GET FiT Market Assessment
Regional Study – Southern Africa

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Multiconsult

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Acronyms

AFD	*Agence Française de Développement*
ATI	African Trade Insurance Agency
BOO	Build-Own-Operate
CENELEC	Electricity Council
CENORED	Central North Regional Electricity Distributor
CPI	Consumer Price Index
CSP	Concentrated Solar Power
CTRG	Central Térmica de Ressano Garcia
DA	Development Agreement
DFI	Development Finance Institution
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
ECB	Electricity Control Board
EDM	Electricidade de Moçambique
EIF	Environmental Investment Fund
EPC	Engineering-Procurement-Construction
ESCOM	Electricity Supply Corporation of Malawi
ESMAP	Energy Sector Management Assistance Program
FDI	Foreign Direct Investment
FM	Force Majeure
FUNAE	National Fund for Rural Electrification
FX	Foreign Exchange
FY	Fiscal Year
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GET FiT	Global Energy Transfer Feed-in Tariffs
GIZ	*Gesellschaft für Internationale Zusammenarbeit*
GoN	Government of Namibia
HCB	Hidroeléctrica de Cahora Bassa
HDI	Human Development Index
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IPP	Independent Power Producer
JICA	Japan International Cooperation Agency
kV	Kilovolts
kWh	Kilowatt Hour
kWp	Kilowatt Potential
LRMC	Long Run Marginal Cost
MCA	Millennium Challenge Account
MCC	Millennium Challenge Corporation
MERA	Malawi Energy Regulatory Agency
MERA	Malawi Energy Regulatory Agency
MGDSII	Second Malawi Growth and Development Strategy
MIREME	Ministry of Energy and Mineral Resources
MITC	Malawi Investment and Trade Centre
MME	Ministry of Mines and Energy
MNREM	Ministry of Natural Resources, Energy and Mines
MOTRACO	Mozambique Transmission Company
MSW	Municipal Solid Waste
MW	Megawatt
MWK	Malawi Kwacha
MZN	Mozambique New Metical
NEI	National Energy Institute
NORED	Northern Regional Electricity Distribution Company
NPC	National Planning Commission
NRE	New and Renewable Energies
O&M	Operation and Maintenance
ODA	Official Development Assistance
PARPA	Action Plan for the Reduction of Absolute Poverty
PII	National Integrated Investment Programme
PPA	Power Purchase Agreements
PPP	Public-Private-Partnership
PRG	Partial Risk Guarantee
PV	Photovoltaics
RE	Renewable Energy
RED	Regional Electricity Distributors
REFiT	Renewable Energy Feed-In Tariff
S/M	Small/Medium Scale
SACREEE	Southern African Centre for Renewable Energy and Energy Efficiency
SADC	Southern African Development Community
SAPP	Southern African Power Pool
SE4ALL	Sustainable Energy for All
SEFA	Sustainable Energy Fund for Africa
SPV	Special Purpose Vehicle
SREP	Scaling Up Renewable Energy in Low Income Countries Program
SSA	Sub-Saharan Africa
STCSP	Short-Term Critical Supply Project
TCA	Transmission Connection Agreement
UN	United Nations
USD	US Dollar
USDc	US Dollar Cents
WAPP	West African Power Pool

1. Introduction

Our understanding of the history of GET FiT and context for the market studies

Developed in 2010, the GET FiT concept – to address climate change by improving the enabling environment for private investors to support renewable energy projects in emerging and developing countries – was piloted in Uganda. Officially launched in May 2013, the program has made significant strides in improving the implementation the Renewable Energy Policy – including standardised project documents such as a Power Purchase Agreement and Implementation Agreement, a donor financed FiT "top-up," improved liquidity security of the single off-taker Uganda Electricity Transmission Company Limited, and the negotiation of a Partial Risk Guarantee with the World Bank. The program has also formalized a process through which IPPs can apply for support via its three Requests for Proposals and its inaugural solar tender. Taken together, GET FiT Uganda has supported the development of almost 200MW of small and medium-scale renewable energy generation including just under 20 projects across three technologies (hydro, bagasse and solar PV). Further, with a significant focus on technical assistance as one of the core pillars of the program, GET FiT is poised to phase out in Uganda with the anticipated publishing of revised feed-in tariffs in 2016, which will be designed to attract private investors without any additional donor subsidy. Further, the joint efforts of the Government and funders shall have both fast-tracked needed investments in the sector while also contributing to a positive track-record which can underpin further investment in the sector.

Based on the success of the pilot, both in terms of concrete results and efficient leveraging of donor resources, KfW/BMZ, UK DECC and UK DFID are seeking to expand the program to new markets across the region. This roll-out has begun in Zambia, in which an intensive implementation design study is under way, which will aim to assemble a program that shares certain fundamental characteristics of the Ugandan intervention, but will employ a customized and distinct set of tools that reflect the unique structure of the Zambian power market and resource endowment. Taking a longer view, KfW/BMZ, UK DECC and UK DFID have also opted to begin assessing where the "third phase" of GET FiT programs might take place. As such, it has commissioned market analyses of ten countries across East, West and Southern Africa, with the intention of identifying those in which GET FiT could prospectively add value in the near to medium term. That assessment will be completed in early 2016, and should recommend three additional markets for GET FiT to explore subsequent to Uganda and Zambia.

