

Renewable Energy IPPs in SSA – Effective use of Blended Finance

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ABSTRACT

Blended finance (“BF”) is a form of structuring finance which involves using foreign aid to leverage commercial funding to a project. The topic is generally under researched, despite its increased importance in development finance and as a tool in attaining the United Nations Sustainable Development Goals. This research set out to investigate if BF was being applied in a justified manner in private sector renewable energy (“RE”) projects in Sub-Saharan Africa (“SSA”). The first two sub-questions looked at the criteria considered when qualifying projects for BF, and the factors influencing terms offered. The final sub-question was to seek operational evidence of appropriate BF usage.

Data was collected through a series of semi-structured interviews with Donors, Development Finance Institutions (“DFIs”) and research institutions and analyzed using an inductive thematic approach. A descriptive case study was used to answer the final sub-question, and involved interviews with key individuals involved with the BF approval process in the selected project.

The results suggest that BF is being applied in a justified manner. Sub-question one found that there is a difference in the criteria considered by Donors and DFIs when offering BF. Donor principles appear to be broader, due to their limited engagement on individual projects and delegated investment authority to DFIs. Having a development rationale and economic case for the use of BF was a prominent theme with DFIs and Donors. Factors influencing the BF terms offered to projects were difficult to extract due to the sensitive nature of the topic. Four factors did emerge, with minimizing concessionality being an overarching theme. For the final sub-question, the Mocuba Solar project was used as a case study and provided much needed evidence on the detailed processes followed in assessing the projects need for BF and how terms were derived.

This research sheds light on the project level use of BF in the SSA RE IPP context and identifies areas where improvements can be made. Having more BF case studies and an agreed definition of BF for reporting purposes were recommendations to ensure BF is applied effectively.

Keywords: blended finance; renewable energy; private sector funding; concessional terms

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GLOSSARY OF TERMS

Blended Finance	A structuring mechanism whereby the use of concessional instruments (provided by public or private sources) are used to mobilize commercial finance (from public or private sources) that would not otherwise be involved in a transaction.
Concessionality	The extent to which an instruments terms are below market rates

LIST OF ACRONYMS AND ABBREVIATIONS

DAC	Development Assistance Committee
DFI	Development Finance Institution
EaIF	Emerging Africa Infrastructure Fund (member of PIDG)
FIT	Feed in Tariff
GDP	Gross Domestic Produce
GHG	Green House Gas
IDA	International Development Association
IFC	International Finance Corporation (part of World Bank Group)
IFI	Infrastructure Financing Institution
IPP	Independent Power Producer
OECD	Organization for Economic Co-operation and Development
MDB	Multilateral Development Bank
PPA	Power Purchase Agreement
PPP	Public Private Partnership
REIPPP	Renewable Energy Independent Power Procurement Program
Solar PV	Solar Photovoltaic
SSA	Sub-Saharan Africa
VGF	Viability Gap Funding
mn	Million
bn	Billion
tn	Trillion

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Renewable energy has been around for a number of years and is seen to be an ideal for many countries attaining clean, sustainable energy. Technologies used include Solar, Wind, Hydro and Biomass, with each technology having sub-categories yielding different costs and productivity levels. Tariffs charged for renewable energy (RE) projects globally have reached that of conventional power sources. Solar PV is a very good example of this, as equipment prices have fallen roughly 80% since 2009 (Chestney, 2017) due to Chinese and Indian technology advancements. In the past two years we have seen projects being awarded at record low tariffs around the world, including Africa. These large-scale projects come at a significant capital cost, despite declining tariffs and equipment prices. Independent Power Producers (IPPs) are a good attempt to bring such projects to the market faster, as the private sector has proven in developed and developing countries, including across Africa.

Energy generation is at the heart of environmental awareness, due to our historic reliance on fossil fuels, resulting in the energy sector being responsible for two thirds of all GHG emissions (IEA, 2015). Governments and industry players have woken up to the reality of climate change and the need to minimize greenhouse gas emissions and move toward renewable energy sources (Donastord et al, 2017). The movement toward clean sources of energy and reducing our carbon footprint is not only good for the environment, but benefits communities through a better quality of life. National and international energy and emissions policy goals can be achieved in developing countries due to the rapidly declining cost of RE, which has brought the cost of RE power as low as traditional sources (Donastord et al, 2017). South Africa provides a good example, where successive RE auctions brought the cost of procuring power from Wind and Solar PV sources is now lower than the power utilities average cost of supply and even lower than new build coal power stations (Eberhard & Naude, 2017). Developed countries such as Denmark, Norway, Iceland and Portugal have even proven that RE can provide 100% of a country's energy demand (Coren, 2018).

The potential for RE in Africa is extremely high across all major renewable technologies, with Solar having the potential of around 10 Terawatts and most countries in the region having more than 300 days of sunlight, compared to half the number of days in Germany (UNEP, 2017). A positive trend being seen is the decreasing total cost of solar projects across Africa, with recent data indicating projects being procured in the sub US\$2/Watt range, suggesting that with the right frameworks, access to finance and competition in the market, utility scale Solar PV can reach across Africa (IRENA, 2016). Furthermore, with tax and depreciation benefits being brought into policies, this favors well for RE on the continent as an incentive for developers to invest (Fitzsimons & van der Merwe, 2018). Despite these advancements, RE projects may end up being more expensive than traditional energy sources (such as coal) in most markets, so long as their benefits in the form of externalities (lower GHG emissions) are not internalized and reflected in overall costs (Hussain et al, 2013).

Funding of Renewable Energy Projects

There are two main sources of funding for RE projects globally, namely the public and private sectors. Each has a role to play in the development of RE in both developed and developing markets. RE is a class of assets which has been predominantly financed by the private sector, with the public sector responsible for creating the enabling environment to allow private sector projects to thrive. Developed markets have demonstrated this well, with most new projects being owned by the private sector, with commercial financing and competitively low tariffs.

The case in developing countries such as Africa is similar in that most grid connected utility size RE plants are owned and funded through the private sector. The difference is that the cost of funding (both debt and equity) is significantly higher due to the higher level of risk on the continent. Risks include untested markets, weak macroeconomic indicators, lack of government institutional capacity, weak local capital markets, off-taker bankability issues and wide spread corruption. So long as these risks are not addressed, RE projects will continue to be unbankable, or procured at tariffs which countries are not able to recoup through electricity sales.

Therefore, funding and assistance from DFIs with the mandate of public and private sector development, as well as mobilization of additional funding have been the largest players in RE development in Africa. DFIs can achieve project bankability twofold: firstly, by working with governments to develop frameworks to allow for effective risk sharing between the public and

private sectors. This is usually in the form of structured procurement programs which give developers and lenders comfort. These are funded through upfront capacity building and technical assistance grants from governments of developed countries or aid organizations. Secondly, DFIs aim to attract investment from commercial lenders by providing funding themselves at commercial terms. This in turn de-risks projects over time as evidence of project bankability creates a ripple effect for future projects in a country. A good example of this is the successful RE IPP program in South Africa which since 2012 has had 4 bidding rounds under a RE auction process, resulting in significant local commercial bank appetite. DFI's (international and domestic) now play a limited role in traditional Solar and Wind RE procurement in SA, and focus more on riskier RE technologies such as Solar CSP where local commercial banks need to be crowded in.

A Boston University Study (2016) found that Chinese development banks have provided as much energy finance to foreign governments as the western MDBs have combined (Gallagher & Kamal, 2016). Recent examples of Chinese financing of RE in Africa include \$2bn provided by ICBC and China EXIM to fund the 750 Megawatt (MW) Kafue Gorge Lower Hydro Project in Zambia (Nyati, 2018). African governments appear to be very quick to take on Chinese debt over western funding as China doesn't require their recipients to follow strict policies (such as those imposed by western MDBs), and their turnaround time for processing loans is much faster (van Eyssen & Welle, 2018). The IMF has also raised concern around lending to African countries in general, as over 40% of low income countries in the region are either at a high risk of debt distress, or already in debt distress (IMF, 2018).

Blended Finance

Although no single formal definition exists, blended finance (BF) is a form of structuring finance which involves using foreign aid/donor/philanthropic funds to leverage/mobilize commercial funding to a project. This essentially maximizes the synergies that both public and private sector players can offer to unlock high impact investments (Zappia & Stodiek, 2018). Advocated by both regional and international DFIs, as well many governments, BF is one of the hottest topics surrounding climate finance globally in recent years. The 2015 International Conference on Financing for Development held in Addis Ababa, Ethiopia, tabled BF to be one of the key tools in unlocking more development capital. This tied in with an earlier development committee discussion note titled "From Billions to Trillions: Transforming Development Finance" authored

by a committee including AfDB, the IMF and WBG. BF is expected to be an important tool to mobilize the estimated \$2.5tn annual shortfall in funding required to meet the 2030 SDGs.

Products used to leverage these funds include grants, guarantees, seed equity, first loss loan tranches, subordinated debt and concessional loans (offered at more favorable than market terms, i.e. below market interest rates or extended repayment periods). The use of these instruments comes with the intention of supporting commercially sustainable, high development impact projects, by effectively reducing their overall project cost and allowing private investors to realize their risk adjusted rates of return.

Helms (2018) refers to these instruments as the ‘modern tools’ to drive economic growth and development by the private sector. Mobilizing funds from the private sector is not simple and having a track record in the space is a big success factor (Convergence, 2018). As an example, the IFC, which is one of the largest providers of BF globally has grown their blended finance envelope from \$40mn to \$3.5bn in a decade (Helms, 2018). BF trends indicate that over \$100bn has been mobilized to date across various sectors and regions, with the largest portion on this (42%) going to SSA (Convergence, 2018).

Helms criticises DFIs as trying to push transactions and get projects rolling, rather than working toward systematic change needed, which Donors are more concerned about. This can be linked to the views shared by several professionals working in the industry who feel that BF should be accompanied by sector reforms to truly be effective. There lies some middle ground in this conundrum, especially taking Donors increased scrutiny regarding the impact and use of their funds. Furthermore, careful monitoring of blending is important as using more than necessary levels of concessional funds gives rise to the risk of moral hazard through subsidizing private sector returns unduly.

1.2 Problem Statement

The use of foreign grants/concessional products to leverage other finance is becoming increasingly more prevalent in RE projects across SSA, as governments look to the private sector to find solutions to address power shortages. The issue faced is that the use of such aid funding is not

sustainable on an ongoing basis. Donor funds are expected to be a kick starter for investment and not a sustainable source of funding for projects. Furthermore, many IFI's won't provide grant funding to the private sector as it undermines the sustainability of markets (DFI Working Group, 2013).

There is a risk of crowding out private capital with non-commercially driven terms, and eventually distorting the market in an industry or region. The unjustified use of BF, such as supporting dead-end projects is a waste of scarce aid funding and can send incorrect signals to the market (Sierra-Escalante, 2016). Furthermore, the use of more favorable than market instruments can artificially increase private sector equity returns and not pass on benefits to the public (through lower user end tariffs).

There is a gap in the current research around understanding the application of BF at the project level, resulting in the need to investigate what drives this decision-making process. When considering the application of BF, attention needs to be placed on the qualifying criteria required and factors influencing the level of concessionality in projects. The literature points to general guiding principles which are agreed by several DFIs, however not much is known about what practices are applied by DFIs and Donors during project level approvals.

The researcher had the option of selecting a few countries to study in SSA as well as specific RE technologies. However, the benefit of doing a project level analysis is that it captures a multitude of decision making criteria which should make provision for country and technology specific nuances. Therefore, the research covered all SSA countries (irrespective of income level) and all RE technologies. Lastly, the research focused on IPPs since this is the preferred framework for energy procurement in the region and has been successful in mobilizing private sector capital.

1.3 Purpose and Significance of the Research

The purpose of this study is to provide insight into the project level application of BF in SSA RE IPP projects. This would contribute to the current body of work which provides high level BF principles to be applied across various sectors and regions globally. The research is aimed at

benefitting policy makers and BF practitioners to critically analyze their operations in the SSA RE space and further refine decision making processes to optimize BF usage.

With decreasing aid budgets and the reliance SSA has on aid funding, research in this area is also important in determining the available sources of finance for the region's future growth. Scrutinizing the use of aid in private sector projects will furthermore push the market to come up with other innovative solutions to de-risk projects, resulting in lower reliance on Donor funding over time and bridging the gap toward commercially viable financing terms.

1.4 Research Questions and Objectives

The main research question for this study is: Is blended finance applied in a justified manner in RE IPP projects in SSA?

Sub Questions:

- What criteria are considered when looking to offer blended finance to RE IPP projects in SSA?
- How are the grant/concessional terms determined when blended finance is offered to RE IPP projects in SSA?
- Is there evidence from a recently closed RE IPP project in SSA to demonstrate justified application of blended finance, with appropriate grant/concessional terms?

Research Objectives:

- To understand the criteria which are considered when deciding to offer blended finance to RE IPP projects in SSA
- To investigate how the grant/concessional terms offered to RE IPP projects in SSA are determined
- To determine if a recently closed RE IPP project in SSA demonstrates justified application of blended finance, at appropriate terms

1.5 Research Assumptions and Ethics

This research focused on private sector grid connected RE projects in SSA and excluded non-RE projects as well as public sector and off grid projects. Furthermore, the projects considered were utility sized and not small scale. Utility sized projects are not universally defined and therefore the researcher decided to look at projects greater than 20MW.

The results of this study were driven by the findings from the respondents to this research. Significant time was taken to map out and identify the correct institutions who work with private sector RE projects in SSA, with a focus on ensuring interviews were secured with the largest players who are most representative of the market. Many DFI's and Donors were screened out of the study based on their limited exposure to SSA and greater focus on other developing countries.

This research was based on the assertion that not much is known about the application of BF in individual projects. Furthermore, the use of blended finance needs to be carefully managed and kept to a minimum in order to avoid market distortion and the support of projects which are not commercially viable or have a justifiable development impact. This assumption also talks to the section in the literature on optimizing the use of aid.

The terms grants/foreign aid and ODA are used interchangeably to refer to funds provided by donors and philanthropists. Furthermore, the study assumed that these funds are a limited resource and need to be managed in a justified manner to ensure their effective use.

The definition adopted in this research for blended finance was quite broad and encompasses upfront technical assistance grants to pay for upfront costs that would otherwise need to be funded by the project itself. The definition also includes guarantees, concessional loans, first loss loans and early stage sweat equity. These were included as the assumption is that these instruments include some form of a grant element (in line with research by Larrea (2016)) as these products are assuming more risk and priced at more favorable than market terms (if not free of charge).

To ensure respondents were completely open to speak freely about the practices of their organizations, the respondent's names and organizations names were kept completely anonymous in this report. Detailed records of the interviews and respondent's details are available and can be provided if respondents agree to share this information on a bilateral basis.

CHAPTER 2: LITERATURE REVIEW

2.1 Overview

This review of literature was designed in a funnel approach, where issues surrounding the research area are discussed, whilst refining the discussion and arriving at a gap in the research. The researcher looks at a range of issues challenging clean energy procurement in SSA and eventually how foreign aid is being used as a solution to mobilize additional funding.

The review starts off by looking at some stylized facts around energy in SSA and discusses the literature around the RE drive considering Africa's abundant renewable resources. Thereafter the researcher looks at the risks faced when developing RE projects and why these appear to be much higher in SSA. This introduces the issue of higher cost of capital in the region. The next area assesses what financing options SSA has available and what combination is best. A significant review is done on private sector finance and foreign aid as these are seen to be the key ingredients in unlocking further capital on the continent. Lastly, the researcher looks at how aid is currently being used to mobilize private sector finance through blended finance, and the issues which require us to scrutinize its use.

2.2 Energy in SSA – Stylized Facts

Energy and Growth

Energy is one of the key ingredients to unlocking development in SSA. Many social, economic and infrastructure development plans are contingent on having power available in the region. The electrification rate for Africa is around 42%, with SSA as low as 31% (Proparco, 2017), indicating that the energy sector is severely underdeveloped in the region.

Infrastructure underpins every economy and often separates thriving economies from struggling ones (Jordan-Tank, 2017). Infrastructure investments have the effect of lowering transaction costs and increasing business confidence, making trade easier and economic objectives more attainable (Deloitte, 2017). The lack of energy infrastructure has limited the economic opportunities for nearly 620 million Africans and created health risks by using alternate energy sources (IEA, 2014).

Sy and Copley (2017) describe the need for reliable sources of electricity to improve the quality of people's lives and increase human capital. The economic growth experienced on the continent since 2000 ties in with the 45% increase in energy consumption over the period (ISPY, 2018). The United Nations SDG's regard addressing the energy needs of all people as a fundamental objective to achieving economic and human development (SDG 7).

The CDC (2016) found that energy has a direct positive correlation with economic growth. This is as energy is either a facilitator or used directly in achieving economic growth across the world. Leading on from this, they also found that unreliable electricity supply is a key constraint to businesses across SSA. Basic services are also heavily impacted, with an estimated 58% of healthcare facilities in the region not having access to electricity at all (AfDB, 2014). CDC also concluded that African countries lose an estimated 1-2% of GDP annually due to power outages.

Energy Mix

SSA has an array of energy resources which are sufficient for electrifying the continent but lacks overall energy supply. Historically the region has depended heavily on thermal and hydro baseload power sources. The literature on the need to move away from thermal sources is clear, as they are the largest contributors to GHG emissions globally. Although hydropower is clean and in abundance on the continent (c.20% of SSA generation), the impacts of climate change could severely impact the performance of hydro plants (Cartwright, 2015). The Kariba Dam provides a recent example of this, with Zambia's power generation sharply declining in 2015-2016 due to drought conditions and an over reliance on hydro power in the country.

RE is also poised to play an important role in the fourth industrial revolution. Africa stands to grow the most through lower energy generation costs which can spur development in the poorest of regions and increase employment during construction and operation of these assets. Including RE into the energy mix in SSA is vital as these energy alternatives require a short construction time, have minimal running costs and do not require extensive technical expertise to run. Furthermore, compared to traditional thermal power sources, RE provides more social and economic development due to their smaller scale and ability to run independently from a control center (ISPY, 2018). The ability to scale RE plants in remote areas, connected to distributed energy mini

grids is important, as only seven countries in SSA have grid access rates greater than 50%, the rest of which are below 20% (Castellano, 2015).

One of the major disadvantages of RE is the inability to use it as a baseload source of power during times of need. However, this is where traditional thermal or hydro sources of power could supplement RE usage. As technologies progress and become more affordable, the ability to add storage solutions to RE plants is expected to scale up. Evidence of this has already been seen in countries such as Australia which have made use of Tesla's battery storage addition to the Hornsdale Wind Farm. South Africa has also recently taken steps, through World Bank funding, to implement a distributed energy storage program.

Power Utility Models

Globally, the power utility industry has 4 basic models, namely: a monopoly; single buyer; wholesale competition; and retail competition (Eberhard, 2000) (See *Appendix A* for differences). Each model moves progressively away from a monopolistic state-owned utility, toward breaking up the functions of generation, transmission and distribution, thereby increasing efficiencies and competition. The single buyer model has been favored by many countries due to the strategic control it gives to government, as well as the simple structure for electricity tariff regulations (Lovei, 2000).

As early as the 1990's power utilities in several African countries started opening their doors to PPPs and IPPs, following the path of developed nations at the time such as the United States. Cote d'Ivoire was one of the first countries in Africa to welcome horizontal integration of generation by contracting a greenfield IPP in 1994 (Eberhart & Gatwick, 2010) – many other SSA countries have followed since. The power utility model in many countries across SSA has thus moved from the pure monopolistic model to one of a single buyer. Regional power pools have also been a step toward improving power dynamics between countries, with 4 regional power pools currently in operation, and the Southern African Power Pool being the most advanced (Scott, 2016). Countries with plans for oversupply, and those facing power shortages will rely on such networks to optimize countries supply/demand flows. As it stands many countries in the region still have the bulk of

generation controlled by government owned power utilities, with IPPs and PPPs supplementing generation.

