</b>	PT. SMI; Septina Dini Irawati <a href="mailto:septina@ptsmi.co.id">septina@ptsmi.co.id</a> Puti Faraniza - <a href="mailto:septina@ptsmi.co.id">septina@ptsmi.co.id</a>	Phone: (62 21) 80679386 (Hunting) Fax. (62 21) 80679387 Email: <a href="mailto:secretariat@icctf.or.id">secretariat@icctf.or.id</a>	Azam Khan Country Manager Tel: (+62) 21 2994 8001 E-mail: <a href="mailto:akhan@ifc.org">akhan@ifc.org</a>	ADB Indonesia Resident Mission (IRM) Tel +62 21 29927388	Hari Yuwono PFAN Indonesia Country Coordinator <a href="mailto:hari.yuwono@pfan.net">hari.yuwono@pfan.net</a>	Ms. Ibu Laksmi Dhewanthi Operational Focal Point since 2015-08-20, Senior Advisor to the Minister on Industry and International Trade Ministry of Environment and Forestry Tel: (62-21) 5730205 Fax: (62-21) 5730385 Email: <a href="mailto:ldhewanthi@gmail.com">ldhewanthi@gmail.com</a>	JICA Indonesia Office Tel : (62-21) 5795-2112 Fax : (62-21) 5795-2116
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#### DFIs (Local)

<b>Financing entity name</b>	PT. Sarana Multi Infrastruktur (SMI)	
<b>Name of the Fund</b>	SMI Project Development Fund – Sustainable Financing Program, under the Sustainable Financing Division (DPB)	PT. SMI Green Bond/Green Sukuk
<b>Financing instrument</b>	Term investment loan, working capital loan, take out financing, promoter financing, subordinate loan, capital investment loan, mezzanine loan	<a href="#">Green Bonds</a>
<b>Project phase</b>	All project phases	N/A (overall project financing or project re-financing)
<b>Minimum project size</b>	3 MW (2 3MW biogas projects in 2019)	≤ 10 MW
<b>Eligibility criteria</b>	<ol style="list-style-type: none"> <li>1. Financing Profile</li> <li>2. Legal documents and Company Permits</li> <li>3. Feasibility Study</li> </ol>	<ul style="list-style-type: none"> <li>• List of existing and pipeline projects portfolio</li> <li>• Compliance to ESS framework</li> <li>• Compliance with Indonesia’s Green Bond Regulations</li> </ul>



	4. Other supporting documents	<ul style="list-style-type: none"> <li>• Financial feasibility</li> <li>• Environmental and social risks checklist</li> <li>• Due Diligence</li> <li>• Technical monitoring</li> <li>• Adherence to PT. SMI Project Environmental and Social Management System (ESMS) Guideline</li> </ul>
<b>Financing period/term</b>	Tenor and grace period are to be adjusted with the construction period, and adjusted according the ability of the company to fulfill its obligations (minimum of 2-3 months according to the complexity of the project)	N/A
<b>Contact details, position of persons for more information</b>	<p>Email</p> <p><a href="mailto:investorrelations@ptsmi.co.id">investorrelations@ptsmi.co.id</a></p> <p>Phone</p> <p>(+62-21) 8082 5288 (ext. 2103)</p> <p>(+62-21) 8082 5258</p> <p>Septina Dini Irawati <a href="mailto:septina@ptsmi.co.id">septina@ptsmi.co.id</a></p> <p>Puti Faraniza - <a href="mailto:septina@ptsmi.co.id">septina@ptsmi.co.id</a></p>	

Private Equity	
<b>Financing entity name</b>	Indonesia Infrastructure Finance (IIF)
<b>Name of the Fund</b>	N/A
<b>Financing instrument</b>	Debt Service/Loan, direct lending of loan
<b>Project phase</b>	Debt service only possible after the project starts commercial operations
<b>Minimum project size</b>	2 MW
<b>Eligibility criteria</b>	<p><b>A. Success factors:</b></p> <ul style="list-style-type: none"> <li>• Project finance risk aspects:</li> </ul>



	<ul style="list-style-type: none"> <li>Land for building the powerplant is owned by one of the shareholders. Have guaranteed feedstock supply from one of the shareholders</li> <li>Availability guarantee, export capacity guarantee, and efficiency guarantee</li> </ul> <p><b>B. Completion of extensive and comprehensive due diligence on project viability</b></p> <p><b>C. Review of project risk allocation and mitigation</b></p> <p><b>D. Project viability aspects:</b></p> <ul style="list-style-type: none"> <li>Cash flow</li> <li>Discounted cash flow</li> <li>Discounted rate</li> <li>Present value</li> <li>Net present value</li> <li>IRR</li> <li>Profitability index</li> </ul>	<ul style="list-style-type: none"> <li>Classification and identification of risk</li> <li>Risk matrices</li> <li>Risk allocation and mitigation</li> <li>Construction and completion risk</li> <li>Operating risks</li> <li>Demand risk</li> <li>Force majeure &amp; change in law</li> <li>Political and regulatory risk, expropriation/nationalisation risk</li> <li>Environmental &amp; social risk</li> <li>Tenor and refinancing risk</li> <li>Currency exchange risk</li> <li>Interest rate risk</li> </ul>
<b>Financing period/term</b>	Tenor of 12 Years	
<b>Contact details, position of persons for more information</b>	Phone : (+62) 21 5082 6600 Fax : (+62) 21 5082 6601 Email : <a href="mailto:info@iif.co.id">info@iif.co.id</a>	