Our understanding of GET FiT

It is our view that the GET FiT concept is meant to, in cooperation with the host country, identify and target the set of critical policy, institutional and financial gaps preventing the timely implementation of privately-promoted small and medium-scale renewables. Through transformative and sustainable sector-wide interventions, an enabling environment for private sector developers and investors would be established. Further, these interventions should be structured so as to ensure that the host government is able to take over full responsibility to maintain the momentum and enabling environment initiated by the intervention.

In Uganda, as described above, this intervention has involved, among others, an internationally financed feed-in-tariff top-up based on transparency, legal support, a precision-targeted TA program, and a bundling of donor and government activities. This set of interventions and the mode of implementation provided private developers and financiers with a sense of predictability and transparency that was likely as important as the financial incentive of the top-up. Together, this provided developers and investors with a sense of security required to undertake costly and time-consuming development activities. It was thus deemed that these were the appropriate interventions in Uganda to stimulate the accelerated development of small renewables. The fact that for on-grid solar projects GET FiT support was restructured in the way of a price-competitive tender process demonstrates the flexibility of the GET FiT concept and goal to adjust the toolbox depending on the starting point, restrictions and targeted results.

The success of GET FiT in Uganda cannot be attributed to one specific instrument of the toolbox, but rather to the clear and consistent signals provided by the government/regulator and donors that they support private sector activities, understand the bottlenecks and constraints of the private sector and actively work to remove such barriers. Additionally, the staying power and collaborative efforts exerted by the members of the steering committee ensured that all were committed to overcome unexpected challenges as they emerged. It could be that the results-based nature of the support kept all stakeholders, including the donors, focused on achieving results. The outcome of this commitment has yielded a burgeoning number of private developers and international equity and debt investors, reduced financing costs for renewables, and a general boost in the quality of environmental and social competencies within project preparations.

In principle, the GET FiT concept should be sufficiently adaptable to be transferred to other countries. However, the actual steps needed to create an enabling environment and achieve short-term results will likely require a different set of instruments and interventions. Nonetheless, in the Team´s view, GET FiT has some key underlying attributes, irrespective of country or sector-specific conditions. These include:

- Targeting commercially viable investments in small renewables if they are economically viable;
- Taking a sector-wide/ full value chain approach in addressing the critical gaps;
- Transparent and predictable operations vis-à-vis developers and investors;
- Supporting the host country in operationalizing existing high-level targets and support policies for renewable energy;
- Ensuring strong country ownership; and,
- Rallying a group of like-minded donors.

These characteristics are key pillars of the chosen methodology for the market assessments that follow in the chapters below.

Aims of the market assessment

The overall aims of this ten-country market assessment are;

- Independently assess the readiness, political-will and economic justification which could motivate and underpin a GET FiT program implementation in each individual country.
- Based on the above, prepare recommendation as to prioritization of the countries, based on a comparative analysis framework and consideration of funders' priorities.
- Based on the above, gain insight into the key barriers and provide a tentative outline for a GET FiT program, including potential country-specific tool-box and timeframes.

In order to fulfil these specific aims and facilitate an effective discussion among funders, a comparative analytical framework has been developed for this study. Through this framework, the key success factors/criteria that would underpin a successful program are brought to the fore. While the results or recommendations do not immediately follow from the framework, it does provide a structured and transparent approach to the analysis and eventual discussion. Based on the outcome of the Study, selected countries will then undergo a detailed feasibility study and implementation planning, which will be subject to a separate tender process.

The approach adopted is to have up to six separate documents as deliverables, consisting of the three regional studies presenting the results for each of the countries taking into account the aforementioned topics, as well as a up to three subsequent project concept notes for each country selected by KfW/BMZ, UK DECC and UK DFID for further analysis based on the regional report. The project concept notes will propose the way in which a GET FiT approach might be most effective in each selected market, taking into consideration the flexibility of the program, and the different underlying features of each market. The Team has emphasized that the GET FiT "story" is likely to be different in the target markets, given their heterogeneity in terms of differing stages of development with regard to their renewable energy market maturity. Which "story" is to be selected is envisioned to be partly the outcome of the analysis and partly the priorities of the funders.

Structure of the report

The remainder of this regional report is structured as follows: it begins with Section 2, some overarching observations on the experiences of implementing REFiTs in Africa, systemic considerations such as grid capacities and nascent financial markets, risk management concerns, decentralized options and gender considerations. In Section 3, the methodology follows, placing our analytical approach in the context of other prominent activities, and elaborating on the 22 indicators and four "gates" through which the country filtering exercise is to take place. Subsequently in Section 4, the report describes several considerations that will inform the development of the GET FiT "toolbox" and the specific tools that may be deployed in the target markets. Section 5 summarizes the findings across the three regions, with an overview of the 22 indicators and the key recommendations. Finally, Section 6 contains the country summaries, beginning with a short

overview based on the opportunities, necessity and implementation considerations for GET FiT, with responses to the following key questions:

- Which role should and could medium-scale RE IPPs play?
- What needs to be done and why should GET FiT get involved?
- What needs to be considered for a potential implementation and what are realistic targets?