The monopolistic and single buyer models come with heavy criticism, especially in developing countries with high levels of corruption and weak payment discipline (Lovei, 2000). This is as government often intervenes to reallocate funds to priority projects which are often politically motivated. Furthermore, in countries with high corruption rates, the temptation to loot utility coffers is high. This further supports Lovei's argument that African utilities should take on the higher short-term costs to allow generator-customer bilateral agreements and shift toward the wholesale competition model. Although there is a long way to go to restructure the models under which African electricity utilities run, the current push to improve the enabling environment for the upscale of IPPs is a good starting point.

This section highlights the importance of energy infrastructure in the SSA context as it is a key driver of growth in the region. There's a need to diversify the power mix across SSA, with RE being very well placed due to its scalability, affordability, clean nature, and the abundance of renewable resources in Africa. Lastly, with the current single buyer power utility models in SSA, the region is still opening up to PPPs which can ease the burden of generation from the government.

2.3 Risk faced – is at all just perceived?

2.3.1 Risks and Return

The equity returns from investing in developed countries power projects such as Europe are extremely low. Therefore, developers are looking toward countries in Africa for higher returns. However, with higher returns come higher risk levels. Tweed (2016) shares these views. Her analysis indicates that return levels in Europe are roughly 4%, whereas returns on power projects in Africa are around 10% (see *Appendix B*).

Risks are an important factor for all parties to a project and influences investment behavior (van der Kuijp, 2017). Some of the key risks faced in developing infrastructure projects in the region are:

- **Country / Macro Risk:** Macroeconomic stability in most African countries has been volatile. Countries that are commodity driven or rely heavily on donor funds have been severely hit economically as much of their growth depends on factors out of their control. Sovereign credit ratings are weak across most African countries and provide a good indication of a country's economic stability. Foreign currency availability has also been a pressing issue, as many African countries have limited forex supplies, and fluctuating local currency exchange rates. Mozambique is a recent example of this.
- **Political Risk:** This refers to the political structures and stability within a country. Several African countries have had issues with political regimes and electoral processes, causing concern for investors (Crouzel, 2014). Managing these risks is where DFIs and ECAs are most important, as they give comfort to investors that if a situation were to arise, these institutions would help facilitate a resolution with local government entities (Kjorstad, 2016). According to the BMI political risk index (2018), most countries in SSA fall below the global average on the short term political risk index (see *Appendix C*), indicating that this is a real risk in Africa.
- **Legal / Regulatory risk:** This refers to the law of the land and frameworks that are in place to legally protect investors in a country. The strength of the investment climate in a country was found to be positively correlated with decreasing investment risk (Aykut, 2018). Many countries do not have the capacity to develop investment programs and transparent procurement processes to give comfort to investors and need assistance with this. The lack of an adequate ecosystem and necessary local skills have made the development process for infrastructure projects in Africa that much more difficult.
- **Counterparty risk:** This refers to the reliance investors must take that the parties to an investment will be able to deliver on their obligations and remain committed to the project. An important party to power projects is the local power utility (off-taker). Investors face the risk that the power utility might default on payment obligations for various reasons. In most instances the utilities financial situation is quite weak and government guarantees would be required to stand behind their obligations. Power utilities in SSA are a good example as most

are struggling and not credit-worthy (Eberhard & Shkaratan, 2012). Since SSA is the key region of Africa in dire need of additional power, this risk is very much real.

- **Construction and Completion Risk:** This refers to the risk that construction may take longer than expected, or that approvals may be delayed, resulting in the project stalling and increasing in cost. With 90% of projects greater than \$1bn in the region being over budget or delayed, this is a significant risk (Deloitte, 2017). A survey undertaken by Papaconstantinou (2016) of various parties to global infrastructure projects confirms these risks. The responses show that delays during the construction phase and attaining final approvals/permits during the completion phase are the greatest factors contributing to these risks (see *Appendix D*). This would be amplified in Africa where developers limited on the ground experience in the country could lead to unexpected hurdles during construction. Timing for permits and approvals by government entities, internal client decision making processes and finalizing commercial agreements also tend to take much longer than anticipated (PWC, 2014). For example, civil unrest regarding land acquisition rights eventually lead to the Kinangop Wind Farm in Kenya being terminated (Kamau, 2018).

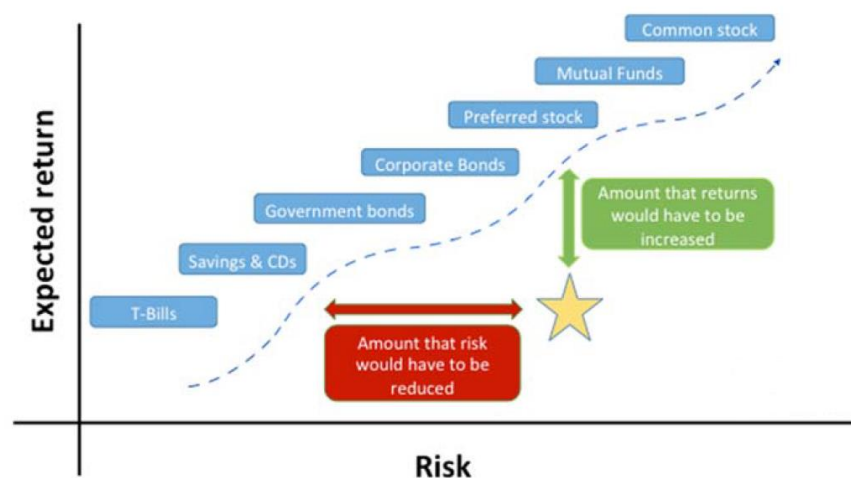
2.3.2 Perceived vs Actual risks

Looking at the perceived vs actual risk in African investments is important as high returns emerge from the difference between them. Two factors that explain this difference are: i) The perception that Africa is risky, (evidence from Haque et al (2000) found that risk ratings for African countries were lower than fundamentals suggest), and ii) neighboring country risk allocation due to limited on the ground knowledge of a country (Asiedu, 2002). However, a well-designed regulatory regime and legal framework can reduce risk perceptions and reduce the need for guarantees as risk mitigation tools (Turkson, 2000). Additionally, experiences and lessons learnt by investors in one project can be carried over and reduce the perceived risk in subsequent investments (van der Kuijp, 2017).

Perceived risk by investors results in projects shifting away from the investors efficient frontier of actual risk vs return combinations (Barder & Talbot, 2015). This shift needs to be corrected by a reduction in risk or an increase in returns to allow the investor to come back to the efficient frontier curve. This is depicted in *Figure 1* below and can be likened to the theory of systematic

(undiversifiable) and unsystematic (diversifiable) risk in portfolios of investments. Since the task of expanding infrastructure rests in the hands of the government (public sector), mobilizing private sector funds requires the public sector to increase returns for private investors, or decrease the perceived risk (Kharas & McArthur, 2014).

Figure 1: Risk-return relationship and the efficient frontier (Barder & Talbot, 2015)



2.3.3 Risk Mitigation Products

Risk mitigation is a way in which developers can attract finance with a lower cost, which can eventually lead to lower tariffs (UNEP, 2016). Products offered include guarantees, first loss tranche's, political risk insurance etc. and usually come at a premium to what similar cover would cost in developed countries. Liquidity is usually scarce if no form of risk mitigation is available or ends up being priced in by financiers through higher interest rate margins or equity returns (UNEP, 2016). Low tariffs on their own are also regarded as a default risk mitigants, as governments are more likely to honor long term projects which are relatively cheaper than others.

DFI involvement also plays an important role in risk mitigation. Not only do they provide finance (equity or loans) themselves and through mobilization, but many provide risk mitigation products such as guarantees and insurance (Eberhard, Gatwick, Morella, & Antmann, 2017). Eberhard et al. also highlight that DFI presence in a transaction and their ability to engage with host governments provides comfort to other investors that there's an extra line of defense if issues arise.

Grants are a good way to address perceived risk and to prove project concept/viability for high impact projects, by providing the right incentives for investors (Keeler, 2017). Perceived risk is high since such projects are usually the first in a region where there are many unknowns. However, Keeler also found that continuous use of grants in projects can become unsustainable where actual risks are being covered rather than perceived risks.

The above articulates that the cost of capital in Africa is high due to several significant risk factors. Life cycle also plays a role as assets are effectively de-risked to an extent post construction and completion is achieved. Managing these risks in a systematic manner and providing protective mechanisms is a way to effectively decrease the cost of capital. The long-term financing needs also exposes capital for extended periods, increasing cost of capital requirements.

2.4 Financing Options – what’s available for Africa?

With a financial close success rate for infrastructure projects of only 20% in Africa, access to finance is difficult, and quite expensive when available (Danso & Samuels, 2017). A survey carried out by Danso and Samuels within their research found that the cost of developing infrastructure projects in Africa was in fact the highest amongst all regions. The impact of this increased cost is eventually passed on to end users through higher tariffs as part of the user pay principle (Ismail et al, 2014).

Furthermore, large energy projects are needed to address the energy shortage in the region, since this is the most cost-effective way of generating power (Arvantis, 2013). This in turn means that project costs are quite high, and projects would require significant external finance. A survey by PwC (2014) agrees with this view. The survey covered power sector issues in Africa and involved interviewing various players in the African power market. Another key finding of the survey was that 94% of respondents believe that local liquidity to finance such power projects would not be possible. This means that international DFIs such as the World Bank/African Development Bank would need to mobilize additional funds for such projects.

As mentioned above, DFI’s are an important player in infrastructure development globally. Developing countries have a great reliance on them as they are at the forefront of risk mitigation

and mobilization of funding (Deloitte, 2017). The presence of DFI's in a transaction also provides leverage and direct engagement with governments which is critical to ensure that agreements are upheld should a project face any issues (Okosi, 2017). However, Attrige (2018) argues that DFI's can do a lot more and increase their risk appetite which is usually kept low due to the need to maintain AAA credit ratings and stay profitable.

Across Africa, governments (which include foreign grant funding) are the largest funders of infrastructure projects (35%), followed by the private sector (20%) and DFI's (17.5%) (Deloitte, 2017). This highlights the importance of these 3 sources of funding but does not give meaningful information into the effectiveness of each of these funding sources. It should also be noted that these figures represent all infrastructure assets, including energy, transport, real estate, and oil and gas.

2.4.1 Public Sector Role

The government (through the public sector) ultimately holds the responsibility to ensure that public services such as infrastructure for healthcare, roads and energy are provided (Spiegel, 2018). Griffith-Jones and Kollatz (2015) found that financing of these infrastructure assets historically come from public budgets, which included large grants from developed countries, and that post the 2008 financial crisis much of these grants started to disappear. This in turn left limited public funds for development in developing countries, and highlights that public funding is not at a stable state. Meeting the high financing needs of infrastructure projects is the main concern, which July (2014) estimates only half of which can be provided by government and donor contributions combined.

The view is shared by (Ahmad, 2014) who indicates that cross border cash flows are short term, volatile and not suited for the long-term needs of infrastructure assets. He additionally focusses on two areas the public sector need to address, namely better decisions around taking on debt, and improved domestic resource mobilization (tax collection).

The views above add to the fact that the public-sector finance in African countries is not developed enough to handle infrastructure projects in a meaningful and cost-effective way. The sole reliance on grants holds countries infrastructure plans hostage to the cyclical nature of other regions and places little to no faith in the countries own ability to mobilize funding.

2.4.2 Private Sector Role

As discussed above, infrastructure services have long been provided by, financed and owned by governments. However, this has been changing since the early 1990's and is turning to be an effective means of the public sector engaging with the private sector. This is the view put forward by (Andres et al, 2008). Additionally, they found that private sector participation brought about improvements in efficiency, quality and overall sector performance. Their research also indicates that policy makers need to agree on performance objectives ahead of engaging with the private sector to ensure efficiency is achieved.

Heimert (2017) also found private sector investment to be the best contributor to close the infrastructure funding gap. His analysis concludes that the best way to attract private sector development is for African governments to ensure that priority infrastructure projects are bankable. A second gap to address is that of the information gap, where private investors are looking to invest into emerging markets and encounter a lack of information regarding the underlying investment and a lack of support as to what DFI instruments are available to them (Lauridsen, 2017).

From an Asset managers point of view, Moolla (2017) shares her experience on how private sector institutions (such as pension funds and insurance companies) provide the bulk of debt finance for infrastructure projects in developed markets, and this is the direction that Africa needs to move toward. She further explains that infrastructure assets are stable long-term investments, which align better to pension and insurance funds rather than commercial banks which have shorter term investment horizons.

Despite the issues above, Lauridsen (2017) believes that tools are available to address these investor concerns and align interests with the public sector. However, her view leans toward the complex nature of products and risk mitigation tools offered by DFI's and multilaterals which remain a 'jumble of abbreviations' to private investors. This leads to her final message around the need for governments and multilaterals to work upstream and develop an environment that promotes African infrastructure investment and demonstrates project bankability in a simple and easy form.

The above literature on private sector investors in the infrastructure space indicates that solutions are available, and the issue lies behind unlocking private sector funds by proving that structural

issues can be addressed with adequate mitigants, and that projects are therefore bankable. (The PPP model seeks to address these concerns in a systematic manner and is discussed later).

2.4.3 Role of Foreign Aid

The OECD (2018) uses the term Official Development Assistance (ODA) to refer to aid provided by official foreign government agencies of DAC countries, targeted at economic development and welfare of developing countries. Military aid and export credit transactions do not qualify according to the definition. **The terms aid, ODA and grants will be used interchangeably throughout this research.** Although ODA represents a small portion of overall development finance, it is the largest form of international public finance and a critical funding source to low income countries (OECD, 2013). Countries eligible for ODA funding are determined based on per capita income levels in a country. This is broadly in line with the IDA's mandate, to provide concessional loans and grants to the world's poorest countries. IDA itself claim to be the single largest donor for basic social services in the world 75 poorest countries, 39 of which are in Africa.

There are of course other sources of aid funding which are non-DAC, including philanthropic aid provided by the likes of the Bill and Melinda Gates Foundation and the Rockefeller Foundation. Donor countries have been called upon to commit to providing target percentages of their GDP as ODA, however preliminary statistics show that only a handful of countries have ever achieved this (OECD, 2016).

Donors have two ways of distributing their aid, through bilateral or multilateral channels, each having their own characteristics. Whilst bilateral aid arrangements give flexibility to donors to control their capital flows wherever strategically (geographically) beneficial, multilaterals may find it easier to implement policy reforms which are usually politically sensitive. Research also shows that aid recipients also prefer multilateral engagements due to their response time and alignment of country systems (Gulrajani, 2016).

Aid can further be classified as general development use in a country of need, or earmarked for particular issues, innovative technologies or socially beneficial projects. Renewable energy in

particular stands out, as numerous donor pockets of funds have been set up in recent years for this industry. In alignment with the Paris (Climate) Agreement on climate change, developed countries are urged to take the lead in supporting developing countries in attaining the climate change targets (Climate Focus, 2015). At the same time country ownership of climate change issues is important as donor funds are quite dispersed and need to be guided toward specific investments (Shine, 2017).

ODA has been a key source of finance especially in the poorest countries where access to capital through public and private resource mobilization is weak (Giovannetti & Lanati, 2015). Aid can also help realize socially beneficial projects which don't yield sufficient returns to investors (Arvantis, 2013). However, aid alone cannot fill the gap between the investment in infrastructure needed and what is currently available (Addison & Anand, 2012). Their research leans toward a solution that aid should be used to mobilize funding from other sources to help fill this gap. For example, this may come from using ODA to develop domestic institutions, address political instabilities, or help with information sharing to provide investors with the right information needed. Effectively managing aid cash flows is vital as statistics show that overall aid is on the decline (Gill, 2018) (See *Appendix E*).

2.4.4 Forms of granting Foreign Aid

There are several ways that aid can be used in the life cycle of a project (such as guarantees, equity kickers, first loss tranches etc.). However, for the relevance of this literature review the researcher focused on the 3 most common ways in which foreign aid is used in RE projects. Extra attention was placed on concessional finance (last form discussed below) due to the expected scale of its use in mobilizing private sector finance in SSA.

Upfront Project Grants

Upfront grants and donations are usually used in the project preparation phase to allow for the project to progress. Many pools of funds exist for this purpose as they catalyze the much larger investment to come. Grants are non-repayable and cover tasks such as pre-feasibility studies and bankability studies which feed into a project information memorandum for investors (DBSA,

2018). Grants have also been used to fund portions of project costs to decrease the overall funding requirement to get the project going (Calitz & Fourie, 2015). The use of project grants is a quick and effective way of donors making use of their aid with a specific purpose.

Project grants are also beneficial in the early stage of projects as they tend to create competition in the market and foster economic growth (Keeler, 2017). This is interesting as individual project success is therefore not the aim of the grant, but rather a demonstration of a viable project and de-risking new markets.

Grants for Technical Assistance

These are also non-repayable forms of financial support which are targeted more at capacity building and knowledge transfer which are key in developing countries. Technical assistance can also have a positive impact on the pace and intensity of private capital flows (Banerjee & Rondinelli, 2003). This is important taking that private sector flows are being looked toward to maximize development finance flows to Africa. The use of aid for technical assistance is therefore considered largely appropriate as the task is well cut out and future benefits for the country are expected to be long lasting. However, concern has been raised around aid being used for technical assistance programs and how much of that financial benefit flows to international consultants who are paid to produce reports which never truly benefit the recipient country (Ellmers, 2011). Although this is an issue to keep in mind, the continuous management of aid flows and donor reporting requirements should prevent this.

Concessional Finance

Concessional finance or soft loans is a type of subsidized finance which offers more favorable repayment terms to a borrower as an incentive for taking on certain risks. Das, Deodhar, Sharma and Shrestha (2014) of the Netherlands Development Organization refer to these favorable terms as below what the market would charge for such finance. They point to concessional finance as having a grant/aid component that can be quantified by how favorable the concessional lending terms are. Their research also highlights that concessional funds are used when market terms would result in no investment, or if market finance is not available.

Most ODA provided has been in the form of grants, however concessional loans are becoming increasingly more common, with the DAC committee recently revising the defining characteristics for concessional finance as ODA (Giovannetti & Lanati, 2015). The definition previously accounted for an entire qualifying concessional loan as ODA, and now only regards loans with an aid/grant element exceeding 25% as ODA flows. The calculation of the grant element is as follows (Arvantis, 2013):

$$Grant\ Element = \left[\frac{Face\ Value - Present\ Value}{Face\ Value} \right] * 100$$

The African Development Fund (2016) highlight that specific targeted impact areas are needed from the outset to control and justify the use of concessional finance. Under the latest proposal to their management (the African Development Bank Group) the Fund intends to prioritize the use of concessional funds toward projects which target employment of women and youth. Furthermore, the proposed window would focus on financing to the agriculture, climate change and SME sectors as they are aligned to sustainable growth in Africa. The concessional element effectively bridges the gap between social and private returns and allows socially positive projects to materialize (Private Sector Roundtable, 2013).

Das, Deodhar, Sharma and Shrestha (2014) also found that in the absence of concessional funding, higher costs are usually passed on to consumers through higher prices or tariffs, or an increase in the reliance on fiscal subsidies is needed. Therefore, alluding to the point that concessional finance is a key player in achieving commercial viability of projects. Their research also confirms an important point, that concessional finance providers do require funds to be repaid, as they consider the borrowers capacity to repay the finance as well as the projects commercial fundamentals in their approval process.

Concessional finance does of course come with potential negative side effects, with some critics pointing toward it leading to massive debt accumulation in developing countries where debt sustainability is a pressing issue (Clements, Bhattacharya, & Nguyen, 2003). However, studies

actually show that concessional terms tend to be more favorable and less of a burden than local alternatives, and that poor use of public funds hampers debt sustainability (Felino & Pinto, 2017).