SPV	
<b>Financing entity name</b>	Indonesia Infrastructure Guarantee Fund / PT Penjaminan Infrastruktur Indonesia
<b>Name of the Fund</b>	Cooperation Scheme between the Government and Business Entities (KPBU) Projects
<b>Financing instrument</b>	Risk Guarantee,
<b>Project phase</b>	Project Initiation

<b>Minimum project size</b>	N/A
<b>Eligibility criteria</b>	<ul style="list-style-type: none"> <li>- Pre feasibility study &amp; report, Pre-feasibility must justify the goal of the project based on available issues. In additional, demand analysis is also needed</li> <li>- Elaboration of why the project is needed, including elaboration on quality, access, and availability of the services that will be provided by the project</li> <li>- Technical analysis</li> <li>- Financial analysis</li> <li>- Environmental and social impact analysis</li> <li>- Legal and institutional analysis</li> <li>- Risk analysis</li> <li>- Cooperation schemes</li> <li>- Government support</li> <li>- Project execution plan</li> </ul> <p>Complete description of each of these criterias are available in: <a href="https://ptpii.co.id/media/kcfinder/docs/prefs-guidelines-juni2017-rev1.pdf">https://ptpii.co.id/media/kcfinder/docs/prefs-guidelines-juni2017-rev1.pdf</a> (pg. 88-92 for energy projects)</p>
<b>Financing period/term</b>	10 Years
<b>Contact details, position of persons for more information</b>	<p>Phone: +62 21 5795 0550</p> <p>Fax: +62 21 5795 0040</p> <p>Email: <a href="mailto:info@iigf.co.id">info@iigf.co.id</a></p>

Public Funds			
<b>Financing entity name</b>	Regional Governments <sup>52</sup>	Ministry of Energy and Mineral Resources	Ministry of Finance

<sup>52</sup> Contoh spesifik di biogas ada di dokumen WWF- Sustainable Energy Finance in Indonesia hal 62

<b>Name of the Fund</b>	DAK (Budget for local governments specific for RE development)	Annual Funds <sup>53</sup>	Green Sukuk
<b>Financing instrument</b>	Regional Budget	Grant	Green Sukuk Retail <sup>54</sup>
<b>Project phase</b>	Initial Phase	Initial Phase	Construction, revitalisation, maintenance
<b>Minimum project size</b>	N/A	N/A	USD 41,262,073 (in 2019), consist of 4,305,470 for financing RE projects in and the rest for refinancing RE projects
<b>Eligibility criteria</b>	N/A	N/A	<ul style="list-style-type: none"> <li>- Adherence to the eligible sectors (<a href="#">link</a> pg. 10)</li> <li>- Eligibility criterias set out in Indonesia’s Green Bond and Green Sukuk Framework: (<a href="#">Link</a>)</li> </ul>
<b>Financing period/term</b>	Throughout Project Cycle	Throughout Project Cycle	5-20 years
<b>Contact details, position of persons for more information</b>	Region-Dependent, main vocal point is the MEMR, Directorate of Renewable Energy and Energy Conservation.	<p>Directorate of Renewable Energy and Energy Conservation, MEMR.</p> <p>Director of Renewable Energy and Energy Conversation, Trois Dilisusendi: <a href="mailto:trois_dilisusendi@yahoo.com">trois_dilisusendi@yahoo.com</a></p>	<p>Directorate General of Budget Financing and Risk Management</p> <p>Phone : (62 - 21) 3516296</p> <p>Website : <a href="http://www.djppr.kemenkeu.go.id">www.djppr.kemenkeu.go.id</a></p> <p>Email : <a href="mailto:webmaster.djppr@kemenkeu.go.id">webmaster.djppr@kemenkeu.go.id</a></p>

<sup>53</sup> The Ministry of Energy and Mineral Resources (ESDM) has launched a bioenergy program through the Special Allocation Fund (DAK) which provides grants to local governments for the construction of POME-to-energy projects. In this program, ESDM provides investment funds for the PLTBg project which will provide electricity to local community project managers during the operational period. Three projects on the island of Sumatra have been developed under the auspices of this program.