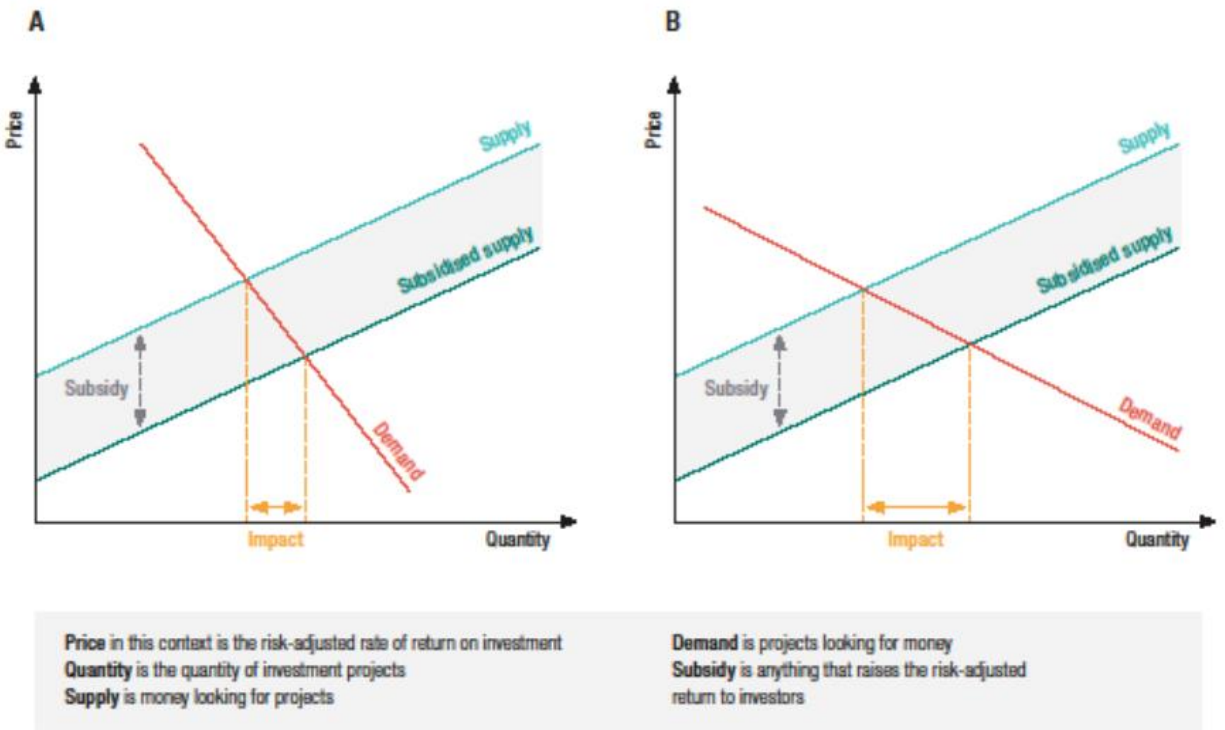
2.4.5 Optimal use of Aid

As early as the 1990's the UK government subsidized the renewable energy tariffs, sizing the subsidy in relation to the cost of conventional power at the time. In this way projects only received the minimum subsidy. This was done alongside an auction process which would attract the most competitive prices to the market as well. No subsidies were provided if the tariffs came out lower than that of conventional power, ensuring that subsidies do not distort market prices for renewable energy (IRENA & CEM, 2015)

India also implemented a successful variable subsidy solution during the second round of India's National Solar Mission. Developers had to bid for a subsidy as well as a tariff on a competitive basis. Half of the subsidy would be used to pay for upfront costs (grant) and the remainder of the subsidy would be paid to them after each of the first 5 years of operations (IRENA & CEM, 2015). In this way reduced energy tariffs were brought to the market and bidders would ideally only request the optimal minimum amount of subsidy they require (too high a subsidy could result in the developer not winning the auction).

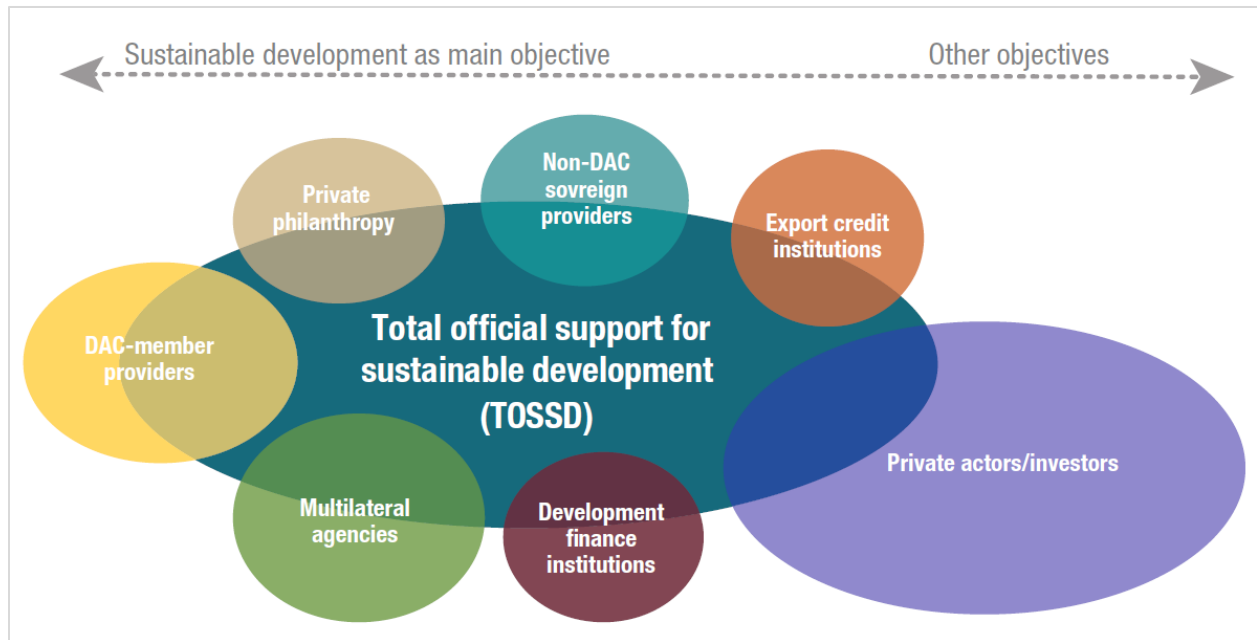
Carter (2015) considers the timing of subsidies from an economic point of view. To maximize the impact of subsidies to the renewable energy sector, the availability of good bankable projects needs to be present (demand curve). The more vertically inclined the demand curve, the lower the impact of subsidies as depicted by *Figure 2* below. Therefore, the author suggests that a pipeline of projects needs to be developed to ensure that grants achieve the maximum development impact. Carter also highlights that project preparation takes time to come to action, whereas subsidized facilities can be arranged relatively fast.

Figure 2: Impact of subsidies vs demand curve (Carter, 2015)



A useful definition to tie up the above sources of finance for African development funding is that of Total Official Support for Sustainable Development (TOSSD) as termed by the OECD (2014). The definition tries to encompass all types of supportive funding (public and private) and instruments which will play a role toward attaining the SDG's (over and above local government spending). *Figure 3* below depicts the types of funding mapped against where they fall on an objective scale. ODA is accounted for under 'DAC member providers' which is aimed at having sustainability as a prime objective (be it economic, social, or environmental).

Figure 3: Total official support for sustainable development (OECD, 2014)



The above literature highlights the concern that public funding alone is not sufficient to fill the energy infrastructure gap on the continent, and that a significant amount of capital sits in the private sector and needs to be unlocked. Foreign aid may be the key to this, as grants and technical assistance can de-risk projects by enabling a sound environment and concessional finance can provide better terms to ease project bankability.

2.5 Public and Private Sectors working together

2.5.1 Public Private Partnerships

Although no standard definition for Public Private Partnerships (PPPs) exists, it involves the government and private sector engaging, whereby profit objectives of the private sector merge with development objectives of the public. The government specifies conditions of service delivery from the private sector which is effectively a transfer of risk (OECD, 2012). There is little doubt that PPPs play a crucial role in developed and developing countries by aligning and protecting the interests of all parties involved (Hovy, 2015). The movement toward PPPs in Africa has been coming for some time, with 45% of respondents to a survey by PWC (2014) believing that PPPs are the way forward, compared to traditional public finance or privatization structures.

According to Jordan-Tank (2017) PPPs have proven to be effective on two main fronts: project time to completion and completion within budget. Both these factors can cripple a countries finances as the opportunity cost of delays and overspending detract from improving and advancing other infrastructure. Shari and Spiegel (2018) provide an alternate view, looking at infrastructure development without the issue of funding. They lean toward focusing on the most cost effective and environmentally friendly solutions, which are in most cases provided through the private sector engaging with the public sector.

An important element to consider is the presence of an independent regulator to provide completeness and shape the enabling environment for PPP transactions (Eberhard, Gatwick, Morella, & Antmann, 2017). The regulator not only needs to be independent but should have the authority and regulatory backing to enforce decisions. In this way investors can have the comfort that there is enforceable oversight from a local authority which ensures certain standards are maintained which may not be captured under legal agreements.

The following table is a summary of some of the key advantages and disadvantages of PPP’s:

Table 1: Advantages and disadvantages of PPPs

<u>Advantages:</u>	<u>Disadvantages:</u>
Brings about the best in class solutions	Expensive for tax payers if it does not work out
Faster completion and less down time	The need for government guarantees to compensate the private firm for additional risk
Risks addressed upfront and non-bankability determined at an early stage	Demanding on governments if no prior frameworks in place
Governments can redirect efforts and funds to other social needs	Limited private interest reduces competition which is required for cost effective partnering
Contractual remedies	
Brings the lowest cost partnership, allowing for lower taxes	

The gap between executing projects in developing and developed markets is narrowing, however the reality still exists that achieving financial close on African PPP’s require a lot more work than the same in developed markets (Kjorstad, 2016). What Kjorstad also finds welcoming is that

indigenous African talent (individuals) which once actively sought opportunities in developed countries, are now returning to Africa and bringing along professionals from abroad to develop African opportunities. Although PPPs are not the all-encompassing solution to Africa's infrastructure needs, they are a good way to attract finance for viable projects and fast track infrastructure delivery on the continent (Rana, 2018).

2.5.2 Independent Power Producers

The most common form of engaging with the private sector for procurement of power projects (renewable energy in particular) has been the independent power producer model. Under a classic IPP structure a private sector entity/consortium owns the energy asset and engages with a state-owned power utility to purchase the power generated under a long-term agreement (PPA) (Woodhouse, 2005). The engagement with the government is usually under a PPP framework. Woodhouse also found that developing countries governments turn to IPP's and the private sector as it eliminated the need for cash poor states to raise capital to increase power generation themselves. The situation is true across most of Africa, where governments lack public sector funding for capital intensive projects, but at the same time are a monopoly in terms of power transmission and distribution. Although IPP's form a small portion of current installed power in Africa (which is dominated by state utilities), they are playing an important role in new power investment across the continent (Eberhard, Gatwick, Morella, & Antmann, 2017).

2.5.3 RE Procurement Support Mechanisms

Procurement models are needed to facilitate project development and attract investor interest under a regulated support structure. The two most common RE support mechanisms are Feed In Tariffs (FITs) and auctions (tenders). The main difference between these two models is the way in which tariffs are determined, with FITs involving country officials determining the price and auctions leaving this to the market.

Auctions have been found to offer better price outcomes and decrease the risk of rent seeking (Eberhard, 2013). However, the institutional capacity required by governments and high upfront costs may deter the use in weaker markets with limited RE experience. Auctions also require larger

sized projects which may be best in countries with initial price data points for reference. Many countries opt for both models, with FITs being used to promote up and coming technologies and auctions for traditional RE procurement such as Solar PV. If rolled out in a transparent and stable way, both models have a place in RE development on the continent (Ahlfeldt, 2015).

A prime example of how an IPP tender system has worked is the South African renewable program. Investors have become more comfortable with the program over time, which has resulted in an effective de-risking of the program (Sarac & Arora, 2016). The successive bidding rounds have also resulted in tariffs coming down due to the increased competition amongst developers (Papapetrou, 2014). Solar PV tariffs in particular have fallen over 75% over the four SA REIPPP bidding rounds. This speaks to the concept that well-structured and transparent procurement programs effectively de-risk investments over time and give developers comfort in a country's tested framework. This in turn brings the best out of the market and private sector.

Understanding PPP engagements are important when planning to work with the private sector. The authors above agree that risk sharing between the public and private sector is a way to achieve maximum development on the continent. An independent regulatory body is also a must to ensure fairness and oversight, as a compliment to contractual agreements. Lastly, governments have two main procurement support mechanisms to choose from when procuring energy projects. Understanding when to implement which model is important as they require different pre-conditions, capacity and funding requirements.

2.6 Blending Aid and Private Funding

2.6.1 What is Blended Finance?

Blended finance is a term used to define the use of foreign aid to leverage, mobilize or crowd in private sources of funding (Pereira, 2017). This in turn reduces the overall cost of finance and makes the finance package more attractive to an investor. Around \$31bn of committed funds toward blending have been set up between 2000 and 2016 (OECD, 2018). Climate funds have been a focus, with individual funds having different focus areas (adaptation, mitigation, capacity-

building etc.), and regional focusses (OECD, 2018). The World Economic Forum (2015) primer on Development Finance and Philanthropic funders regards blended finance as playing the important role of risk mitigation to attract additional funding to a market, sector or industry. As seen in *Figure 4* below, the intention of blended finance is to use development funds (public or private), combined with other development focused funds, to mobilize the large pool of commercial finance which comes at non-concessional terms. This approach is expected to unlock more money for SDG driven projects as the image below indicates graphically.

Figure 4: Making blended finance work (OECD, 2018)



There are of course various definitions for blended finance, some broad and others narrower and refined to reflect organizational goals. The OECD definition (as seen in the image above) is broad and refers to development focused funds (public or private) at concessional or non-concessional terms, being used to leverage commercial finance (which does not have a development focus). On the other hand, a number of DFIs define blended finance as an approach to enable commercial private sector investment where it would not otherwise be possible, by using an element of concessional funding (IFC, 2016). Despite the differences and non-uniform approach, the general intention is to increase funds toward high development impact projects, in line with achieving the SDGs. The OECD (2017) shares similar views and regards blended finance as an important tool in being able to achieve the SDG’s in developing countries. There are various tools which can be used to achieve this goal (including concessional debt, technical assistance, guarantees etc.) and

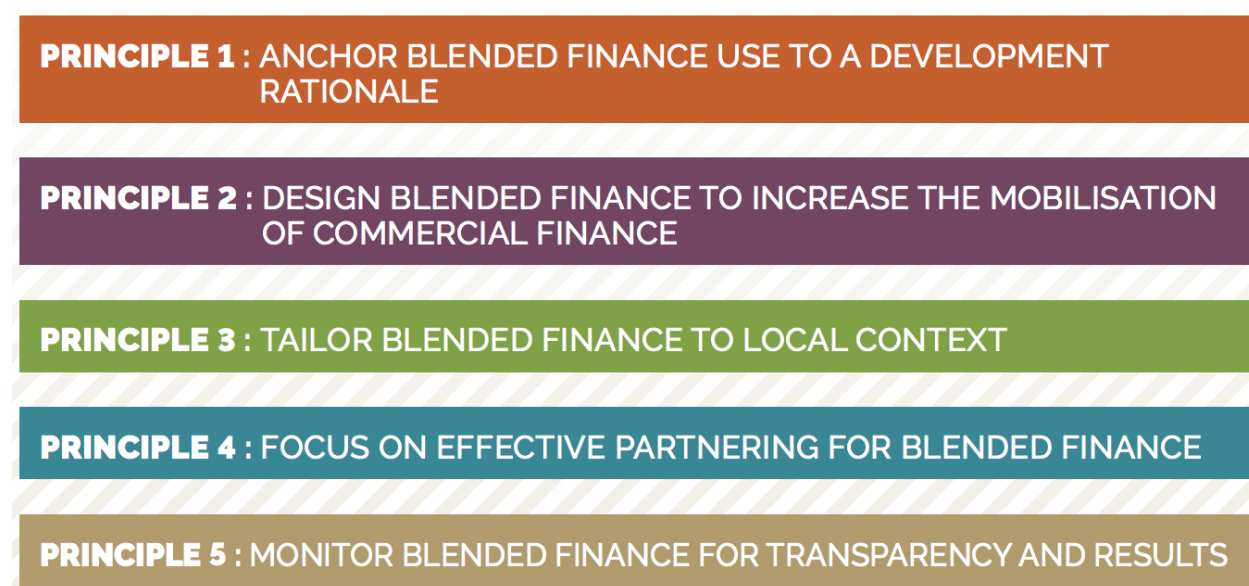
these need to be carefully utilized in the correct market stage to ensure effective use and avoid distorting markets. A publication by Tonkonogy et al. (2018) identified the different blended finance instruments and the potential project risk that they might address (see *Appendix I*).

The use of concessional debt in renewable energy projects is becoming increasingly prevalent to reduce the cost of developing these projects and attracting more private investment toward green energy (World Economic Forum, 2013). Nelson and Shrimali (2014) share similar views in that they found concessional debt to be a more effective way to attract developers of renewable energy projects in countries where the average cost of debt is high. This is true especially for Africa, where the average cost of debt is seen to be even higher than non-African countries with comparable risk rating scores (Sow, 2017) (see *Appendix F*). Therefore, concessional finance (and blended finance) can have a two-fold effect in the region: attracting more clean energy investments, and reducing the costs associated with developing these expensive long-term assets.

2.6.2 Principles for using Blended Finance

There are a few working groups comprising of concessional finance providers who work together with Multilateral Development Banks to develop principles to universally manage the use and reporting of blended finance. The most prominent of these groups are the principles of the OECD DAC Blended Finance Group. The group represents 30 DAC countries, 17 of which already provide concessional finance actively. Their principles to provide blended finance are refined when needed and depicted in *Figure 5* below.

Figure 5: OECD DAC blended finance principles (OECD, 2018)



1) ***Having an anchored development rationale***: This refers to blended finance needing to be used to maximize development impact. The use of blended finance needs to contribute additionally to what is currently available in the market and should be a catalyst to unlocking additional development and finance.

2) ***Increase the mobilization of commercial finance*** This refers to using blended finance to maximize the leverage it has to bring in commercial finance to a development initiative. Due to the scarcity of such funds, they should be used effectively to address market failures and get commercial funders comfortable to invest. Over time the use of blended finance should decrease and be replaced with commercial finance.

3) ***Tailor blended finance to local markets***: Blended finance should be adapted to local contexts and address specific issues in local markets. The introduction of blended finance should not distort pricing of local participants or crowd them out by competing with them. Blended finance providers should work together with national governments and local market players to address specific market failures to create a sound enabling environment.

4) ***Effective partnering to maximize parties' abilities***: Blended finance should only be used where there is a market failure that needs to be addressed and is preventing the project from moving ahead. Participants to a project should invest according to their mandates and take on risks that they are comfortable with. Subsidies should be minimized to maximize the scalability of donor

funds. Competitive tendering for minimal concessionality is a good way of maximizing partners ability and prevent rent seeking.

5) **Monitoring to ensure impact and transparency is achieved:** High standards of transparency and accountability should be instilled in investments to ensure maximum effectiveness. Development and performance metrics should be agreed upfront, with monitoring and reporting at agreed intervals. Such reporting is a good way for donors to ensure their funds are achieving their required targets.

Many DFI's have their own blended finance principles embedded in their governance structures and regard the OECD DAC principles as complimentary to their own. In a summary report by a DFI working group comprising of AfDB, EBRD, IFC, EIB and others (2017), the group formulated five "DFI Enhanced Principles" for managing blended finance as shown in *Figure 6*.