<https://www.winrock.org/wp-content/uploads/2016/05/CIRCLE-Handbook-INDO-compressed.pdf>

<sup>54</sup> Brief description document on Green Sukuk: <https://www.djppr.kemenkeu.go.id/page/loadViewer?idViewer=9468&action=download>



## 6 Republic of South Africa

### 6.1 Overview of financing space

South Africa is the world’s 14th largest emitter of greenhouse gases (GHGs). Its CO<sub>2</sub> emissions are principally due to a heavy reliance on coal. The state power utility, ESKOM, accounts for two-fifths of South Africa’s greenhouse-gas emissions. The second largest GHG emitter is SASOL, the oil from coal producer. ESKOM and SASOL combined emit 53% of SA’s greenhouse gases. The emissions from Sasol’s Secunda plant exceed the individual totals of more than 100 countries. It is the world’s biggest single-site emitter at 56.5 million tons of greenhouse gases a year<sup>55</sup>.

In total the energy sector accounts for 80% of the total emissions (RENEMER, 2018), followed by industrial processes at 7%, agriculture at 8% and 2% from the waste sector.

South Africa signed the United Nations Framework Convention on Climate Change (UNFCCC) 1993 as SA’s government recognized the need to transition towards a climate resilient and low carbon economy and society (DEA, 2011a).

The four mitigation interventions that have the largest potential for reducing emissions are energy efficiency, electricity generation from renewables, transport and carbon capture and storage. Due to the energy sector’s contribution to GHS, the focus on national development objectives and climate change mitigation objectives is centred on the country’s energy system.

In this report, we will highlight South Africa’s auction programme; Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) impact to diversifying the electricity generation sector, and a viable programme that launched utility scale biogas projects into South Africa’s national grid. The auction programme technology allocations are informed by the Integrated Resource Plan (IRP) through Section 4 of the Electricity Generation Act No.4 that enables the Minister of Mineral Resources and Energy to determine new electrical energy generation capacity requirements in consultations with National Energy Regulator of South Africa (NERSA) for its concurrence (IPPO, 2020).

South Africa’s base load energy sources are dominated by coal (36 479 MW) with deposits that are exploited at extremely favourable costs; nuclear (1860 MW), gas fired stations (2 409 MW), hydro (600 MW), and Sere wind plant developed and owned by Eskom (100 MW) – all generated and transmitted by the state-owned utility, Eskom, across the country. In addition, the South Africa renewable energy auction programme viz. REIPPPP established in 2011 has successfully procured and connected total of 4 201 MW to the national grid. The contributing technologies are as follows: onshore wind (1 980 MW), solar PV (1 699 MW), CSP (500 MW) and landfill gas (22 MW).

Prior to the REIPPPP, South Africa had the lowest level of private sector investment in renewable energies of BRICS countries (Brazil, Russia, India, China and South Africa). However, South Africa’s solar power generation potential is in the top 1% in the world, and almost a decade after the REIPPPP inception, South Africa ranks amongst the top 10 in utility scale

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<sup>55</sup> Bloomberg Green, <https://www.bloomberg.com/news/features/2020-03-17/south-africa-living-near-the-world-s-biggest-emitting-plant>



solar energy generation. An enabling regulatory environment unlocked the potential for utility scale renewable energy technologies and attracted billions of investments into the country.

The learnings from this program can inform how different financiers may be incentivized to invest into the clean energy technologies beyond the REIPPPP.

### **6.1.1 Private sector**

The financial sector in South Africa is one of the most developed and well-regulated financial sectors in Africa. The sector consists of commercial banks, insurance companies and private equity funds. Most financial institutions are listed on the Johannesburg Stock Exchange (JSE) with a total capitalization of ~ USD 900 billion (Montmasson-Clair, 2013) and highly concentrated with the five largest banks.

South Africa's four largest banks were among the earliest emerging market signatories of the Equator Principles (EP). The Johannesburg Stock Exchange (JSE) is supporting innovation in green finance through the Financial Times Stock Exchange FTSE/JSE Responsible Investment Index series and through new guidance on the issuance of green bonds (SBN, 2019). Currently, the banking sector lacks an action plan from a regulator that will outline the technical guidelines for the sector; to implement performance metrics aligned to the Environmental, Social and Corporate Governance (ESGs) objectives. Although, there are no requirements in terms of calculating and monitoring environmental benefits; the Banking Association of South Africa Association (BASA), which consists of 34 South African and international banks, is currently implementing the United Nations Environment Programme Finance Initiative (UNEPFI) Positive Impact Finance Principles (with a focus on Sustainable Development Goals). This includes the creation of independent data dashboards, to be made publicly available (SBN, 2019). In addition, there are currently no requirements in terms of green finance flows on reporting and disclosures. This presents a critical barrier for projects seeking green finance funding due to lack of established and accessible channels of reporting by the financial institutions.