Figure 6: DFI Enhanced principles for private sector operations (AfDB et al., 2017)

- I. Rationale for Using Blended Concessional Finance:** DFI support for the private sector should make a contribution that is beyond what is available, or that is otherwise absent from the market, and should not crowd out the private sector. blended concessional finance should address market failures.
- II. Crowding-in and Minimum Concessionality:** DFI support for the private sector should, to the extent possible, contribute to catalyzing market development and the mobilization of private sector resources and minimize the use of concessional resources.
- III. Commercial Sustainability:** DFI support for the private sector and the impact achieved by each operation should aim to be sustainable. DFI support must contribute towards the commercial viability of their clients. Level of concessionality in a sector should be revisited over time.
- IV. Reinforcing Markets:** DFI support for the private sector should be structured to effectively and efficiently address market failures, and minimize the risk of disrupting or unduly distorting markets or crowding out private finance, including new entrants.
- V. Promoting High Standards:** DFI private sector operations should seek to promote adherence to high standards of conduct in their clients, including in the areas of corporate governance, environmental impact, social inclusion, transparency, integrity, and disclosure.

The five DFI Enhanced principles are complimentary to the five OECD DAC principles, however they have been adapted to the context of DFI private sector operations. Therefore, the principles below are tailored for using blended finance to mobilize commercial capital to private sector projects, rather than including public sector projects as well. These enhanced principles and guidelines are important as donor support of private sector projects raises additional concerns of rent seeking and abuse of scarce public funds.

2.6.3 Concerns when using Blended Finance

Donors have a responsibility to ensure that the funds they are providing are being used in an effective manner (Ouma, 2012). Subsidizing high risk projects may be justified, however subsidizing projects which are not profitable may also raise concerns around supporting inefficiencies (Arvantis, 2013). When dealing with private investors, knowing their true risk appetite and minimum return requirements is often not possible. Therefore, knowing when to offer subsidies to the private sector and the extent is problematic as private investors could unduly benefit from higher risk adjusted returns (Carter, 2015). Studies also indicate that higher private capital flows lead to lower aid, and that aid can be used initially to attract private investment when it is not present (Herzer & Grimm, 2011).

It is also important to note that grants are not sustainable financing tools. We need to ensure that subsidized finance does not lead to a moral hazard of excessively risky lending (Arvantis, 2013). There is also an argument that grants should only be used for critical transmission infrastructure in the power sector, where the cost cannot be passed on to customers, rather than toward tariffs which can distort markets (Herscowitz, 2018).

Choosing the right form and level of concessionality is important as concessional products run the risk of distorting competition in the market (Arvantis, 2013). Furthermore, if concessional finance is not carefully managed and kept to a minimum, more sustainable finance such as commercial finance may be crowded out (Green Climate Fund, 2014). If our final goal is to ensure the scaling up of clean power on the continent, then slowly transitioning toward local commercial finance is the way to go. Excessive use of blended finance may continue to allow projects to materialize,

however if concessional funding were to disappear, we may find that unrealistic tariffs and excess risk prevent commercial finance bankability.

The authors above discuss how aid is being used to leverage commercial finance and bring projects to market much quicker. The array of different instruments available to manage different market failures also allows for blended finance to be tailored to regions and sectors. Effective use of blended finance can therefore attract private capital as well as transition toward commercial bankability through demonstrating project viability. The principles that guide blended finance usage appear to be quite broad and serve as a tool to prevent overuse and market distortion of prices.

2.7 Conclusion

The literature above provides evidence that energy infrastructure is lacking on the African continent and has a direct link to growth, which in turn affects a nation's ability to develop. Within the African continent, SSA appears to be the hardest hit, with low electrification rates and reduced investment due to high levels of actual and perceived risk. Higher levels of risk have deterred investors and resulted in the cost of capital (and returns) being much higher. With a lack of public infrastructure spending, DFIs are being looked at to crowd in investment and mobilize the private sector to bridge the funding gaps. DFIs have the experience and relationships with governments as well as the private sector and can facilitate the implementation of PPPs and IPPs.

Renewable energy IPPs are seen as the solution to scale up clean energy generation in SSA. Not only do these projects provide for diversification of the current thermal and hydro dominated energy mix, but their shorter construction time, scalability in remote areas and significant development impact are highly attractive. RE auction processes have also proven to bring out the best pricing outcomes and attracted the best market players to invest in a country.

The use of foreign aid to unlock more investment on the continent through blended finance is at the heart of scaling up development funding. There are a variety of donor funded concessional instruments which can be used to reduce risks in commercially sustainable, high development impact projects and in turn allow private investors to realize their risk adjusted rates of return. At

the same time foreign aid can create significant issues such as market distortion and rent seeking if overused. The use of foreign aid needs to be closely managed and scrutinized to ensure funds are efficiently used and have the greatest development impact. Although principles do exist to guide the general use of blended finance globally, these are broad and not much is known regarding the actual criteria applied in a SSA RE IPP environment.

CHAPTER 3: METHODOLOGY

3.1 Research Approach

In general, there are 3 approaches to research, namely quantitative, qualitative and the mixed method approach, each of which describe the research strategy used to meet the objective of the study (Creswell, 2003). The area of research being looked at involves observing the processes and applications in place by various grant providers (Donors) and implementing entities (DFIs), to better understand what is being applied in the market. Therefore, the researcher used a qualitative approach to answer the research questions as it allows for a theory to be formulated based on interactions with respondents.

Furthermore, this area of research involves studying many private sector and government entities where disclosure of information at the level required is generally limited. Quantitative data is particularly limited and seldom disclosed at a level which can be dissected and studied to provide meaningful results. Furthermore, this study was effectively looking at grants to private sector projects, which is a sensitive issue politically. The little quantitative data that is available is likely to be dated, aggregated, and not representative of the studied population. A meaningful set of quantitative data would include detailed financing terms for RE projects across SSA. Therefore, as much as a mixed method approach of qualitative and quantitative methods would have allowed the researcher to cross examine results and theories, availability of quantitative findings was a limiting factor.

3.2 Research Design

Under a qualitative study there are 5 general design categories: ethnography, narrative, phenomenological, grounded theory, and case study. However, thematic analysis is another method that also exists and argued to be a fundamental method that is widely used but poorly branded (Braun & Clarke, 2006). The design phase focusses on what type of information the researcher intends to collect, and how they intend to collect it. Although all qualitative research

design methods involve similar data collection means, the purpose of the study should drive the design method selected (Sauro, 2015).

The first two research objectives were aimed at getting an understanding of what factors the respondents considered when providing grants, and the factors driving terms of grants. Therefore, the thematic analysis approach was chosen, which essentially allowed the researcher to identify patterns in the data and create overarching themes to reflect these patterns. This may seem like the grounded theory approach, as both approaches root their analysis in the data collected. However, the difference lies in that the grounded approach works to create a theoretical framework rather than emerging with themes. The resultant themes can thereafter be compared to the theoretical frameworks from the literature review to determine similarities and differences and possibly lead to refining existing frameworks by addressing additional themes. At the same time the researcher needed to avoid ‘premature closure’ which occurs when the researcher has looked into the literature prior to the study and as a result narrowed the researcher’s analytic field of vision to the themes emerging from the literature (Tuckett, 2005).

The last research objective aimed to take a deep dive into a recently closed RE deal in SSA which made use of BF. The intention was to understand why the project was eligible for grant funding and what specific factors influenced the level of grant funding received. This differed from the first two research objectives, which were aimed at getting a general understanding of factors considered when providing grants. Therefore, the case study approach was best suited as it allowed the researcher to explain the specific context and decision-making process behind the project receiving a grant. The case study needed to be descriptive to allow the research sub-question to be answered in a narrative form and in an intrinsic manner. The project was carefully selected to ensure enough in-depth data can be attained without encountering confidentiality constraints.

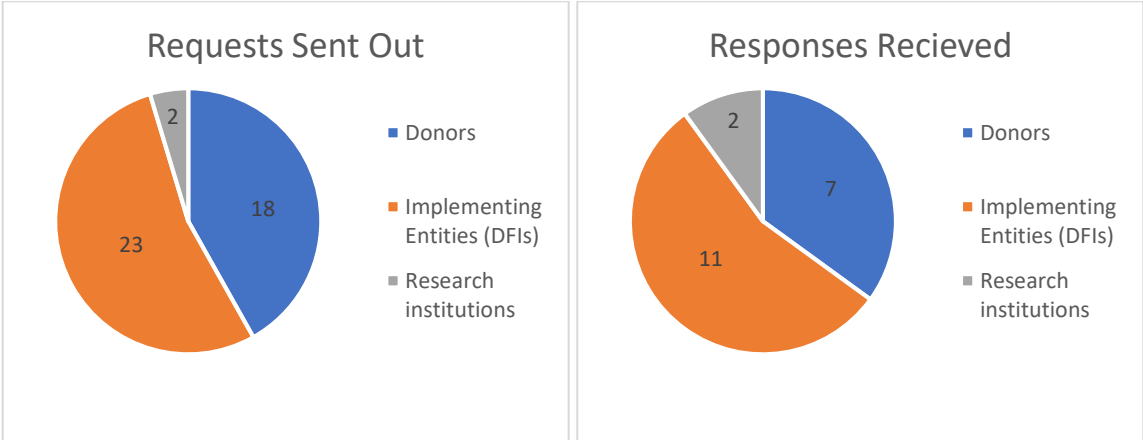
3.3 Data Sampling

The sample sizes for qualitative studies are usually small, to allow for adequate in-depth analysis of the responses (Hammarberg, 2016). At the same time the researcher needs to avoid having too small a sample and falling trap to claims of ‘saturation’ of data, as this may affect the credibility of the study (Charmaz, 2008). Although more common in the ground theory approach, thematic analysis faces similar sampling constraints.

The population of respondents for the first two research sub-questions were all stakeholders involved with private sector RE projects in SSA. These included developers, equity participants, commercial financiers, development banks managing concessional funds, grant funds and government officials representing Donors. However, to effectively manage the sample, the researcher focused solely on grant providers (Donors) and implementing entities (DFIs) who manage grant funding on behalf of Donors and identify eligible projects which could benefit from grants. The sample therefore comprised of senior, highly experienced decision makers who understood their company’s internal approval process as well as project screening criteria. This was a form of non-probability sampling as certain groups of potential respondents were excluded based on selection criterion. Two research firms specializing in the tracking of Donor activities and blended finance transactions were also selected to bridge any information gaps on engagement.

Out of the 43 representatives contacted, responses were received from 25 of them. From this, 5 potential interviewees were excluded due to their limited involvement in SSA projects and their decision not to proceed. Excluding the 2 research institutions, the sample of 18 Donors and DFIs that remained provided a good representation of the larger population as there are many more DFIs than Donors who have a focus on RE IPP projects in SSA. The full list of entities contacted are included in *Appendix G*. In addition, the ‘larger’, more prominent Donors and DFIs did respond, which provided strong credibility to the sample. The breakdown of responds is shown in *Figure 7* below.

Figure 7: Breakdown of respondents



For the last research sub-question, selecting a case study project which allowed the researcher access to discussions with stakeholders to a project was the biggest challenge. This was due to private sector project participants having little incentive to provide more information than what is currently disclosed. The project selected was the 40MW Mocuba Solar PV plant (the “Project”) located in Mozambique. The researcher was pointed to this Project through discussions with a DFI when conducting interviews for research sub-questions 1 & 2. The Project provides a good example of a recently closed RE IPP project weathering ‘the perfect storm’ of adverse investment conditions in Mozambique (country in SSA) and making use of blended finance. Certain Project details could not be provided to the researcher due to confidentiality and sensitivity issues. However, the aim of the case study was to delve into the approval processes undertaken to arrive at these concessional products and conclude as to the level of due diligence performed – this was still possible. A large portion of the data used was sourced from desktop reviews (public databases and company disclosures) from as early as 2015 when the Project was negotiated with the government.

3.4 Data Collection

For the first two research sub-questions the researcher conducted interviews with senior individuals working for organizations which are involved in the decision-making process for blending Donor funds into projects. Within the sphere of interviews, the researcher decided to conduct semi structured interviews as it allows the researcher to focus on key questions, but at the same time pursue more detail based on the responses (Gill et al., 2008). Therefore, questions were structured to lead the respondents to provide insight into their decision-making process rather than simply asking yes/no questions. The interviews took place over the phone and the two broad research sub-questions were shared prior to the interview as many respondents had requested this (see *Appendix H*). Although this collection method is relatively simple, the way interviews were shaped and conducted was important as factors such as interviewer bias and open-ended questions could result in poor reliability of data (Brewerton & Millward, 2001). To prevent misunderstandings, the interviews were recorded (respondents consented to this) and key points summarized and confirmed back to the respondents toward the end of the interview. This ensured

the accuracy of data collected. Much of the data the researcher was looking for was not in the public domain, therefore sensitizing information from interviews (not linking responses to individuals or institutions) was an important task to ensure respondents could provide the right level of detail, without imposing on institutional sensitivities. The interviews were scheduled to take between 30 to 45 minutes each, and an information sheet and consent form shared prior (included in *Appendix L*).

Collecting data for the last research sub-question followed the same sequence as outlined above. However, the key difference here was that the responses needed to be very in depth and provide details at a much more granular level than for the first two research sub-questions. This involved asking specific questions and probing to get complete answers. Supplemental data was also collected by sifting through publicly available information on the relevant implementing entities approval processes (desktop reviews). Publicly available information was also used to gain more background on the case project.

For all 3 research sub-questions, handwritten notes and recorded telephonic interviews were the primary sources of data capturing.

3.5 Data Analysis

Qualitative data analysis involves transforming the raw data collected into an explanation or emergence of themes which help answer the research objectives. Within the sphere of thematic analysis, the approach the researcher took for the first two research sub-questions was inductive as the intention was for the identified themes to be driven by the data itself (Patton, 1990). This attribute of inductive thematic analysis is shared with the ground theory approach. The researcher also had to take care in not letting any self-determined themes or themes from existing literature affect the process of coding the data collected. Another important point considered was prevalence and keeping in mind that the importance of themes should not solely be driven by the frequency of occurrence in the data, but would require researcher judgement (Braun & Clarke, 2006). This also lends to the premise of thematic analysis, whereby judgements are made by the researcher who is the instrument for analysis (Starks & Trinidad, 2007). The background of the respondents

as well as the mandate under which they operate were also considered to help manage any one-sided responses/views.

The steps followed in analyzing the data were in line with Braun and Clarke (2006):

1. **Getting familiar with the data:** This involved reading and re-reading the responses from interviewees and converting all collected data (short hand notes and recordings) into clear text.
2. **Coding the data:** This step involved creating flags based on pieces of information that stood out in the data and would likely feed into shaping the results of the study.
3. **Searching for themes:** This involved sorting the data flagged into themes based on similar properties.
4. **Reviewing themes:** This involved checking if the identified themes correctly represented the flagged data extracts, as well as captured the entire set of data. The data was also reviewed for any additional themes.
5. **Defining and naming themes:** Themes were then refined, defined and named to get a clear picture of the story that was emerging from the data set.
6. **Producing the report:** The results were then explained, using key themes and extracts from the data to provide a descriptive understanding of the themes emerging. This was synthesized with addressing the research sub-questions and using relevant literature to provide a comparison.

The case study was used to tie in what the interviews brought out versus what was being implemented in the market. The case data was analyzed through a descriptive content analysis approach and structured to tell a clear story around what was followed by the different grant providers to arrive at the terms offered to the project. The unit of analysis was the specific project selected, and the case was not intended for wider generalization on the topic. The background to the project and sequence of events leading up to financial close had to be laid out to give the reader a clear view of the case. Where gaps were identified in theoretical vs implemented processes, or limited information available, these were highlighted.

3.6 Reliability and Validity

Reliability of a qualitative study refers to the consistency of the approach used by the researcher. For this research, the researcher used a template of guiding questions for the semi-structured interviews to ensure that all interviewees were approached in the same manner (see *Appendix H*). This template was reviewed by the research supervisor prior to piloting the study to improve internal validity. The research setting for all interviews were standardized and involved pre-arranged time slots, the researcher calling the interviewees on a pre-agreed number, and the two broad research sub-questions being shared with the interviewees ahead of time. Validity of the study refers to the accuracy of the data collected. This was ensured on 2 levels. Firstly, a summary of the interview was shared verbally with respondents toward the end of the interview. This allowed for any potential misunderstandings to be clarified and any important areas to be highlighted. Secondly, interviews were recorded, and the researcher cross checked their written notes to the recordings within 3 days of each interview. This ensured that the right messages were being captured from each interviewee. Interviewer bias was an initial concern taking the background of the researcher (from a DFI) – however this was managed through keeping to the template of questions and avoiding any reference to thoughts/views that the researcher may have come across in their day to day work. Interviewee bias was another upfront concern which was addressed through clear messaging that confidentiality regarding the interviewees name and company they represent would be strictly adhered to. This allowed the respondents to talk freely and ensured that the best quality of data could be extracted.

3.7 Research Limitations

Although the researcher was able to reach enough respondents and get a clear view on what Donors and DFIs are considering, having more responses would have been ideal. This was limited due to one researcher being involved as well as not having a complete list of every institution and contact details of the right people to engage with at Donor and DFI institutions. A significant amount of time was spent by the researcher in compiling a list of institutions and relevant contact people. Having upfront institutional buy in to this research at a higher level might also have yielded more responses in a shorter time. Lack of saturation was not an issue as the prominent DFIs and Donors

working in the space were interviewed. Lastly, the inability to have personalized face to face interviews limited the researcher's ability to judge body language of respondents. However, the researcher felt that none of the above limitations were significant enough to affect the outcome of the study.

CHAPTER 4: RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

For the first two research sub-questions, the analysis was based on semi structured interviews conducted with 20 individuals over an 8-week period (11 DFIs, 7 Donors and 2 research institutions). The DFIs and Donors interviewed represented the largest institutions engaging in RE BF in SSA and were able to share details behind the BF processes applied by their institutions. The research institutions added to the validity of findings. The analysis for the third research sub-question was based on interviews with 2 individuals closely involved with the Mocuba Solar Project, public announcements on the Project, as well as publicly available documents on the grant providers approval processes.

The general sentiment around BF was positive, as RI2 explained, “BF is receiving significant attention as a solution to scaling development”. Donors particularly found BF useful as DNR 4&7 stated that it allows them to leverage limited funds to achieve larger development goals. However nearly all Donors mentioned that their involvement with individual projects was rare, and DFIs are better skilled and staffed to engage at this level. Another key takeaway from research institutions and DFIs was the need to align terminology defining BF for reporting and benchmarking purposes.

Regarding research sub-question one, there was a clear distinction between the level of engagement and criteria applied by DFIs and Donors in the market. For this reason, the researcher separated themes that emerged from DFIs (*section 4.2* below) and Donors (*section 4.3* below) regarding BF application. At the same time, it came across that Donors had little to no direct influence over the BF terms offered to individual projects (although some were involved in an approval capacity). Therefore, the themes surrounding BF terms / pricing predominantly included feedback from DFIs.

In addressing research sub-question three (*section 4.4* below) the Mocuba Solar case study was able to demonstrate that a significant level of due diligence was undertaken in approving the

Project for BF use. Furthermore, the terms offered were subject to independent checks which ensured that minimal concessionality was maintained. Although the case provided positive results, gathering the relevant information to analyze was a lengthy process which could have been supported by more detailed disclosures.

4.2 Application of Blended Finance by DFIs: Emerging Themes

Most respondents had processes in place to qualify projects for BF. The processes appeared to be quite iterative, with an initial evaluation of whether the project meets certain requirements or not. Respondents appeared to be working toward the same goal of only allocating BF to projects where there was a need for concessional interventions, however entities seemed to be at different stages of scaling up this form of finance in SSA RE projects. IA2&3 came across as the most advanced DFIs involved in the BF space (with significant in-house expertise and transactional experience). Both have signed up for the DFI Enhanced Principles and have incorporated them into governance structures. Project specific issues seemed to be the main driving force behind principles for BF. If certain issues / market failures are not present or do not need to be addressed, the justification for BF doesn't appear to be present. The table below summarizes the responses from DFIs, with a discussion of individual themes following.

Table 2: Themes emerging on DFI application of BF

Theme	DFIs											
	1	2	3	4	5	6	7	8	9	10	11	
Avoiding market distortion	x	x	x	x	x	x	x	x	x	x	x	x
Economic case and development rationale	x	x	x	x	x	x	x	x	x	x	x	x
Matching risks and concessional products		x	x		x	x	x	x	x			
Implementing global best practices		x	x	x	x			x		x		x
Crowding in Pvt Commercial Funding	x	x	x	x	x	x		x	x			x

4.2.1 Avoiding Market Distortion

This theme was by far one of the most repeated and emphasized across all DFIs interviewed. This stemmed from the underlying concern of using Donor funds to potentially disrupt and crowd out future investment due to overuse at an early stage of implementation. The theme essentially encompassed the need to prevent overuse of BF as it may create unrealistic expectations in the

market and not allow for a bridge toward commercial funding. DFI2 explained that, “the idea is for concessional funding to reduce in successive projects over time, allowing for commercial players to take over”. Importantly to note is that the IPP market in SSA is still at a very early stage (DFI5) resulting in the need for careful use of BF at this stage to maximize its effectiveness. DFI6 summarized this by saying that “blended finance should be used to the extent that a project needs to move ahead – no more, and no less”. However, this is easier said than done, as put forward in *section 4.4* discussing the complexities on arriving at terms.

Distortion on its own is quite a complex concept to identify and prevent (DFI6). It’s usually seen as an after effect whereby unrealistic market expectations, or a reluctance to invest is seen from developers/financiers. DFI4 used a theoretical example of trying to target low tariffs in African projects, as seen in more developed regions. Such use of BF may enable a single project but risk the future of successive projects due to certain benchmarks set. A common solution put forward by respondents was regular engagement with commercial financiers to identify their entry point and address the risks they face through appropriate products (discussed in 4.2.3).

The literature discussed earlier aligns to this theme, with the DFI Enhanced Principles and OECD DAC Principles talking to minimizing the extent of concessionality. Arvantis (2013) went on to describe how excessive concessionality could lead to the moral hazard of risky lending, and that market distortion needed to be managed through the correct selection of concessional products. The examples of variable subsidy solutions from India and the UK by IRENA & CEMM (2015) highlighted how competitive tendering of concessionality in more advanced energy markets can lead to minimum concessionality.

4.2.2 Economic Case and Development Rationale

Within the first 15 minutes of each interview, all DFIs touched on this theme in one way or another. The theme encompasses the key driving force behind the innovative approach of BF – to support high impact, development focused projects which cannot move ahead due to market barriers impeding economic viability. It therefore goes without saying that projects need to have a direct link toward improving lives and supporting countries development objectives. RI2 likened the

development rationale to that of working toward the SDGs. This aligned to the messaging found in the literature by the OECD (2017) whereby BF is seen as a tool to achieve the SDGs. At the same time, not all high impact, development focused projects may need BF to move ahead. Many developed markets have sufficient commercial appetite for RE projects and an economic rationale for BF would therefore not exist. DFI4 described the example of South Africa, where “the local commercial banks are pretty much all over the REIPP projects”. This essentially means that use of BF in such contexts would be unjustified as an economic case would not be present.

Respondents also tied this theme in with the need for BF to facilitate bankability of projects – which was mentioned by DBSA (2018) in the literature. Essentially this means that BF should be used to get projects to a point where financing can be attained. Much of this heavy lifting is done in the development stage of projects or programs, whereby products such as technical assistance grants and development grants to cover feasibility studies are needed to bring projects to market. DFI2 expressed this viewpoint with the nuance that “project funding is available on the continent, what we are missing is bankable projects”. If this is indeed the case, DFIs need to be more proactive in developing projects and programs with the support of grants that are available for this purpose.

The development angle was also found in the OECD DAC Principles and DFI Enhanced Principles from the literature – with the messaging that BF intervention should be over and above what is economically available. In tying together this theme, a term used by several DFIs on their websites and governance documents is the concept of additionality. This refers to the need to provide value in addition to what is currently available in a market or project. DFIs 2 & 3 concurred that additionality was not always possible if markets could do without interventions by DFIs (no economic case). Testing additionality is somewhat subjective and sufficient market sounding is needed to avoid crowding out of commercial funding and market distortion.

4.2.3 Addressing Relevant Risks with the Right Products

As discussed in *section 4.2.1*, market distortion is a key risk which results from overuse or the incorrect use of BF. This theme echoes the same underlying message, however the intention is to

match risks with the correct instruments available under BF. In doing so, BF allows for market failures to be addressed and commercial private sector investors to realize their risk adjusted returns. DFI5 explained that, “no market is identical, and the challenges that need to be addressed require different forms of grant funding based on the nature of the issue at hand”. This was the same messaging brought forward by Arvantis (2013) in the literature. When implementing BF, it is therefore imperative to have extensive on the ground experience of how the market/industry works and the risks that different players are willing to absorb. Much of this knowledge sits with DFIs who have regional focusses and spend a significant amount of time on the ground engaging with power utilities and commercial private sector financiers to identify the correct risk management solutions.

Respondents highlighted that the first step was to identify the market failures that exist and determine how best to address these. Many a time capacity building at government entities and initial feasibility studies are needed to kickstart projects and programs. Technical assistance grants are usually well matched to this and are linked to defined objectives. The literature by Banerjee and Rondinelli (2003) shared similar views and correlated technical assistance to increased private capital flows. Another common issue in SSA is evidence of bankable power off-takers. The literature by Eberhard & Shkaratan (2012) reiterates this. DFI7 had strong views on the need to address this risk through loan guarantees against buyer default. By developing a positive payment track record of power utilities, these guarantees could potentially decrease over time as credit ratings improve and the market is more comfortable to take on this risk themselves.

DFI9 explained how they see the evolution of instruments such as grants. “Grants are on their way out for grid connected RE in SSA as most markets have passed the ‘breaking in’ phase”. DFI9 further went on to imply that the use of commercial funding coupled with repayable grants (VGF) is a more sustainable approach. Evidence of this was also seen in the case study (see *section 4.5*). A common thread seen across respondents was that the use of pure grants is shifting from large grid scale projects, to supporting distributed generation, transmission access and innovative solutions such as battery storage.

Concessional capital emerged as the most frequently used product in blending (46% of deals making use of it) (OECD, 2018). Although concessional capital (in the form of VGF, first loss tranches, concessional equity and debt) takes on more risk for a non-commercial level of return, this form of BF is at times criticized for not addressing underlying market failures, but rather providing a band-aid. DFI3 explains that, “concessional capital has the ability to mobilize commercial funds, but also has a greater chance of distorting tariffs”. The respondent felt that specific risks need to be identified at a granular level, and BF be used to cover insurance, guarantees and tighter regulatory frameworks, which in turn attract the private sector. The overall messaging from this theme was that BF instruments need to match specific risks identified in projects, as earlier highlighted in the literature by Tonkonogy et al (2018).

4.2.4 Implementing Global Best Practices

This theme looks at implementing sound environmental and social (E&S), governance, reporting and procurement standards as a pre-requisite to committing BF in projects. “These include the IFCs E&S performance standards and Equator Principles, IFRS reporting and sound legal agreements which align to local legislation” (DFI3). Such principles are usually practiced by DFIs and allow for transparency and integrity within projects. The theme is shared by the OECD DAC Principles and DFI Enhanced Principles in the literature. The messaging is that these standards should not be imposing on project companies as they are essentially setting the groundwork for a sound business environment which attracts private sector funding. DFI2 explained that Donors make use of MDBs and DFIs as such best practices are “baked into the approval processes of these institutions”. Therefore, associating Donor funds with such standards brings credibility to Donor activities.

Supporting projects which align with global best practices can also prevent negative publicity and avoid projects falling apart at an advanced stage. DFI5 provided the example of a project in East Africa which ended up not proceeding due to disagreement and conflict with the local community. The project participants ended up facing negative publicity and losing millions of dollars which could have been prevented had enough social due diligence been performed at project inception.

Transparency in reporting was also an important factor that DFIs touched on. Some highlighted that although reporting on BF is done to Donors and the public, this is usually done on a consolidated basis. RI2 felt that more project case studies are needed which investigate the rationale used to deploy BF as well as the processes undertaken by DFIs when approving these funds. RI2 has worked on such case studies and found that providing this detail to the public allows for greater scrutiny into the use of BF.

4.2.5 Crowding in Private Commercial Funding

This theme talks to one of the main reasons why BF is being utilized – to crowd in private sector funding by addressing risks which impede their involvement. The theme was also highlighted by the OECD DAC and DFI Enhanced Principles in the literature. DFI3 explained that an important yardstick to DFI effectiveness is monitoring and reporting on their ability to crowd in or mobilize additional funding. The literature also spoke to the need to turn billions into trillions and the key role that private sector funding plays in achieving the SDGs.

Tonkonogy et al. (2018) found that guarantees accounted for 45% of private sector mobilization, yet only represented 5% of capital committed. Therefore, the use of specific instruments should be considered in mobilization efforts. Theoretically the maximum mobilization should be possible if the correct concessional products are matched to address the relevant risks.

At the same time, RI1 noted that DFIs are often criticized for claiming mobilization for funds that were already development focused (such as DFI own account financing). This criticism aligns with the OECDs definition of BF and the need to use development focused funding (DFI funding) to attract non-development focused funding (purely commercial funds).

In response to research sub-question one, the above discussions with DFIs highlighted five key themes regarding BF application by DFIs. The first three principles identified spoke directly to using BF in a careful manner which ensures development is being achieved, an economic rationale for the subsidy is present, and market distortion is avoided. All three of these point toward minimal use of BF and are likened to the ‘optimal use of aid’ discussed in the literature.

The fourth principle identified above tells us that DFIs are using their position of BF implementing entities to ensure that projects meet high international standards for investing. Many of these standards may not have ordinarily been implemented, hence BF is helping to bring out further positive externalities such as higher E&S standards in projects. The last principle identified was the need to use BF in a way that attracts other financiers with different risk/return requirements to the project. By mobilizing additional funds, this is a step toward maximizing development funding, which the literature termed as turning billions into trillions.

The literature on BF itself spoke to guiding BF principles being available for DFI's and interested parties, however the literature showed that these were mere guidelines. The above five themes confirmed that there is a clear link between the guidelines in the literature and what DFI's are actually applying. Each principle may not have been applied by all DFIs studied (as evidenced in Table 2), nonetheless there seems to be consensus as to the 5 themes overall. Since DFI's are the most active players in implementing BF in RE IPP projects, the results were comforting and provided a link between active application and guidelines which are not set in stone.

4.3 Application of Blended Finance by Donors: Emerging Themes

The pool of 7 Donors interviewed were quite pleased that research was being done in this area and that their input was being sought. Overall, Donors were aligned in the message that BF is an effective way to leverage their limited funds toward attaining the SDGs. DNR3 emphasized that Donors are becoming more concerned with the use of their funds as spending of taxpayer money is under additional scrutiny in recent years. It was also interesting to the researcher to learn that Donors do communicate between themselves, "we swap notes and discuss different approaches to deploy funding (DNR6). DNR4 stood out to the researcher as their engagement in BF and active steps taken to scale up operations is evident and welcomed by the DFI market.

All Donors interviewed identified themselves as having signed up to the OECD DAC BF Principles (discussed in the literature). Despite this, the researcher only focused on the rationales provided throughout the interviews. Overlap was found with the DFI themes identified earlier,

however the Donor driven themes (in the table below) had significantly different rationales and justified a separate analysis.

Table 3: Themes emerging on Donor application of BF

Theme	Donors						
	1	2	3	4	5	6	7
Development rationale and public messaging	x	x	x	x	x	x	x
Delegating management to accredited entities	x	x	x		x	x	
Regular donor reporting	x			x	x	x	x

4.3.1 Development Rationale and Public Messaging

Much like the corresponding DFI theme identified (4.2.2), Donors sought to support high impact, development focused projects. The main difference being that Donors have a broader development goal, that of achieving the SDGs, with DFIs having more defined mandates. The researcher found that Donors appeared to have longer-term goals in mind when looking to deploy their funds. “These goals are what the public and taxpayers eventually hold us accountable against” (DNR2). As a result, Donors are less involved in the individual projects that are supported by their funds and tend to delegate much of this to DFIs and specific funds.

Donor investment principles are usually agreed by country policy makers and, “include universally acceptable standards to ensure projects supported are of a high quality and involve credible partners”, as explained by DNR2. At the same time, policy makers decide on which countries and regions should be recipients of their aid, which is at times politically driven. DNR4 reminded the researcher that certain countries also have nexus requirements which seek to promote Donor countries trade and economic interests abroad. In a way some may argue that this form of aid is tied, however little evidence was found in the research pool.

Donors 1, 5 & 6 were identified to have gone over and above the ‘norm’ and identified specific initiatives which they looked to implement through BF engagement. For example, DNR1 highlighted the importance of gender equality in individual projects supported by them. Projects which were not compliant with their Women and Girls initiative would need to seek Donor funds

elsewhere. Taking such a stance on initiatives not only pushes the market to evolve but gives comfort to taxpayers that their money is supporting more identifiable causes.

4.3.2 Delegating management to accredited entities

A key element in understanding the BF principles applied by Donors is examining the linkage they have with day to day management of their funds. The researcher identified 3 main models which explain Donor-project engagement: i) through DFIs, MDBs and aid agencies; ii) through DFIs, MDBs and bilateral development banks; and iii) through MDBs and direct engagement with projects. Out of the Donors interviewed, many suggested that direct aid is a very small proportion of their activities, and even more so in RE IPP projects in SSA. The preference appeared to be dealing with MDBs and DFIs, as well as global funds which in turn channel funds through MDBs and DFIs.

Taking that MDBs and DFIs are an integral part of implementing Donor funds, DNR3 explained that, “having a rigorous approval process for implementing entities is a key due diligence step for Donors”. DNR2 shared that such approval processes are usually once off and from that point onward a pool of funds is delegated full authority to the DFI. Two Donors did share that they remained involved in the approval process for individual projects and sign off on high level terms that are sought to be implemented. However, the overall view from Donors was that they don’t have capacity for such micro managing of funds.

The actual accreditation process differed from Donor to Donor, with the average process taking 6 to 18 months with the majority of time spent on debating on how funds should be indicatively allocated to different regions and sectors. DNR2 explained that the accreditation process is, “the time when Donors can have the most influence and challenge the deployment of their funds”. When it comes to climate funds such as the Green Climate Fund, the researcher found that governance structures were influenced by committees which comprised mainly of developing country representatives. Hence Donors found it easier to commit funds to such global initiatives which were created for defined purposes.

4.3.3 Regular Donor reporting

This theme was seen across the Donors interviewed (excluding two) and captures the Donor's requirement for regular reporting. The frequency of such reporting appeared to vary between quarterly and semi-annual reports. However there appeared to be alignment in the drive to have annual reports which are publicly available. Some Donors and research institutes even went as far as to have interactive online platforms to track Donors work in sectors and regions. DNR4 noted that project indicators such as employment statistics, community spend and taxes paid are agreed upfront in the DFI accreditation process and are fed back to Donors on a project by project basis. As mentioned in the literature, Donor reporting is an important tool for governments to show taxpayers that their taxes are being used appropriately.

In response to research sub-question one, the above discussions with Donors highlighted three key themes regarding BF application by Donors. (As mentioned earlier, research sub-question one was also discussed from the DFI perspective). The responses from Donors were important as BF utilizes Donor funds which are eventually used in RE IPP projects. Donors therefore have a direct influence on how such funds are managed, and thus central to the research.

The first principle identified spoke to the need for BF to support projects with a high development impact. As discussed in the literature, the missing element in the SSA RE space is usually financing in order to unlock high development impact projects. The second principle linked Donor activities to that of DFIs, as Donors prefer to leave the active management of BF to DFIs with expertise in the space. Having a rigorous approval process for DFIs ensures Donors are comfortable with the due diligence process of DFIs that would lead to the use of BF. As highlighted in the literature, although bilateral aid/BF is still an option, the multilateral/DFI approach usually has a greater policy impact. The final principle was Donor reporting which enables Donors to track and publicly report to taxpayers on the use of their funds to ensure full transparency.

The three themes above give us a sense of what steps Donors are taking when implementing BF. The literature spoke to the need to use public sector/Donor funds in an impact driven

manner, which ensures taxpayer funds are being justifiably spent. The three themes provide the missing link from a BF RE IPP perspective, explaining how Donors manage BF engagements.

4.4 Arriving at BF Terms: Emerging Themes

The general perception from interviews was that Donors are less involved with determining BF terms. This left the task to DFIs who engage directly with projects. Overall, the understanding from respondents was that concessional terms need to be determined with the principle of minimum concessionality in mind. DFI4 referred to the process as “a fine art in a way, combining qualitative and quantitative characteristics”. RI2 confirmed the researcher’s initial views from DFIs, that there is very little guidance on how terms should be derived. As a result, DFIs learn from transactional experience and refine their internal analysis.

The DFIs also touched on an important concept when it comes to deciding on terms – the extent to which concessional funds can leverage other finance. DFI3 presented this as “the ratio of Donor funds to mobilized commercial funds”. DFI3 further explained that “there is increased pressure to have more leverage in middle income countries as opposed to low income ones”. This is as there is a greater need for concessionality to unlock funds in low income countries than middle income ones. The ability to leverage needs to be maximized, hence the choice of instrument is important and the embedded grant minimized as much as possible.

Table 4: Themes emerging on BF terms

Theme	DFIs										
	1	2	3	4	5	6	7	8	9	10	11
Decision making process	x	x	x	x	x	x	x	x	x	x	x
Strength of project cash flows	x	x	x	x	x	x	x	x	x	x	x
Procurement models	x	x	x	x			x			x	x
Instrument selection	x	x	x	x	x		x		x		

4.4.1 Decision making process

This theme covered the processes and levels at which decisions on BF terms are made. All DFIs interviewed appeared to have governance structures in place which determined BF terms – some

being more advanced than others. One of the more advanced ones included an independent committee which sat aside from the DFIs own account investment committee. Although this segregation allows for a more in-depth analysis of the project’s eligibility for BF and assessment of the adequate instruments and terms, this approach requires significant in-house capacity. The majority of DFIs interviewed used their own account investment committee to decide on terms. DFI4 reflected on the approaches, noting that “DFIs are becoming increasingly aware of the need to introduce more independence into the review process as this could conflict with their own account funding”.

As mentioned earlier, Donor involvement in the decision-making process is limited. Out of the Donors interviewed, DRN2 was the only Donor that was actively involved with deciding terms. However, DFIs did allude to the point that Donors were informed of what terms would be offered to projects, or in some cases had a no objection period to respond. DNR3 provided a different angle by explaining that Donors usually have upfront conditions under which their funds can be used, and that this was their way of influencing terms.

MDBs highlighted that they also have a secondary level of approval, or board approval, whereby board members critic high level aspects of the project proposal. DFI4 clarified that board level approvals, “won’t get into the finer detail such as terms offered”. What the researcher found comforting was that all respondents were aware of the different approaches applied in the market and acknowledged the need to standardize such processes across the board to avoid independence concerns.

4.4.2 Strength of project cash flows

This theme was undoubtedly the most focused upon as it talks to the projects economic and financial need for concessional interventions. Although the BF principles in the literature never talk directly to this theme, Carter (2015) and IRENA & CEM (2015) both discussed the need for financial analysis. DFI5 explained that, “a significant amount of time is spent undertaking a financial due diligence of the project financial model and the inputs that feed into it”. External advisors are also hired to verify the assumptions being used – although this is in any way a part of

DFIs standard due diligence process for their own account funding. The aim is to identify the limiting factors in the project cash flows and how best to address these. DFI2 explained that, “what we usually find is that in the absence of concessional interventions, tariffs are quite high, returns are too low, or debt covenants cannot be met”. Such limitations are of course based off project specific assumptions.