SA's financial sector has implemented voluntary initiatives towards the national commitment to decarbonising the economy. Nedbank Capital headed a consortium that led to the first institutional green bond issued by Industrial Development Corporation (IDC) in 2012 (SBN, 2019). The bond funds (R 5 billion) were earmarked for energy efficiency industries. Following that, City of Johannesburg in 2014; International Finance Corporation (IFC) in 2015 and the City of Cape Town in 2017 launched subsequent green bonds. Beyond that, the financing landscape has developed through policy enabling frameworks, REIPPPP auction programme and other climate change related government interventions.

Of the total debt and equity on the REIPPPP project cost, 73% of the project cost were sourced locally, dominated by the local commercial banks (46.7%), followed by the Development Finance Institutions (DFIs) (45.7%). The common fund structures within the REIPPPP were project finance and corporate finance arrangements, with one case of finance via corporate bond issuance. The Department of Mineral Resources and Energy (DMRE) with Independent Power Producers Office (IPPO) introduced a Refinancing Initiative to the early bid window projects (1-3.5) due to higher tariffs implemented earlier within the programme due to higher risk perceived with entrance into a new unknown market. Although, this may disrupt the market confidence; the IPPO claims 70% of the IPPs have positively responded to these refi-

financing guidelines. Therefore, we can acknowledge private sector’s willingness to review and adjust financing structures under favourable and long-term policy frameworks.

Table 6-1: Key elements on the financing structure that were essential from a risk perspective to ensure bankability of the REIPPPP utility scale projects (Corkin, 2018; Eberhard et al.,2014)

Elements of the financing structured that attracted debt providers to participate in the programme	Description
<ul style="list-style-type: none"> <li><b>Guaranteed off-take</b></li> </ul>	The power purchase agreement (PPA) obligated Eskom to pay for any power delivered (i.e. generated and delivered by virtue of the generation facility being linked to the state grid)
<ul style="list-style-type: none"> <li><b>Sovereign Guarantee:</b></li> </ul>	The South Africa government, via National Treasury, provided a sovereign guarantee for Eskom’s obligations, thus mitigating political and non-payment risk from the state utility, given Eskom’s deteriorating financial standing
<ul style="list-style-type: none"> <li><b>Comprehensive legal agreements</b></li> </ul>	Part of the legal agreements included step-in rights for debt providers
<ul style="list-style-type: none"> <li><b>Transparency:</b></li> </ul>	The bidding and procurement process was considered transparent and competitive
<ul style="list-style-type: none"> <li><b>Reputable O&amp;M manufacturers</b></li> </ul>	Key to the assessment of debt providers was the quality of the operation and maintenance and equipment suppliers. In many cases, this requirement ensured that only the larger, more well-known manufacturers succeeded in participating, effectively locking out participation by small, medium and micro-enterprises (SMMEs).
<ul style="list-style-type: none"> <li><b>25 Conservative capital structure:</b></li> </ul>	circa 75% debt and 25% equity.
<ul style="list-style-type: none"> <li><b>Conservative operating assumptions:</b></li> </ul>	Most of the debt providers’ base case operating models used P90 (the power generation outcomes in the ninetieth percentile of probability). Furthermore, debt amortization profiles were modelled to be paid off long before the end of the life of the project. This effectively meant that should there be any delay or postponement, for whatever reason, in the project paying off its debt, there would still be a number of years during which time the project would generate revenue, thus allowing the leeway for the debt to still be paid off in full before the project was retired.
<ul style="list-style-type: none"> <li><b>Experienced technical advisors</b></li> </ul>	Eberhard et.al attributes the success of the programme to the availability of sophisticated advisory and project finance capabilities, not only to assist the sponsors in structuring their projects, but also in terms of the actual design of the REIPPPP bidding procedure itself
<ul style="list-style-type: none"> <li><b>High profit margin in the tariff</b></li> </ul>	This was important in the early rounds to attract private investment as well as assure the debt providers that the projects being financed were viable. In the later rounds, competition increased and profit margins for both investors and debt providers were compressed.

The elements listed above in Table 6-1 were crucial to attract the debt providers into South Africa’s untested industry. As the competition increased in the successive rounds, the tariffs were lowered, the manufacturers could now be local small players and the capital structures became more aggressive. In addition, the projects were approved on less conservative operating assumptions<sup>5</sup>. These elements also ensured that Eskom, the single buyer utility, would

honour the 20-year Power Purchase Agreement (PPA) obligations with the IPPs.

### **6.1.2 Development Financial Institutions (DFIs)**

In South Africa, the biogas specific financing options that are available are largely offered by the DFIs such as Development Bank of South Africa (DBSA), IDC, Land Bank of South Africa and Small Enterprise Finance (SEFA). DFIs provide key channels through which government funding reaches local communities and smaller businesses; and are critical in contributing to National Development Plan (NDP) targets which include sustainable development mandates. Although, these institutions provide climate change and/or green economy funding amongst other emerging sectors – biogas specific financing options representation has been very minimal. The investors have appetite for large scale investments with financing conditions that are not suitable for small projects and the initial costs of renewable energy technologies are 3-7 times higher than for conventional fossil fuel generation (CEC, 2006).

It is common for South African DFIs to co-fund projects with an international public funder. The partnership between AFD through SUNREF and IDC financed the first industrial scale biogas plant with electricity generation to be built in South Africa (SUNREF, 2013). The generation capacity is 4.4 MW and generates electricity on a 24/7 basis. The plant has an expected initial life span of 20 years. The financing for such projects usually has green economy, employment and energy efficiency targets that need to be fulfilled by the benefactor; as embedded in the funding agreement.

Outside that, commercial banks and private equity firms are increasingly providing funding for small scale embedded generation (SSEG) installations (GreenCape, 2019). The SSEG (renewable energy systems smaller than 1 MW) market growth could reach a total of 7.5 GW of installed capacity by 2035 – a total available market of R 75 billion (GreenCape, 2020). The exponential growth of this market is driven by above-inflation electricity price rises, decreasing technology costs, enabling policies that no longer requires a generation license application for less than 1 MW systems and innovative finance. This sector is currently dominated by roof top solar PV installations. In 2017, the big commercial banks started offering affordable finance packages for commercial and residential solar PV. The debt largely remains closely tied to strong individual credit scores and existing bank customer relations. The banks' offering includes mechanisms that cover 70%-to-100% of capital costs with a five to ten-year loan repayment period. With using pre-selected EPCs and prudent energy audits; banks ensure that financed projects are designed so that the customer's electricity bill savings generated from the solar installations are greater than the loan repayments. Therefore, generating a positive cash flow. The success and exponential growth of the Energy Services sector can be attributed to the fact that it is a business led industry with entrepreneurs and big businesses as the country's major retailers seeking innovative ways to offset the increasing cost of electricity. Also, there is less red tape in terms of regulatory frameworks and fulfils the businesses' ESG obligations and acquire tax incentives that free up cash flows for other operational costs and activities.

International and bilateral donors are very well represented within the South African financing landscape that support the country's sustainable development efforts. Donors are used to leverage the country's own financial resources and foster partnerships on knowledge and technology transfer; and policy changes (Montmasson-Clair, G, 2013). A successful example this is the REIPPPP. European donors provided ~ R 30 million that helped recruit a team of trans-

action



specialists for the development of the REIPPPP. The REIPPPP was recognised as a very successful renewable energy auction programme within the emerging market, and has successfully connected 3 976 MW of clean electricity generation capacity into the national grid; carbon emission reduction of 38.8 Mton CO<sub>2</sub> (IPPO, 2020) and mobilised, in turn, R 209.7 billion in investments into the country. Investments in renewable energy grew from a few million dollars in 2011 to \$5.7 billion in 2012 and \$4.8 billion in 2013 (Baker, 2015).

International DFIs have established partnerships with different government departments, provinces, municipalities (mainly large metropolitan municipalities) to fulfil similar sustainable development impacts. Some prerequisites of financing from these institutions include availability of matched co-funding from the beneficiary and contributing to climate change mitigation and/or adaptation objectives. Donor funded project are primarily implemented by public sector such as Eskom’s Renewables Support project with the World Bank and eThekweni’s Durban Landfill Gas-To-Electricity Project funded by the World Bank (World Bank, 2004).

In some instances, the private sector financial institutions look to DFIs to provide pre-investment capital to unlock opportunities within the green economy sector, to dilute risk etc. and incubate projects that need additional support at pre-feasibility phases (DEA, 2011b). Within the private financial sector, the majority of the financing options respond to the REIPPPP investment opportunities due to the government guarantees and National Treasury backed 20 year PPA with single buyer, Eskom. Foreign DFIs have administered funds to South African commercial banks to promote energy efficiency and renewable energy; loan agreements dating back as early as 2009. A practical example of a partnership between a foreign DFI and a domestic commercial bank: A loan agreement between FirstRand Bank; one of the South Africa’s big four banks; and EIB was valued at EUR 40m loan (EIB, 2009). The loan financed investments in a range of climate change mitigation activities with a specific focus on industrial cogeneration but projects that would likely support renewable energy schemes, waste or landfill gas for heat and power generation, and energy efficiency installations in residential, public or commercial buildings.

Major international and African-based DFIs that allocate funding resources within the Southern African region appoint a third-party organization such as government department, state owned entities, local DFIs and municipalities and academic institutions to either use the fund for operational purposes or appoint/reward SA based catalytic projects that will achieve the financing requirements. A substantial share of this type of funding is provided through concessional loans than grants. Funding available for targeted sectors such as biogas, waste management, wastewater treatment works and renewable energy will be channelled under the relevant leading government departments; as part of their key deliverables to fulfil the green economy related deliverables; as stated by the national government.