To ensure that terms used in the financial analysis are in line with what the market is offering, benchmarking is done against other projects in the region. However, DFI5 found that the only limitation with this was the lack of publicly available benchmarks, and thus DFIs needed to rely on projects they have worked on in the past. A good example was shared by DFI8 on the falling price of Solar PV panels globally and the impact this has had on projects in Africa which at times take years to close. Even though falling prices are a positive change, “DFIs need to ensure that such changes flow through to project costs” (DFI8).

DFI3 and 4 raised the point of financial analysis being difficult when the developer has multiple roles in a project, as knowing whether such contracts are fully cost reflective is difficult. Since the developers’ objective is to maximize returns, they would benefit from the highest level of concessionality in a project. This contrasts with Donor and DFI objectives of ensuring minimal concessionality. DNR6 completed the point by explaining that, “receivers of concessional funding are less concerned about distortion as DFIs and Donors are”. This confirmed the researcher’s thoughts when selecting a sample for this study and excluding recipients of BF.

Whilst ensuring that project costs and assumptions are in line with market standards, decision makers also pay close attention to equity returns (sponsor returns). DNR3 explained that their funding should not be used to prop up investor returns to above market levels. The view was shared by Carter (2015) in the literature. This yet again brings up the issue of having appropriate benchmarks to base these decisions off. This point also speaks to the reason why active DFIs working on the continent are best equipped to make such decisions. Their experience and relationships with governments, developers and financiers allows them to broker sensitive discussions such as return expectations and at the same time represent Donor interests.

4.4.3 Procurement models

As described in the literature, there are two basic models for procuring RE projects – FITs and tenders/auctions. The choice of approach also impacts the concessional terms offered to projects. For example, DFI10 explained that an auction process could not only be based on factors such as minimum tariff offered but could potentially hold the tariff at a fixed level and bid out the amount of concessional funds that developers require. The approach aligns with the literature by IRENA & CEM (2015). This would not only support minimum concessionality but would create sufficient competition amongst lenders to put their best terms forward. However, DFI11 added that, “procurement programs such as the REIPPP in South Africa took years to develop and significant amounts of upfront investment”. This follows on from the literature which noted high upfront costs and significant institutional capacity as barriers to auctions.

Despite the merits of the above, the more common approach is for financing terms to be decided post project tariffs are agreed (through FITs or auctions). In such cases DFIs are usually engaged to subsequently arrange the debt package with some form of BF. DFI1 shared that “in the RE space, sponsors are aware of concessional funds being available and have optimistic expectations of the terms they will receive”. However, DFI2 indicated that with the more recent attention on minimizing concessionality, terms are not as favorable as they were in the past. The respondent explained further that, “greater scrutiny and time is applied when offering blended finance to bilaterally agreed IPPs”. From further discussions the researcher found that the reason behind this was due to the work needed to ensure minimal concessionality.

DNR 3 & 4 proposed the view that some DFIs use BF to further their own account financing by making it conditional and more attractive. This is a risk that Donors may not see as critical, but other DFIs have an issue with. DFI3s views echoed this point, explaining that, “blended finance should not differentiate between DFI selection on projects, as concessionality is a stand-alone decision”. The researcher found the point interesting as this introduced an element of competition between DFIs, whereby ones with blended finance capabilities would have a better service offering.

4.4.4 Instrument selection

This theme involved DFIs deciding which concessional instruments to use and the implications of such. Respondents focused on 3 main instruments during interviews: project grants (returnable and non-returnable); concessional loans; and guarantees. These instruments “could be sized in different ways and result in different levels of concessionality”, as DFI3 described. The rationale behind this comment related to the embedded grant element discussed in the literature by Arvantis (2013). Although respondents did not allude to calculating the grant element for each project, this was the underlying message extracted. The 3 instruments are discussed separately:

Project grants

DFI2 explained that project grants are used when, “costs involved in a project cannot be covered by the available funding”. In such cases developers would usually provide more equity into the project, however this would erode their equity returns. DNR5 expressed that “if returns are transparent and tariffs have no room to increase, there may be merit in a grant”. However, DFIs did not appear to use this instrument often due to limited scope under Donor funds. DFI9s experience with Donor funds indicated that many Donors, “are looking for preservation of capital,” and require some sort of return. DFI5 added to this, confirming that some projects grants are returnable over a period. The earlier literature described this shift in the industry, to have more returnable grants such as VGF.

Concessional loans

This was the most widely used instrument across the DFIs interviewed. Donors also showed interest in this instrument as it allowed for a return of capital, coupled with an investment return, whilst maintaining concessional characteristics. The understanding was that concessional loans are a good fit when projects cannot support fully commercial loan terms. A tranche of debt with, “a lower interest rate or longer payback period is usually used” (DFI2). DFI3 explained that this instrument was, “favored by sponsors as it decreases their cost of capital”. DFI3 further shared that concessional loans are an ideal tool to use when tariffs are fixed and equity returns need to be lifted to acceptable risk adjusted levels (a point raised in the literature by Carter). The researcher

tied this in with a point made by DNR4 that RE IPP projects with low tariffs usually have concessional loans to support the projects bankability.

Most DFIs interviewed were not very willing to discuss more on terms, except one. DFI9 shared their approach to sizing, “the size of the loan would match our own account funding.” They went on to describe that the interest rate and tenor would be as close to their own account terms, with a lower interest rate and longer tenor based on the project’s needs. Lastly, DFI9 commented that larger sized projects tend to require less concessionality than a small project (all else equal). Although no standard definition exists for large and small projects, the researcher linked this difference in concessionality levels to economies of scale possible in larger projects. The researcher did find it interesting that none of the respondents made reference to grant equivalent calculations as discussed by Arvantis (2013) in the literature.

Guarantees

This instrument was generally accepted as the least form of actual concessionality as it targets a specific risk and does not interfere directly with project cash flows. According to DFI4, the risks targeted by guarantees include “buyer/seller default, first loss tranches, political risk and others”. DFI2 explained that “at times certain risks are the roadblock for investors,” and, “guarantees can address these issues and unlock funding”. Guarantees can also cover exposures fully or partially, and this can affect the guarantee fee as well. The view put forward by DNR1 was that “we expect to see more guarantees being utilized in the RE space going forward, especially in countries with follow on projects”.

In response to research sub-question two, the above four factors provide evidence of what factors are considered when deciding on BF terms offered to projects. This sub-question was particularly important to the research as the literature was quite thin on how BF terms are arrived at. The literature refers to the need to manage the use of BF/grants carefully as they are not sustainable financing tools.

The first factor covered how different DFIs have various levels of approvals when offering BF to projects, some of which included significant in-house capacity and independent reviews to

ensure terms are not distorting competition. This was touched on in the literature as a risk that BF poses if excessively applied. The second factor, determining the strength of project cash flows talked directly to the economic and financial case for BF in individual projects. Seeing evidence that thorough financial analysis is done to determine if the need for BF exists is positive. The third factor looked at the way in which a project is procured (bilaterally or through an auction), as well as the timing when BF is introduced. Auctions were seen to be favored as the level of concessionality could be bid out and kept to a minimum. Instrument selection within BF was the fourth and final factor, which talked to matching risks with the correct concessional instrument available. In this way concessionality is kept to addressing the issue at hand. The literature also covered this point and highlighted it as a means to prevent market distortion. The above provided sufficient evidence that DFIs are actively taking steps to manage BF terms in a way that maximizes its impact, whilst at the same time minimizes distortionary effects.

4.5 Mocuba Solar Case Study

Introduction

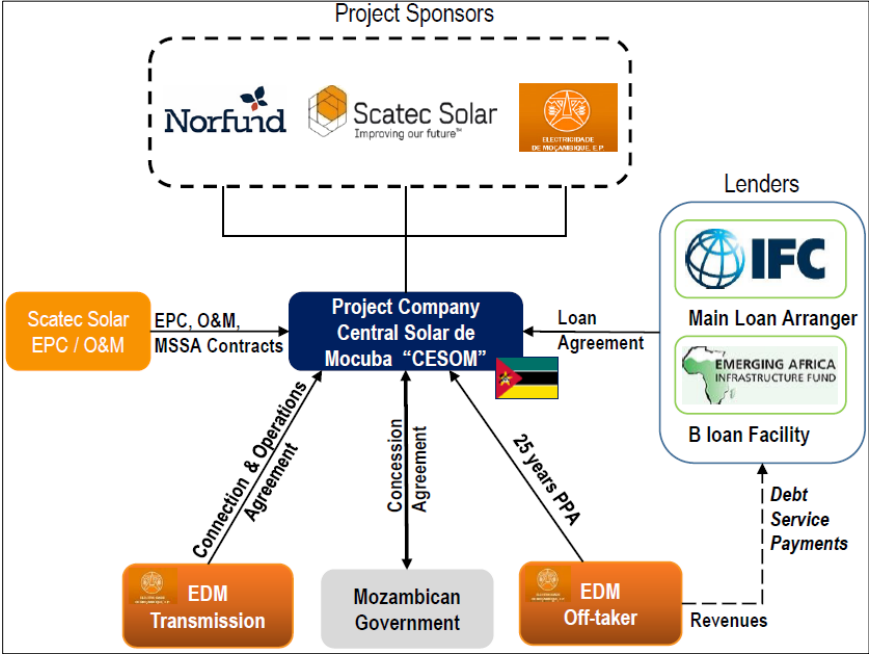
This case study aimed to demonstrate the steps taken toward justifying the use of grant/concessional funding in a RE IPP project in SSA. Telephonic interviews were conducted with two key individuals involved with the project to better understand the rationale for grant/concessional funding, as well as how this was optimized to match the Project needs. *Appendix J* contains the profiles and details of the people interviewed.

Background

The Project was developed by Scatec Solar (Norwegian publicly listed vertically integrated Solar PV developer) and Norfund (Norwegian private equity developer) and formally awarded the right to develop the project in 2015 by the Government of Mozambique. *Figure 8* below depicts the project structure diagram and main parties involved. Recommendation for the project was the result of a least cost electricity supply study conducted by the state power utility (Electricidade De Mocambique or “EdM”) in 2014 which found that the Northern Mozambique transmission grid could benefit from the addition of Solar PV. The Project is expected to generate c.77,000kwh of

power once operational in Q2 2019. The power generated will provide 175,000 homes with clean energy and represent c.5% of Mozambique’s total electricity generating capacity (c.40% of Northern Mozambique’s energy) (Chapman, 2018). Once operational the Project will increase power supply to a country with an electrification rate of c.29% (USAID, 2018) and help diversify the power mix in Mozambique which is currently hydro dominated and sensitive to rainfall conditions.

Figure 8: Mocuba Solar PV project structure diagram (Scatec, 2017)



The PPA for the Project was negotiated and signed in October 2016 between EdM and the Project Company (Central Solar de Mocuba, or CESCO), making the Mocuba Project the largest Solar PV project in SSA (outside of South Africa) at the time. Under Mozambican law there was no need to tender the project, however lenders noted that PPA framework was in line with other regions. Financial close was achieved in June 2017, with a total project cost of \$76mn and a debt package comprising of: i) \$19mn Senior A Loan from IFC; ii) \$17mn Senior Loan from EAIF (under the IFC B Loan program); and iii) \$19mn in concessional loans (administered by the IFC Blended Finance department). In addition to this the project also benefitted from a \$7mn Viability Gap Funding (VGF) grant provided by the Technical Assistance Facility (TAF) division of the Private Infrastructure Development Group (PIDG).

Challenges Faced

The investment climate for a new project in Mozambique was extremely challenging. Issues included:

- Extreme local currency depreciation against the US\$ (~40% in 2016 alone)
- Severe rationing of foreign currency and substantially reduced exchange reserves
- Freezing of donor and IMF support to the country due to a ‘hidden debt’ scandal¹
- Significant increase in the country’s national debt, with an eventual default and downgrading of the sovereign rating to selective default
- An introduction of Solar PV into a LDC with little experience managing IPPs
- A gap in the Project funding which could not be bridged by other funders
- User tariffs which were not cost reflective. This despite three increases in electricity tariffs between 2015 and 2017

The IFC was mandated in 2015 to arrange debt financing for the project and attracted the EAIF through its B Loan program (both IFC and EAIF loans were at commercial terms). Taking the above challenges, the Project was looking at an extremely high tariff if fully funded at commercial terms, which EdM would not be able to sustain. Not only did this Project need to demonstrate the viability of Solar PV in Mozambique, but this would be the first pricing benchmark for the technology in the country.

Grant Solutions and Approvals

The Project was able to decrease the tariff level through two layers of grant/concessional instruments, namely concessional loans which were administered by IFC’s BF department and a VGF grant provided by PIDG. The concessional loans brought the tariff down to USc13² at year 1 commissioning, and the VGF grant managed to reduce this even further³. Each of these concessional products were administered and decided through processes as described below:

¹ The 2018 scandal involved loans of c.\$2bn to state owned companies which were guaranteed by the State

² This tariff was later decreased due to the involvement of the TAF VGF grant. The initial tariff pre-concessional loans and the VGF grant was not publicly disclosed

³ The final PPA tariff post the VGF grant and concessional loans was not publicly disclosed. Tariffs in the range of USc13 were considered high based on global benchmarks at the time, however this represented a much cheaper alternative to other sources of new generation (e.g. diesel barges) to deal with power constraints in Northern

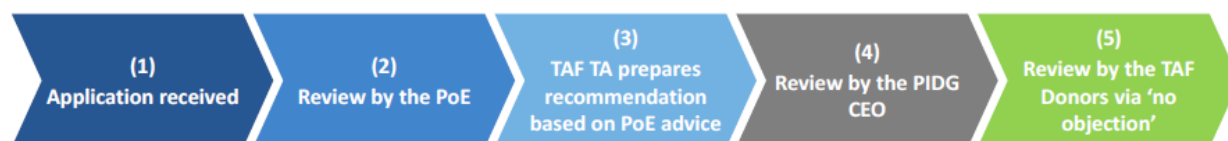
a) VGF grant from TAF:

TAF is one of the facilities offered by PIDG, a multi donor institution involved with promoting the mobilization of private sector funding to infrastructure projects in the world’s poorest countries. An application for TAF VGF funding can only be made by another PIDG facility who is already involved in the Project (in this case EAIF being the other PIDG facility). An initial eligibility check was done by EAIF based on *Table 5* below:

Table 5: TAF VGF eligibility criteria

Eligibility Criteria ⁴	Met?	Comment
Project in a DAC1 or 2 country	Yes	Mozambique is DAC1
Project has strong, demonstrable, pro-poor impacts	Yes	Development and employment in one of the poorest areas in the country
Project in sanitation/solid waste/transport/energy sector	Yes	Energy sector project
Grant request is <15% of total project cost	Yes	Request was for \$7mn, which is c.9% of total project cost
Desirable project characteristics: <ul style="list-style-type: none"> - Strong positive impacts on females - Clear, strong climate change benefits - Located in a fragile or post-conflict state 	n/a Yes n/a	Clean energy project

Since the Project did appear eligible for VGF funding, EAIF made a VGF application which required the TAF application form to be submitted, as well as a concept note (specifically for VGF requests), under the following process:



- 1) An independent consultant was hired by PIDG to complete the concept note on behalf of EAIF. This was not part of the normal process and provided an extra layer of transparency and independence since EAIF itself may have been conflicted. Information submitted included the TAF application form, concept note and supporting documents. The concept

Mozambique. Furthermore, the final tariff was in line with round 1&2 SA REIPPP solar PV projects which were awarded around the same time and had comparatively lower risk profiles

⁴ Adapted from “VGF Policies”, available at: <https://www.pidg.org/resource-library/other-documents/vgf-policies-and-procedures.june-2016.pdf>

note covered areas such as: development impact, level and timing of VGF, beneficiaries, affordability of tariffs, commercial case, and possibility of alternatives (full list of questions included in *Appendix K*). The independent consultant also opined on an appropriate grant amount which should be considered by the Panel of Experts (PoE), based on the projects cash flows, gap in funding and need to bring down the tariff to benefit end users. The TAF Technical Adviser then made an initial assessment of the concept note and determined that the project was potentially eligible for TAF VGF funding. Olivia Carballo (EAIF Investment Director), highlighted that one of the main driving factors behind the VGF grant was that it had to be pro-poor, and support affordable services for poor people – in this case through a lower project tariff which leads to lower user end tariffs.

- 2) The Panel of Experts is a specific body used to review applications for VGF funding and consists of three individuals, two independent and a third member being the chair of one of the PIDG committees, all of which have extensive experience in the field. The panel had 10 days to evaluate the rationale put forward for the request (PoE evaluation work sheet attached in *Appendix K*). The project request was reviewed based on: meeting eligibility criteria; appropriateness of grant sizing; risk mitigation; and other issues donors might have. In cases where the VGF amount was not determined through a tender process (such as Mocuba) the PoE advise on the level of VGF funding that should be granted, based on justifications provided by the independent consultant. The main concern the PoE had was whether the project contracts (EPC, O&M etc.) were in line with market standards and that Scatec was not unduly benefitting through their role as Sponsor, EPC and O&M provider. The EAIF and IFC benchmarked these elements of the project contracts with others in the region and determined that the contracts were in line with market practice. It should also be noted that the benchmarks in SSA were limited, with SA having the bulk of projects. Furthermore, economies of scale were not optimally possible as the project was 40MW and not as large as some of the SA projects (75MW).
- 3) After reviewing the PoE recommendations, the TAF TA decided that the project should qualify for TAF VGF funding based on its pro-poor impact through the tariff reduction and its ability to move the project forward. The project would also be a breakthrough for clean energy in a poor and relatively underserved area of Mozambique. Furthermore, the terms put forward were appropriately matched to the project requirements.

- 4) The PIDG CEO was supportive of the Project. However, the researcher was not able to get further detail on the CEO's comments or additional requests prior to the project proceeding.
- 5) Lastly, the TAF donors (ADA, DFID, DGIS, Irish Aid and SECO) were given a 10 day no-objection period, which, although increased the processing and approval time, ensured donors had sufficient oversight. The researcher learned that donors were satisfied with the analysis provided.

b) Concessional loans from CIF:

The Climate Investment Fund is an \$8bn multi-donor fund designed to accelerate climate action by empowering transformations in clean technology, energy access, climate resilience, and sustainable forests in developing and middle-income countries. The fund has several sub-funds, two of which provided concessional funding through IFC Blended Finance operations to the Mocuba Project. The 2 sub-funds do have different strategic mandates: i) The Clean Technology Fund supports low carbon mitigation technologies; funds for the Mocuba project were approved for IFC use under the Utility Scale Solar PV Sub-Program in August 2015; and ii) The SCF-PPCR helps developing countries implement resilient solutions to the impacts of climate change. The SCF-PPCR, of which Mozambique was a pilot country, also tied in with the Mozambican governments National RE Strategy 2011-2025. IFC obtained approval for financing eligible projects like Mocuba from the PPCR donor committee in June 2016.