## 6.2 Legislation and policies

Table 6-2: Key strategies, policies and initiatives that provide a mandate for green economy development (DEA, 2012; Deloitte, 2014; Steenkamp, 2016)

Year	Policy	Description	Department
2011/11-2012/13	Industrial Policy Action Plan II	<ul style="list-style-type: none"> <li>Outlines the strategic initiatives to develop green industries</li> </ul>	Department of Trade and Industry and Competition (DTIC)
2008	National Environmental Management Act (107 of 1998) (NEMA)	<ul style="list-style-type: none"> <li>provides for a framework within which other environmental legislation must be interpreted and within which all decision-making regarding the protection of the environment must take place</li> </ul>	Department of Environmental Affairs (DEA)
2008	National Framework for Sustainable Development (NFSD)	<ul style="list-style-type: none"> <li>Outlines South Africa's vision for sustainable development and identifies strategic interventions to transition to a sustainable development path</li> </ul>	South African Government
2010	New Growth Path	<ul style="list-style-type: none"> <li>Identifies the green economy as a key driver for job creation</li> </ul>	Department of Economic Development (DED)
2011	National Climate Change Response Strategy	<ul style="list-style-type: none"> <li>Describes the South Africa's response to climate change including focus on creating jobs in the green economy sectors and on promoting investment in human, natural and capital resources</li> </ul>	South African Government
2011	National Strategy for Sustainable Development (NSSD)	<ul style="list-style-type: none"> <li>A proactive strategy that regards sustainable development as a long-term commitment, which combines environmental protection, social equity and economic efficiency with the vision and values of the country. The NSSD 1 marks the continuation of a national partnership for sustainable development</li> </ul>	Department of Environmental Affairs (DEA)
2011	Green Economy Accord	<ul style="list-style-type: none"> <li>Agreement between government and the private sector, organised labour and civil society, that commits signatories to, among other things, promote green sectors of the economy to create jobs and to green other traditional sectors</li> </ul>	Department of Economic Development (DED)
2011	Integrated Resource Plan	<ul style="list-style-type: none"> <li>The IRP is an electricity infrastructure development plan based on least-cost electricity supply and demand balance, taking into account security of supply and the environment (minimize negative emissions and water usage)</li> <li>The latest plan has allocated a total of 14 GW of onshore wind and 6 GW of solar PV by 2030</li> </ul>	Department of Mineral Resources and Energy (DMRE)
2012	National Development Plan	<ul style="list-style-type: none"> <li>Mainstreams low carbon and climate resilient development</li> </ul>	South African Government

## 6.3 Identifying potential financing options

In South Africa today, biogas has the potential to displace 2.5 GW of grid electricity and boasts 300 bio-digesters of which only 50 are registered commercial biogas plants. The industry is primarily funded by private sector on agriculture and livestock farms, municipal wastewater treatments plants and rural/domestic households. Biogas implementation in South Africa includes reduction of waste entering over-capacitated landfills, clean electricity generation and (for self-consumption or contribution to the national grid), potential fertilizer industry and gas production for domestic/industrial use. The majority of the implemented biogas projects have been largely influenced and supported by international companies due to lack of funding in SA by government, lack of local technology shortages and local maintenance & operations (O&M) skills, (GIZ-SABVIA, 2016).

The approach was informed by the global and local relevance of the financing institutions. In as such, the local DFIs funding is readily available for the local businesses to aid and enable the green economy sector. Following that, commercial banks; although currently considering





biogas as a relatively riskier investment than other renewable energy technologies; are starting to offer renewable energy (including bio-energy) products.



## 6.4 Financing options identified

### 6.4.1 Public sector

Entity name	Name of the Fund	Type of funder	Financing instrument	Stage of development	Size of financing	Financing period	Source of finance	Type of finance	Technology	Biogas specific	Contact details	Website	Other notes
Energy and Environment Partnership (EEP Africa)	-	Development Finance Institution (DFI)	Grant	Pre-feasibility (Project development)	100 000 - 500 000 EUR	< 3 years	Foreign	Green Economy	Unspecified	Biogas specific - yes	071 742 6081	<a href="https://eepafrica.org/">https://eepafrica.org/</a>	
IDC		Development Finance Institution (DFI)	Grant										
Powering Renewable Energy Opportunities (PREO)		Grant funder	Grant	Unspecified	100 000 - 500 000 EUR	Not applicable	Foreign	Climate Change	Renewable Energy	Biogas specific - no	<a href="mailto:contact@preo.org">contact@preo.org</a>	<a href="https://www.preo.org/">https://www.preo.org/</a>	NA
Public Investment Corporation	Isibaya Fund	Development Finance Institution (DFI)	Debt	Construction (Project implementation)	> 2 million EUR	5 - 10 years	Local	General	Waste Management	Biogas specific - no	<a href="mailto:info@pic.gov.za">info@pic.gov.za</a>	<a href="https://isibaya.pic.gov.za">isibaya.pic.gov.za</a>	Funding instruments may comprise of equity, preference shares, mezzanine, debt or a hybrid thereof