Approval by donors and stakeholders of these pools of funds to be implemented by the IFC Blended Finance department took place when these sub-funds were formed and designed on a country level. The guiding principles aligned to IFC's own investment principles, which donors and stakeholders took comfort in. The IFC Blended Finance department was therefore the primary focal point for setting terms and ultimate approval of concessional funds to the Mocuba Project under the following process⁵:

⁵ This process runs in parallel with IFC's own account investment process, and information is shared freely, however decisions taken independently



- 1) The Project was taken for donor approval in 2015 to determine if the Project met the countries objectives of diversifying the power mix, as well as the fund objectives of climate mitigation and adaptation. At first, the full amount sought of c.\$19mn was to come from the CTF pool of funds. However, the subsequent availability of SCF-PPCR funds which had a relevant climate adaptation angle resulted in the use of 2 facilities. The SCF-PPCR pool of funds had a \$10mn limit for the project in Mozambique. One of the challenges was justifying the use of funds under the 2 sub-funds used. The climate mitigation requirement under CTF was easier to prove as the Solar PV Project would provide clean power and address climate change. The climate adaptation requirement under SCF-PPCR was tougher to agree on as it is region specific. The project was therefore designed to withstand the climate specific risks faced in the northern region of Mozambique. Donors had no objection supporting this Project as it was of strategic importance to the northern region of Mozambique. There was no further engagement with donors as IFC BF department was given full delegated authority to make decisions on these funds.
- 2) The concept note followed shortly after, with the main area of discussion being around why concessional funds were needed for this Project. The outcome from this independent committee was that the potential for this Project to demonstrate the commercial viability of Solar PV in Mozambique, as well as the expected development impact from the Project, justified the concessional support. In the absence of concessional funding the Project would have required a higher tariff to move ahead. Furthermore, the funds would support efforts to decrease tariffs to reach grid parity with thermal sources.
- 3) The BF Investment Committee (IC) meeting took place in early 2016 and involved an analysis to indicate that the project assumptions were thoroughly checked, and that financing terms were adequately matched. The introduction of VGF funding (discussed earlier) came about, as the required tariff level was still considerably high, and not competitive with thermal alternatives. Concern was raised around having an additional layer of concessionality, however comfort was taken by the committee as the VGF funding went through a transparent process and would directly decrease the PPA tariff and support affordability. Furthermore, the level of

concessionality was justified as the Project was a first of its kind in an IDA FCS country and would provide clean power to a poor region in Mozambique which was largely disconnected from the main grid. Since IFC's BF can only be used in conjunction with IFC's own account products, IFCs own investment principles applied. These include working with legitimate partners, maintaining E&S safeguards, ensuring the project is a strategic fit for the country, and a detailed financial analysis to ensure project bankability.

- 4) Board approval was received toward the end of 2016, with IFC's BF principles at the time⁶ (*Table 6*) demonstrating that blended finance was being applied appropriately.

Table 6: IFC Blended Finance Principles (2016)

Core Principle	Met?	Detail
Moving beyond additionality	Yes	This was met as the project was not able to go ahead without the concessional loans.
Avoiding market distortion	Yes	Minimum concessionality was achieved through a detailed analysis of the financial model, whereby equity returns were kept fixed and project viability was the main aim. Terms such as tenor and repayment profile followed the commercial loans, with the interest rate margin being the only concessional factor.
Sustainability of markets	Yes	Supporting this project would demonstrate that Solar PV is possible in Mozambique and pave the way for future projects by de-risking the industry.
Promoting high standards	Yes	The BF approval was independently evaluated (BF committee) and transparent as the project company was fully aware of all approval steps. The Project passed IFCs due diligence process and upheld IFC's stringent E&S performance standards. These would set a good example for future projects procured in Mozambique.

Conclusion

The above has provided a clear picture on the issues faced by the Mocuba Project, as well as how the Project managed to bridge the funding gap and move ahead. More importantly, the case study provides clear evidence on the processes involved with providing the TAF VGF grant as well as the concessional loans. These two concessional sources of funding managed to address the lack of funding due to adverse investment conditions in Mozambique. Furthermore, evidence was

⁶ These four core principles were applicable at the time of decision making and have subsequently evolved to the five principles adopted as the 'Enhanced DFI Principles for Private Sector Operations'

provided as to how terms to these concessional instruments were determined, and how concerns of private sector rent seeking were managed through monitoring equity returns and undergoing a thorough due diligence.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

Overview

The aim of this research was to examine the application of grants/concessional products in RE IPP projects in SSA. More commonly referred to as blended finance, this form of finance structuring can leverage the large private sector market. Although the literature surrounding BF and its use was limited, the researcher saw merit in delving into this area of research due to the increasing role it plays in the SSA energy sector. The study involved qualitative analysis due to the limited and consolidated nature of the quantitative data available. However, the engagement with Donors, DFIs and research institutions through semi structured interviews was an effective tool to engage on this topic. Although confidentiality of interviewee profiles had to be maintained, this was done to avoid direct criticism of institutions and allow for a transparent view of institutional processes.

Donors and DFIs, who are the key decision makers when it comes to decisions on blended finance, appeared to approach the topic of BF management slightly differently, and much of this relates to their internal capacities and strategic focuses. Little detail-oriented alignment was seen between Donors and DFIs when discussing the mechanics behind determining terms that are offered to projects. On the other hand, the case study indicated that on a standalone project basis, significant due diligence is done on the blended finance side. Overall the research was successful in that the researcher was able to extract meaningful answers to the research question through the outcomes of the sub-questions, and conclude that from the sample of market players studied, BF is being applied in a justified manner in SSA RE IPP projects.

Summary and Conclusions – Criteria considered when looking to offer BF to RE IPP projects

This sub-question aimed to understand the criteria which are considered when deciding to offer blended finance to RE IPP projects in SSA. The thematic analysis applied brought out key themes in managing blended finance from Donors and DFIs:

DFIs

Avoiding market distortion

Economic case and development rationale

Selecting the right instruments

Implementing best practices

Mobilization of private sector

Donors

Development rationale and public messaging

Accreditation of DFIs

Regular donor reporting

In extracting results from the interview data, the researcher was pleased to find that the principles applied by DFIs in managing BF align well with the literature on the topic (OECD and Enhanced Blended Finance Principles). Although Donors endorsed the OECD principles, their limited involvement with project management meant that their operational priorities were different. Nevertheless, a key similarity was that a strong development rationale is needed for BF. At a very minimum this factor gives some overall comfort as to the implementation of BF across the board, and that these funds are applied in a development focused manner.

When looking at management of blended finance, there was a clear delegation of authority to invest Donor money through DFIs. The interaction between Donors and DFIs was strong, with decision making taking place independently at both levels. However, the objectives of Donors and DFIs seemed to be quite different, as Donors have much broader, big picture targets and lack the capacity to do project by project analysis.

The DFI principles identified can be summarized well by saying that DFIs are looking to maximize the limited BF funds available by mobilizing private sector funds. In order to achieve this, they select the right concessional instruments based on the projects own economic case in order to avoid market distortion. At the same time the nature of DFI involvement in these projects allows for the implementation of global best practices which accompany most DFI investments.

The researcher did find that although many DFIs and Donors have stringent approval processes, not all decision-making rationales regarding concessional products are made public. Taking that public funds are being used, there is a greater need for individual project disclosures on the rationale for blended finance usage. Furthermore, since scarce public funds are going toward private sector projects, this furthers the need for a transparent decision-making process. Few DFI's

have disclosed full project specific rationales, and the ones that do disclose, have not done so consistently.

Summary and Conclusions – Basis for grant/concessional terms offered to RE IPP projects

This sub question aimed to investigate how the grant/concessional terms offered to RE IPP projects in SSA were determined. The thematic analysis uncovered four key themes when it comes to deciding on BF terms:

Themes on arriving at BF terms

Strength of project cash flows

Instrument selection

Procurement model

Decision making process

The underlying messaging across all 4 themes was on minimizing concessionality in individual projects. Although this was not a specific theme itself, it connected the themes together. This was backed up by the literature on BF and grants which reiterate that concessional funds run the risk of market distortion and crowding out of sustainable finance. Unfortunately, the researcher found that literature on arriving at BF terms itself was minimal.

The interviews determined that assessing the strength of project cash flows was quite complex and included analyzing the financial model, benchmarking costs and monitoring equity returns. All this with the intention of sizing concessional terms that would allow the project to move ahead. This fed in to the theme of instrument selection as the aim of BF was to unlock specific issues preventing projects from moving ahead. The traditional model of just providing upfront grants has thus evolved into matching risks with appropriate solutions. The theme on procurement models looked at the process and stage at which BF is introduced into a project. This can affect the terms which are offered based on an evaluation of the procurement process. Lastly, the decision-making process tied the other three themes together as this speaks to the various levels of evaluation that DFIs undergo prior to offering terms. These levels of approval often include industry experts and independent evaluators to ensure that the terms offered are fair and achieving the intended outcome.

Summary and Conclusions – Evidence of justified application of BF, at appropriate terms

The final sub question aimed to determine if a recently closed RE IPP project in SSA demonstrated justified application of BF, at appropriate terms. The first grid connected solar PV project in Mozambique (Mocuba Solar) was selected as a case study. Not only did the Project take on the task of demonstrating the commercial viability of Solar PV in a remote area of Mozambique but was also faced with challenges that deterred general investment into the country.

The case study uncovered that the strategic use of 2 forms of blended finance were able to make the project more commercially bankable and supported the lowering of user end tariffs. The researcher was pleased to learn of the significant due diligence and approval processes undergone to arrive at terms which were tailored to the projects financial and economic constraints. Sharing these lessons learnt and approval rationales behind the use of specific blended finance instruments could be a way to better the successive use of blended finance in Mozambique (and the region). The researcher was pleased that sufficient evidence was found to conclude that this particular project demonstrated appropriate use of BF.

Recommendations

Although not an intended outcome of the study, the researcher has developed an extensive database of players in the blended finance space in SSA. It was only through this study that the researcher found how valuable such a database can be, as identifying the correct people to speak with had taken a significant amount of time. This database could benefit future research.

Throughout the research a significant shortcoming identified in the blended finance market was the availability of project specific information and examples. Not only would this level of transparency ensure taxpayer money is put to effective use, but this would allow for tracking of the blended finance market. At the same time, projects could benefit from SSA specific benchmarks when conducting their pricing analysis.

Another recommendation would be for DFIs and Donors to focus efforts on addressing market failures, as opposed to plugging the finance gap in individual projects. Although the latter may be

a more manageable task, addressing the systematic issues faced by the energy sectors in SSA countries is the more long-term concern.

Lastly, there appears to be several different definitions for blended finance which are essentially a nuance in the concept of using Donor funds to leverage commercial funding. Instruments considered and the method of calculating concessionality differ. The various definitions mean that Donor and DFI reports on blended finance usage are not entirely comparable across the board. Having a universally accepted definition, if not just for reporting purposes, would allow for more meaningful impact assessment.

Future Research

The research has uncovered that the area of blended finance, particularly in SSA RE is quite under-researched, despite the increased interest. Possible further areas of research include:

- A quantitative study examining the grant equivalent amounts utilized in RE projects across SSA. The data could be used to determine the overall trend of concessionality over time, and at a minimum help develop a database for other qualitative studies.
- Research on the mobilization/leverage effect of different DFIs using concessional funds in RE IPP projects.
- A quantitative study looking at the effects of concessional funding structures and instruments on RE IPP tariffs.
- Forming a common set of reporting requirements for projects utilizing blended finance, through a template for both Donors and DFIs, with guidance on how to compute figures.

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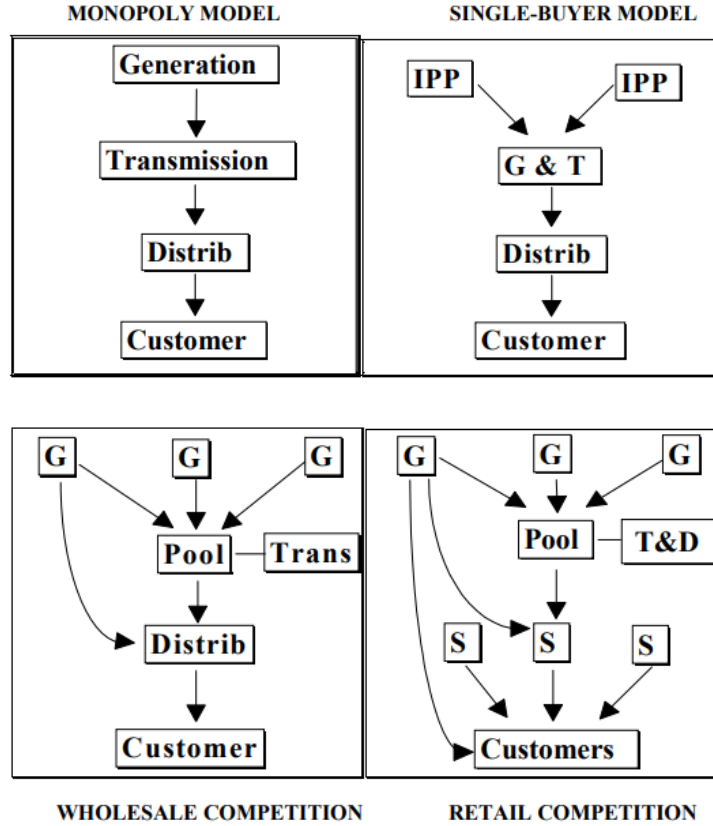
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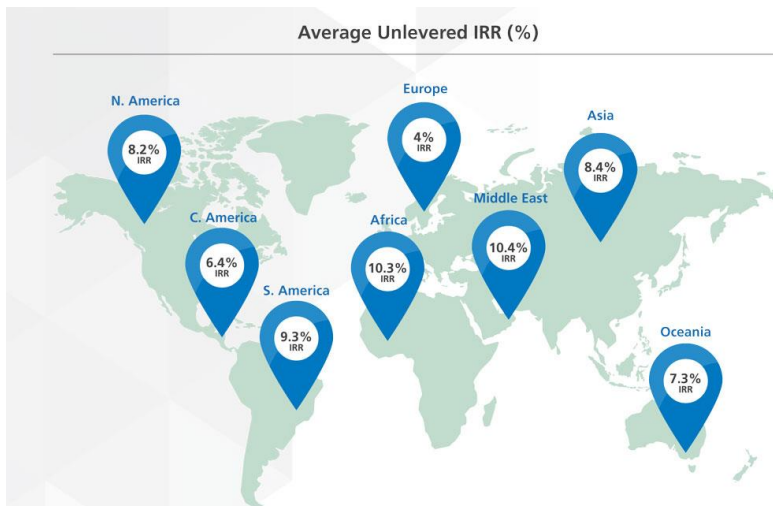
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APPENDICES

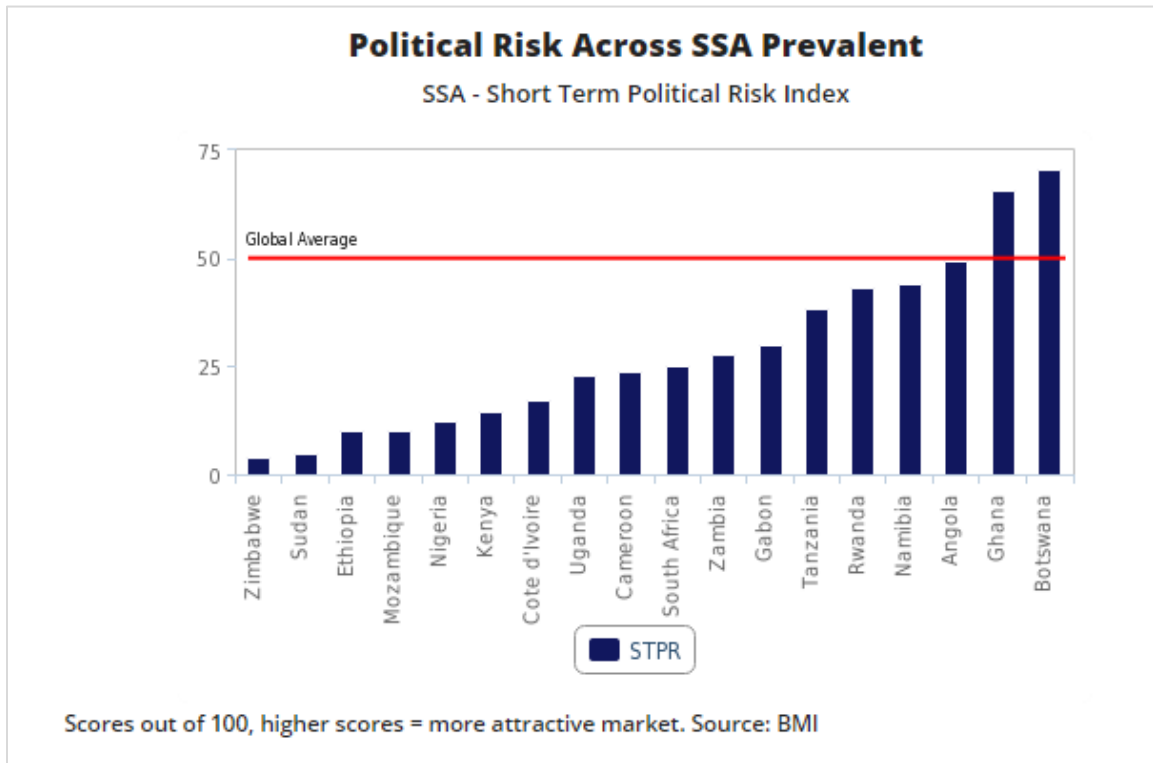
Appendix A: Power utility models (Eberhard, 2000)



Appendix B: Global expected return levels (Tweed, 2016)

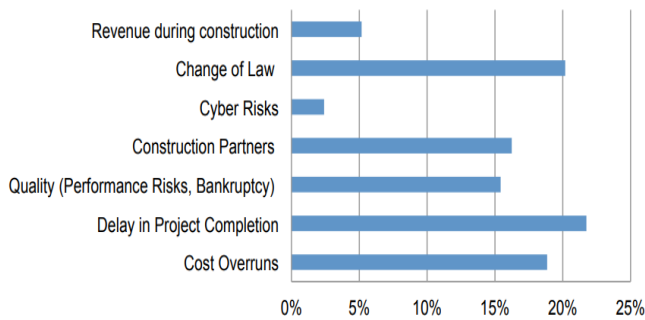


Appendix C: Global short term political risk index (BMI, 2018)

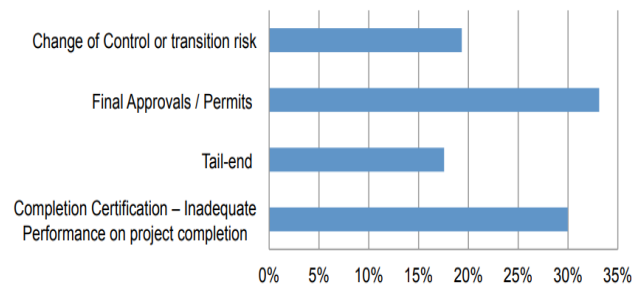


Appendix D: Construction and completion risks (Papakonstantinou, 2016)

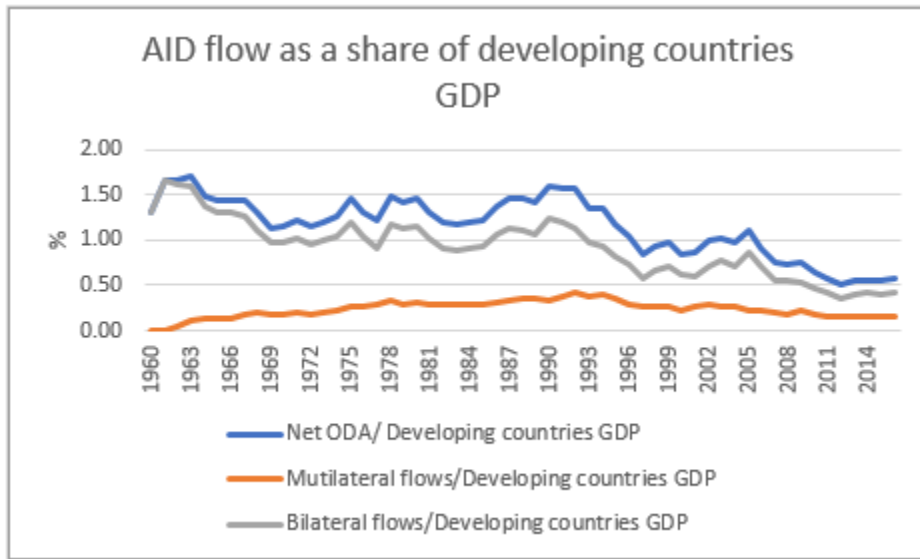
Construction Risks as deterring factors to infrastructure investment in Emerging Economies - % of responses



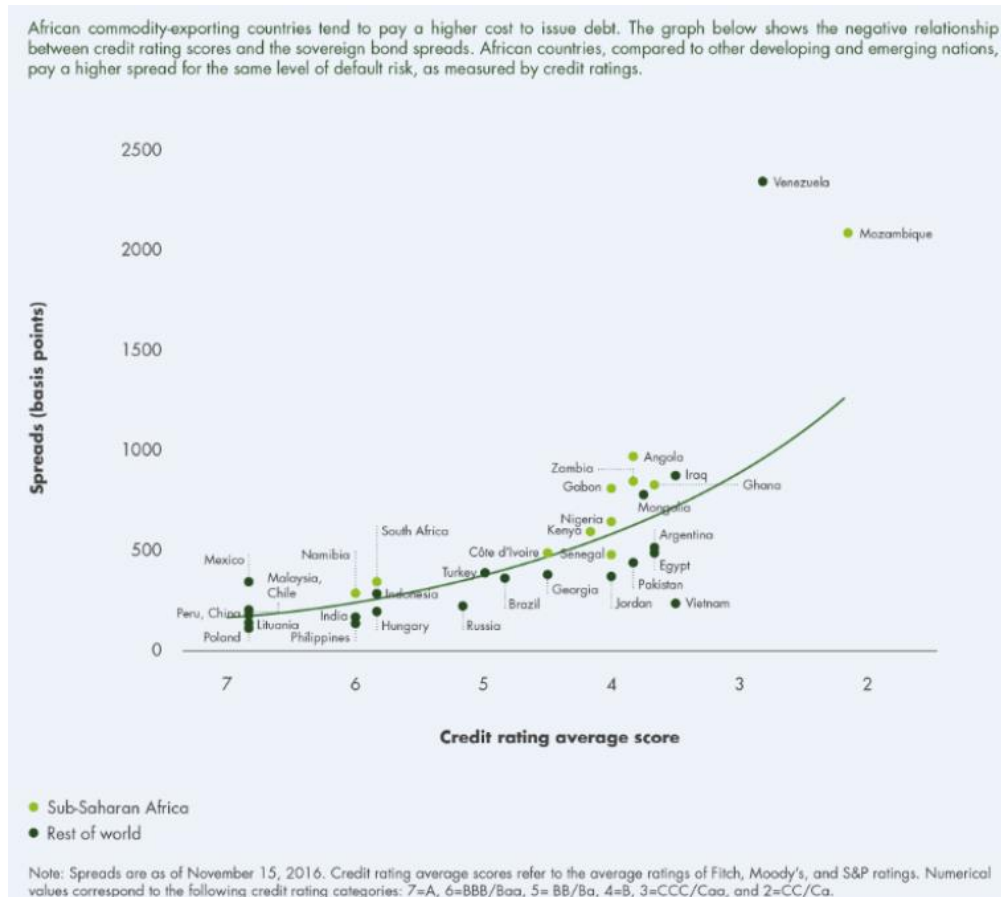
Completion / Commissioning Risks as deterring factors to infrastructure investment in Emerging Economies - % of responses



Appendix E: Aid received as a percentage of GDP (Gill, 2018)



Appendix F: Credit rating vs sovereign bond spreads (Sow, 2017)



Appendix G: Interviewee profiles

Respondent Code	Description of Blending Activities	Blending Engagement	Duration of Interview
Donors			
DNR 1	Mixing grants and commercial funding (aid agency)	Through Bilateral DFIs and MDBs	34min
DNR 2	Guarantees, project grants, technical assistance	Through aid agency, bilateral DFI and MDBs	34min
DNR 3	Mainly grants bilaterally. Funds and MDBs have full flexibility	Through funds, MDBs and bilateral	26min
DNR 4	Concessional loans, grants, guarantees, repayable grants	Through MDBs and platforms	32min
DNR 5	Project and TA grants, concessional loans, guarantees, equity	Through aid agency, bilateral DFI and MDBs	30min
DNR 6	Grants for TA and project preparation, credit enhancement	Through aid agency, bilateral DFI and MDBs	26min
DNR 7	Mainly grants bilaterally. Funds and MDBs have full flexibility	Through funds, MDBs and bilateral	37min
Implementing Entities			
DFI 1	Mainly grants for project preparation	Directly with projects	24min
DFI 2	All (grants, concessional loans, equity)	Directly with projects, through sub funds	28min + 33min
DFI 3	All (grants, concessional loans, equity)	Directly with projects, and advising other DFIs	50min
DFI 4	All (grants, concessional loans, equity)	Directly with projects	40min
DFI 5	All (grants, concessional loans, equity)	Directly with projects	30min
DFI 6	Grants (returnable and non returnable) in smaller projects	Directly with projects	31min
DFI 8	All (grants, concessional loans, equity), implemented through donors	Directly with projects	26min
DFI 9	All (grants, concessional loans, equity)	Directly with projects	32min
DFI 10	Advice to a large donor on implementing blended finance	Directly with projects	29min
DFI 11	All (grants, concessional loans, equity)	Directly with projects	31min
Research Institutions			
RI 1	Institution providing independent research on BF transactions	n/a	34min
RI 2	Institution providing research and guidance on BF transactions	n/a	44min

Appendix H: Guiding Interview Questions

Questions for Implementing Entities and Donors

Main Q 1 (shared with respondents):

What considerations are made and requirements needed when looking to offer grants to RE IPP projects in Sub-Saharan Africa? And are these aligned amongst different grant providers?

This question is focusing on what is considered in the grant decision-making process, and if enough due diligence is undertaken by donors/implementing agents.

Guiding questions for the researcher (not shared):

- 1) What type of grants does your institution provide? (technical assistance, upfront project costs, concessional loans etc.)
 - a. Are there pockets of grant funds earmarked for countries/sectors? Or are funds pooled generally?
- 2) What general principles/guidelines are followed by your institution when providing grant finance to RE projects in Africa?

- a. Are any global alliance of principles followed? (DAC OECD principles etc.)
- b. Do these principles form a minimum base for all projects, or does this differ among projects
- 3) Is the concept of minimum concessionality an important consideration?
 - a. If so, how is this concern managed?
- 4) What project specific factors are considered by your institution ahead of providing a grant?
 - a. Sector situation/tariff levels/scale of RE in country/equity return levels
 - b. When would these factors justify a grant?
- 5) Are commercial/local finance providers consulted prior to offering grants to projects?
- 6) Is the general understanding to move away from grant funding to projects over time?
 - a. Are grants expected to change in form over time?
 - b. Is the intention to move toward commercial terms over time?
- 7) Are there conditions to the grant funding that your institution provides?
 - a. Specific transparent reporting etc.
- 8) What is the average success rate of projects which are considered for grant funding vs ones that actually receive grant funding?
 - a. Do these projects usually get the maximum being requested, or are they limited by the grant funding constraint

Main Q 2 (shared with respondents):

How is the grant value/component determined when offered to RE IPP projects in Sub-Saharan Africa?

This question aims to understand if grants are sized according to specific conditions and project needs, or arbitrarily determined based on availability of funds.

Guiding questions for the researcher (not shared):

- 1) Regarding upfront grants to pay for technical assistance and project costs:
 - a. To what extent should these be covered by grants, as opposed to being paid by Developers?
 - b. How is this level of subsidization determined?
- 2) Regarding concessional loans:
 - a. How are concessional loan terms determined (tenor, int rate, repayment profile)
 - b. Is the embedded grant element of concessional loans ever calculated?
 - c. If so, how is the grant element of your concessional funds determined? (formula /benchmark /reduction in tariff etc.)
 - d. Is the level of this embedded grant internally scrutinized?
 - e. How long does this approval process usually take?

- f. Does your institution have an internal rate of return required on concessional loans provided (above LIBOR)? If so, how does this differ from project to project?
- 3) Are Sponsor equity returns a consideration when deciding on the grant size?
 - a. Are returns ever limited to prevent undue private sector profiting?
- 4) Are multiple forms of grants in a single project possible?
 - a. How are these managed and sized to prevent misuse?
- 5) How would you differentiate between a 'weak project' (not worth pursuing) and one which requires a substantial amount of grant funding to make it viable?

Question for Research Institutions

- 1) Are guiding principles for BF usage being aligned with DFIs?
- 2) Are these principles mere guidelines or are they being incorporated into governance structures?
- 3) Is there pushback from institutions to align on principles?
- 4) Are donors aligned with these principles?
- 5) Do donors have different objectives regarding use of their aid?
- 6) Is the BF market at too early a stage to provide meaningful conclusions on minimal concessionality used?
- 7) Are there any guidelines on how terms should be determined?
- 8) are there any guidelines on multiple concessional elements in a single project?
- 9) Is there a push for more transparency into implementing entities approval/decision making process around granting BF?

Appendix I: Blended finance instruments (Tonkonogy et. al, 2018)

INSTRUMENT TYPE	DESCRIPTION	EXAMPLES	ADDRESSES WHICH SPECIFIC RISKS/ BARRIERS
Direct Investment	Debt or equity instruments with direct contribution into a blended finance vehicle (e.g., project or fund)	Junior/ subordinated capital (e.g., concessional equity & debt)	Multiple risks including off-taker risks, construction risks, revenues attractiveness, etc.
		Commercial capital (catalytic when used for demonstration effect, also known as "anchor capital")	Access to capital
Guarantees	Generally, three party agreements, where a third party provides an extra layer of protection for the beneficiary of a service, e.g. debt service, in case the entity who would normally provide a service fails to do so	Loan guarantees	Access to capital, counterparty / off-taker / credit risk
		Performance guarantees	Technical risk
Hedging instruments, swaps, and derivatives	Contractual instruments to help manage different types of risks faced by an investor or borrower	Local currency hedges/swaps	Currency risk
		Securitization	Liquidity/time horizon, scale, counterparty / off-taker / credit risk
Insurance	Two party contracts between the insurer and the policy holder. The insurance provider promises to provide financial compensation in the instance of an event that results in a financial loss	Political risk insurance	Political and social risks
		Performance insurance	Construction risks, operation and output risks Upstream resource-related risks
Commercially oriented preparation support	Grant or concessional funding specifically to address early stage development risks	Project preparation funding or technical assistance	Administrative risks, Access to capital, capacity at local level

Appendix J: Case study interviewee profiles

Name	Company and Position	Duration of interview
Olivia Carabello	EAIF Transaction Director	44min
Neelam Patel	IFC Investment Officer (Blended Finance Team)	50min

Appendix K: TAF VGF approval documents

TAF VGF concept note requirements:

Concept Note Headings

- a) PIDG Facility:
 - 1) Which PIDG facility (apart from TAF) is involved with the project?
- b) Development Impact:
 - 1) Provide a description of the project's development impact.
 - 2) What is the estimated ERR of the project (with the capital grant included)? List the assumptions used.
 - 3) What is the estimated IRR of the project (with and without the capital grant)? List the assumptions used.
 - 4) What other project options were considered and does the chosen option represent the best benefit to cost ratio?
- c) VGF Level and Timing:
 - 1) Maximum VGF grant required for the project.
 - 2) Indicate timing of VGF payments.
 - 3) How is the VGF grant level to be determined? If not by competition, explain why and how this will be done.
- d) Beneficiaries:
 - 1) Who are the primary beneficiaries of the project's services?
 - 2) How is "poor" defined in the context of this project?
 - 3) Annual per capita income of expected project beneficiaries.
 - 4) Percentage of per capita or household income spent on the project services before and after impact of VGF grant.
 - 5) How are poor beneficiaries targeted and what mechanisms will be put in place to ensure positive impacts for targeted beneficiaries?
 - 6) Number of households expected to benefit from the project in the project area.
 - 7) Number of people per household in project area.
 - 8) Number of women and girls that are expected to benefit from the project's services in the area.
 - 9) Percentage of population in the project area expected to have access to the service.
- e) Investment:
 - 1) What is the estimated capital cost of the project and how has this been determined – in particular, where the level of VGF grant itself is not determined through a competitive process, have the project costs been arrived at through a competitive process or appropriately benchmarked?
 - 2) How much private sector financing will be committed to the project (debt, equity)?
 - 3) How much financing from other sources is involved (government funding and / or co-financing)?
 - 4) Will the VGF grant be disbursed after equity or pro rata with debt?
- f) Affordability of Tariffs:
 - 1) Minimum user-based revenue required to cover O&M (in US\$).
 - 2) Average expected tariff (if relevant) for project beneficiaries.
 - 3) Collection rate, if relevant.
 - 4) Where relevant, if collected tariff is less than the minimum required to cover O&M costs, how is the gap being filled?
 - 5) Describe other subsidies, if any, affecting targeted beneficiaries for same service (e.g., lifeline tariff or cross subsidy).
- g) Outputs and Service Quality:

- 1) Indicate nature of service and current availability level (e.g., average hours per day of access to the service) and comparison with existing availability and quality (e.g., number of interruptions or outages per day).
 - 2) How will the project outputs be measured, e.g., through a PPP contract or through regulation?
 - 3) Will any grant or performance-based payments be made on the basis of output achievement?
 - 4) If so, indicate outputs (or milestones) and corresponding grant as % of total grant.
- h) Public Authority Obligations:
- 1) What principle risks (if any) are being allocated to the public authority?
 - 2) What is the value of any liabilities (actual and contingent) that the public authority is being asked to bear, if any?
 - 3) Is the public authority obliged to repay part of all of the VGF in the event of authority termination?
 - 4) How is the public authority, if relevant, organised to manage the project procurement process in an equal, fair, transparent and non-discriminatory way and deliver value for money?
 - 5) How well is the public authority organised for subsequent management of the contract, if relevant?
 - 6) What is the risk (if any) that the service delivered by the project will change and how easily can the project respond to such changes while delivering value for money?
- i) Commercial Case:
- 1) How will competition be generated for the supply of the project inputs (capex, opex and, if relevant, finance) – it is very important that VGF is not used to supplement the profit margins of suppliers but is used to address a clear issue of affordability.
- j) How Will Key Project Risks be Mitigated?
- 1) Risk that government lacks ownership of, commitment to, the project and its objectives.
 - 2) Risk that the contractor fails to complete the project (are there performance guarantees and would TAF VGF be a beneficiary of these?).
 - 3) Risk that the project operation is unsustainable and/or inefficient once any capital grants disbursed.
 - 4) Risk that customers are unwilling or unable to pay tariffs.
 - 5) Risk that service provider lacks technical, financial, and/or managerial capacity.
 - 6) Risk that regulator or implementing agency, if relevant, is unwilling or unable to manage post-closure contract/regulatory compliance.
 - 7) Risk that the project loses focus on service benefits for the poor after the capital grant is disbursed.
 - 8) Risk of market distortion because of unfair competitive advantage afforded the project receiving the VGF grant.
- k) Conclusions – Key Alternatives Eliminated?
A concluding section of the Concept Note should confirm the following:
- 1) That the tariff/user charges cannot be increased to eliminate or reduce the project viability gap;
 - 2) That the project term cannot be increased in order to eliminate or reduce the viability gap;
 - 3) That the capital and finance costs are reasonable and based on the standards and specifications normally applicable to such projects;
 - 4) That the capital and finance costs cannot be further reduced in order to eliminate or reduce the viability gap.

TAF VGF PoE evaluation worksheet:

VGF Evaluation Work Sheet

Eligibility Criteria	Details	Definition/Rationale	PoE Comments
1. Eligibility: Must be pro-poor	1.1 Targeting the poor	How well does the project target poor people and ensure that they benefit?	
	1.2 Pro-poor affordability benefits	What is the nature and size of pro-poor affordability benefits? Are they <u>direct</u> (in terms of affordable user tariffs) or <u>indirect</u> (in terms of affordable unitary payments by government)? If the latter, how effectively do these benefits filter down to the poor?	
	1.3 Other pro-poor benefits	Are there other ways in which the project benefits the poor (job creation, social add-ons, etc.)? How significant are these benefits?	
	1.4 DAC 1 or 2	Does the project meet the required country focus (DAC 1 or 2)? If not, is an exception to this requirement warranted?	
2. Grant size: Must reflect value for money	2.1 Determination of subsidy level	Is the subsidy level determined via a competitive process for selecting private sponsors/operators (operators selected on the basis of lowest subsidy required)? If not, is an exception to this requirement warranted?	
	2.2 Underlying project costs	If competitive operator selection is not possible, do appropriate expert reviews and/or benchmarking show that the underlying project costs have been established through a competitive process or equivalent (i.e., are at a level that would have reasonably been achieved through competition)?	
	2.3 Subsidy size	A VGF grant is supposed to be big enough to transform an economically viable project into a financially viable one, but not so big as to make the project wildly profitable. Do the ERR and IRR for this project confirm this?	
	2.4 Required maximum subsidy size	Is the subsidy less than (or equal to) the required maximum size (not more than 15% of project capital costs, or US\$3 million per project, whichever is less)? If not, is an exception to this limit warranted?	
3. Risks: Mitigation is essential	3.1 Timing of VGF disbursement	<p>For debt-plus-equity projects:</p> <ul style="list-style-type: none"> • Is VGF disbursed pari passu with debt draw downs after equity subscriptions are made? • If VGF disbursement are made prior to debt disbursements are such disbursements supported by enhanced due diligence and monitoring of project milestones? <p>For equity-only projects:</p> <ul style="list-style-type: none"> • Does VGF become available only after equity subscriptions are made and construction completion is certified? • If VGF is disbursed pari passu with staged equity disbursements, are these disbursements linked to reliable project delivery milestones? <p>Are exceptions to these rules warranted?</p>	
	3.2 If premature project termination	If the project terminates prematurely, will the VGF grant be repaid from performance guarantees (for non-performance by contractors or concessionaire) or compensation for lost equity (if non-performance by government)? What other safeguards are in place regarding premature project termination?	
	3.3 market distortion	To what extent will market distortions result from this VGF grant, in the form of unfair competition, or slower than normal market development as potential future market entrants await similar subsidized loans or remain skeptical that activities of this nature will be commercially viable without similar support.	
4. Other Considerations	4.1 What other key issues should TAF donors take into consideration?	Is there other information from the concept note, application, or direct communication with project participants, which should be considered by the TAF donors in taking a decision on this application for VGF funding?	

Appendix L: Consent form template



INFORMATION SHEET & CONSENT FORM:

[Company Name]

Renewable Energy Projects in Sub-Saharan Africa – Effective use of Grant Funding

Good day [interviewee name],

My name is Imraan Solwa and I am a student at the University of Cape Town’s Graduate School of Business, conducting research towards a Master’s degree in Development Finance. I am researching grant funding (upfront grants and concessional loans) in renewable energy projects in Sub-Saharan Africa and would like to invite you to participate in my research.

I aim to understand if the use of grants is kept to a minimum and applied in a justified manner to Renewable Energy Independent Power Producer projects in SSA. Therefore, as part of my research, I would like to interview senior decision makers of donor institutions as well as implementation agencies of these funds. The research would be beneficial to project developers seeking concessional funds, as well as general public awareness to ensure effective use of such funding.

This research has been approved by the UCT Commerce Faculty Ethics in Research Committee. Please understand that your participation to this study is voluntary. If you choose not to participate, there will be no negative consequence. If you choose to participate, but wish to withdraw at any time, you will be free to do so without negative consequence. However, I would be grateful if you would assist by allowing me to interview you, as it will contribute greatly to the current body of concessional finance and renewable energy research.

Interviews will be conducted telephonically or via video conference and will cover questions on how grants are sized and what factors justify the use of such funding for your institution. The discussion should not take more than 30-40 minutes of your time and will take place at your convenience. I also request permission to voice-record the discussion for the purposes of correctly capturing responses.

All findings will be kept anonymous. No costs will be incurred by you as the interviewee. **All data collected will be used only for the purposes of this study** and will **not be available for re-use** by any other party outside of this project. The final report can be made available to you once it is completed.

Please sign below to confirm your participation in the study as per above, and I will be in contact with you to confirm a meeting time. (Alternatively your confirmation of participation over email is acceptable).

Name of participant Date

Signature of participant