Entity name	Name of the Fund	Type of funder	Financing instrument	Stage of development	Size of financing	Financing period	Source of finance	Type of finance	Technology	Biogas specific	Contact details	Website	Other notes
Department of Trade and Industry (dti)	Agro-Processing Support Scheme (APSS)	Grant funder	Hybrid (Debt/Equity)	Operation and Maintenance (Project implementation)	500 000 - 2 million EUR	< 3 years	Local	General	Sustainable Agriculture	Biogas specific - no	<a href="mailto:Ms_Suzan_Chiloane_schiloane@thedti.gov.za">Ms Suzan Chiloane - schiloane@thedti.gov.za</a> <a href="tel:0123941208">012 394 1208</a>	<a href="http://dticshceme">dticshceme</a>	The scheme offers a 20% to a 30% cost-sharing grant to a maximum of R20 million over a two-year investment period
DBSA	Infrastructure Investment Programme for SA (IPPSA) - Project Preparation Fund	Development Finance Institution (DFI)	Grant	Pre-feasibility (Project development)	500 000 - 2 million EUR	Not applicable	Local	General	Renewable Energy	Biogas specific - no	+27 21 300 2222	<a href="mailto:ppinfo@dsba.org">ppinfo@dsba.org</a>	





Entity name	Name of the Fund	Type of funder	Financing instrument	Stage of development	Size of financing	Financing period	Source of finance	Type of finance	Technology	Biogas specific	Contact details	Website	Other notes
DBSA	SADC Project Preparation and Development Facility (PPDF)	Development Finance Institution (DFI)	Grant	Pre-feasibility (Project development)	> 2 million EUR	Not applicable	Local	General	Renewable Energy	Biogas specific - no		<a href="mailto:sadcppdf@dbsa.org">sadcppdf@dbsa.org</a>	A monetary contribution of a minimum of 5% of the total cost of the proposed preparatory activity needs to be from the project owner/sponsor; this amount will exclude any tax related implications. Projects proposed by private sector organisations, and involving the participation of the public sector (Public-Private Partnerships (PPPs) would be eligible for financing under the PPDF on the condition that the applicant has a letter of support from the respective government's representative.



### 6.4.2 Private sector

Entity name	Name of the Fund	Type of funder	Financing instrument	Stage of development	Size of financing	Financing period	Source of finance	Type of finance	Technology	Biogas specific	Contact details	Website	Other notes
Metier Sustainable Capital	Metier Sustainable Capital Fund II	Private equity	Loan	Complete project development	< 100 000 EUR	Not applicable	Local	Climate Change	Renewable Energy	Biogas specific - no		<a href="http://www.metier.co.za/">http://www.metier.co.za/</a>	
GreenFin Financial Services	Alternative Energy Finance	Commercial bank	Loan	Unspecified	< 100 000 EUR	< 3 years	Local	Green Economy	Renewable Energy	Biogas specific - no	<a href="mailto:info@greenfin.co.za">info@greenfin.co.za</a>	<a href="https://greenfin.co.za/">https://greenfin.co.za/</a>	



## 7 Europe and global based support

As the focus of the COVID pandemic begins to shift to reopening economies, investment in climate-friendly strategies can deliver multiple wins<sup>56</sup>. The World Bank’s Climate Change Fund Management Unit has more than \$5 billion in capital initiatives that deliver innovative and scalable climate and environmental action. The purpose of these initiatives is to create partnerships to develop new financial instruments for low-carbon, climate-resilient development, build supportive policy and regulatory environments to help lower the cost of capital and dismantle barriers to projects, and catalyse private sector capital to finance and scale-up climate action.

The World Bank will look to build on relevant experience using results-based financing through programmatic approaches to finance biogas projects. This will be done through opportunities to scale-up business models tested with a sectoral approach where substantial reforms in the country’s institutional framework are required to transform the sector. Collaboration between the World Bank and countries on making these reforms and securing the necessary financial support needed to overcome some of the existing barriers for the growth of the biogas market as part of a resilient economic recovery.

In addition, the European Investment Bank (EIB), one of the world’s largest multinational lenders, has invested in a few projects in developing countries covering climate action<sup>57</sup>. EIB operates both inside and outside the EU, but the majority of EIB lending is attributed to projects in EU Member States. Outside the EU, the EIB’s international financial operations help address imbalances and establish closer collaborative partnerships, stimulate a stable and open world economy and enable the cross-pollination of expertise and technologies<sup>58</sup>.

## 8 Summary/Conclusion

Majority of the financing options identified for Argentina, Ethiopia, Ghana, Indonesia and South Africa provide support and opportunities to biogas projects that have reached financial close, i.e. feasibility studies completes and entering construction and commissioning phase of the project. There are very few financing options available for the completion of scoping, pre-feasibility and feasibility study phases of a biogas project.

The biogas financing options available in South Africa is through the DFIs; DFIs as government owned entities have relatively lowered risk exposure to biogas failure, and in addition, the funding requirements play a key role in coordinating key sector development targets through the catalytic projects that are awarded funding. DFIs can play a bigger role to developing fi-

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<sup>56</sup><https://world-biogas-summit.com/the-world-bank-biogas-reopening-economies-post-covid/?bcn=YmNucz1qUXg7YmNubD0xNTQ1NjtiY253PTM1NDtiY252PTQ7YmNuPWxpdmU=>

<sup>57</sup> <https://www.eib.org/en/projects/regions/ala/index.htm>

<sup>58</sup> Angela Sainz – Communication manager of European Biogas Association

financing solutions with potentially blended components provided by other domestic DFIs, continental and international DFIs. These solutions can include infrastructure funds, liquidity facilities, blended finance platforms or subnational financing models.

Biogas projects are aligned with SDG including climate change – we have observed that COVID-19 has also shifted the narrative around sustainable finance, with more investors increasingly prioritizing social and environmental issues in their investment strategies.

Institutional investors sector in South Africa, in collaboration with government and DFIs can play a bigger role to advance the infrastructural sector and support the growth of the biogas sector. The institutional investors sector has recently been engaged with by the President, in the country's recent infrastructure plan (R 2.3 trillion). President Ramaphosa informed asset managers and banks that the plan requires R1.5 trillion investments from the Private Sector. The Private Sector has responded favourably to support water, sanitation, energy, agriculture and agri-processing projects on a commercial risk-return basis which presents an opportunity for the pension and insurance funds to invest in infrastructure projects.

Although, landfill gas and biomass are less constrained by energy availability and typically offers higher load factors. These technologies cost: R1.11/kWh for landfill gas, R1.65/kWh for biomass; as compared to R0.87/kWh for onshore wind and R1.17/kWh for solar PV, when selling to Eskom via the REIPPPP programme. As the auction programme progressed through more bid windows, solar PV and onshore wind has recorded declined tariffs to R0.62/kWh (accounting to competitiveness, financing options available at lowered cost and technology upgrades) and biomass has remained at R1.61/kWh.

Therefore, the biogas financing options may continue to be relatively limited or more expensive compared to other renewable energy technologies. This has a direct effect to the electricity cost charged to off-takers, whether Eskom or municipalities. Therefore, the viability of biogas project against SSEG solar PV technology. In South Africa, SSEG solar PV installations are projected to grow to a saturation point of 500MWp per annum, with total market reaching 7.5 GW installed capacity by 2035, total available market of R75 billion.

Within Ethiopia, one the best options for future financing options for biogas projects in Ethiopia is Development Bank of Ethiopia. Considering the amount of money required for large-scale Biogas projects, the project financing options is an ideal solution.

In addition to Development Bank of Ethiopia, private and government banks in Ethiopia are all potential sources of finance for biogas projects. In addition, international organizations play a significant role in developing renewable energy sectors in Ethiopia. Ethiopia currently receives funds from several international organizations as a loan or in-kind and cash towards promoting renewable energy technologies in rural communities in Ethiopia. Thus, these international organizations are a great potential in financing biogas projects as well in Ethiopia. Finally, to increase access to energy the government of Ethiopia is promoting renewable energy projects through both national and international bids. These bids are attractive for biogas projects that address the lack of access to electricity and large feedstock potential due to poor waste management within Ethiopia. Thus, biogas may potentially be financed through the annual budget of the government.

In Ghana, the following conclusions can be made when identifying financing options for biogas projects within Ghana.

- Ghana has put in place the necessary regulations, legislation and policies to spearhead the development and deployment of renewable energy into the national energy mix.
- However, financing has been the major impediment to the achievement set by government with majority of the financing of renewable energy projects being undertaken or supported by development partners with partial support from government usually in the form of subsidies and import duties granted to companies.

Private organisations interested in renewable energy development seek financial support through both local and foreign commercial banks. Unfortunately, the high-risk level in the biogas sector impedes commercial banks to lend to investors.

Argentina highlight limited options due to the impact of the COVID-19 pandemic and the principal macroeconomic problems. Financing institutions are hesitant to engage with projects in developing markets that carry high risks. This has resulted in the financing sector within Argentina becoming quite stagnant with regards to investing into the biogas market.

The opportunities available to the biogas market within Indonesia are encouraging due to the supportive legislation. Accessing these opportunities require sharing of knowledge and skills in understanding the financial risks for biogas projects as the options specific to biogas projects are limited.

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# Digital global Biogas Cooperation

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## Review

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