Following this overview, Section 7 contains the in-depth market assessments for each country with more detailed information on the energy market and is structured along the due diligence areas as listed in the ToR, but with an added emphasis on local financial markets.

2. Contextual observations

Before elaborating on the chosen methodology to derive our recommendations, we wish to share some general observations, which should be considered in the context of the study although they may or may not directly impact the recommendations:

FiT tariff models are advancing in Africa but dialogue and the level of cooperation between regulators, ministries of energy and utilities in the context of FiTs is often limited. In many of the countries, considerable efforts and TA have been employed to develop/upgrade national FiT programs. In most cases, the governments rely heavily upon external support. In particular in East Africa, the FiT calculations have become relatively well refined and governments have more or less implemented the recommendations. However, all too often, the utilities have not been properly involved in FiT processes, meaning that their perspectives were not fully considered and the impact on their balance sheets was not meaningfully analysed. As such, FiTs often represent "bad deals" for the utilities and threaten to further weaken their financial position. There is thus room for improvement to develop comprehensive packages, which do not create clear "losers" and "winners". *GET FiT could take advantage of this opportunity to moderate an unbiased process.*

Auctions have emerged as important approach to allocate PPAs. Driven by the success of the tender system in South Africa and taking into account the development above, i.e. the awareness and availability of more sophisticated cost benefit analysis, many countries have started or are thinking about moving towards auction systems. *GET FiT has gained experience with auctions for PV capacity in Uganda and should be flexible supporting the approach in other countries as well.*

More donor coordination and alignment would be beneficial in most countries: In most of the target countries, there are only a few stakeholders who were able to provide a full picture of the renewables sector, including donor initiatives. Therefore interventions are often missing a comprehensive approach and/or the feedback given to ministries of energy is limited in value. *As such, the GET FiT approach could add significant value for the governments but also private sector stakeholders.*

FiTs on paper are often attractive but simply not achievable in PPAs. In many countries, a top-up is not necessarily needed if the FiT serves as a benchmark. However, in light of emerging cost-reflective FiTs, off-takers appear to be becoming concerned about the cost of energy. Many countries have alternative (though not necessarily green) larger and lower-cost sources of power, and as a consequence utilities sometimes block or stall PPA processes. *In order to facilitate small and medium IPP transactions, GET FiT should consider discussing a burden sharing of the FiT if this would help to unlock utility action and if the negative impact of the FiT on the utility balance sheet can be verified.*

A GET FiT intervention does not necessarily require an incremental cost financing (e.g. top-up) but will help to motivate stakeholders. Economic viability of small and medium-scale RE is given in many countries, which means that a top-up payment would generally be unnecessary. One could therefore argue that a GET FiT intervention could rather focus on procedures, risk mitigation instruments and other tools which are needed to complement the enabling environment. However, policy-focused interventions have demonstrated that their leverage and influence is often limited. A complementary GET FiT top-up (or similar instrument) can therefore be viewed as a form of donor-support reward for positive sector reform that allows for private sector investment to take place, rather than strictly as an economic necessity. *We would therefore not be too concerned with GET FIT offering a country the carrot of a FiT burden sharing arrangement so long as a clear mid-term phase-out can be agreed and the FiT top-up is in the range of appropriate carbon abatement price levels.*

Much focus is put on PV although grid integration and economic viability can be a challenge for this technology. We have observed a great deal of interest across the region for solar PV (most likely on account of short development lead-times and international price developments), despite the fact that prices remain the highest among the range of technologies and implications of scale-up on grid stability remain a challenge for utilities. As before, closer cooperation with the respective utilities would be especially important to deploy additional PV. *We would therefore remain cautious to design a GET FiT program such that it heavily supports the ramp-up of PV with a top-up which exceeds carbon prices and without addressing the grid integration aspect properly. Further, the accumulated effect of PV projects supported under GET FiT and IFC's Scaling Solar initiative in Sub-Saharan Africa, which aims to support larger-scale projects, needs to be considered.*

There are countries among those analysed in which the financial market is mature enough to support scaling up small and medium RE. Putting in place a robust enabling environment will not only attract developers but also raise expectations in the financial sector. While we remain sceptical with regard to the capabilities of the commercial lending sector to deploy as much capital as is needed (and at appropriate costs

and in due time), we see a reputational risk for GET FiT if no role is allocated to the commercial banking market in more mature countries. *During the in-country missions, the Team heard more than once that commercial banks are concerned about GET FiT "setting the table" for DFIs, which would then compete them out. This should in particular be considered in the context of the discussion about the choice of instruments for incremental cost support.*

Off-taker risk guarantees remain critical but the understanding in the public sector is still limited. Receiving timely and reliable payments from off-takers remains a major risk, which needs to be addressed given limited creditworthiness of utilities and limited progress made on the underlying drivers of their capacity to pay, such as cost-reflective tariffs. However, the public sector often sees guarantees only as another "subsidy" (and a negative factor under the Heavily Indebted Poor Countries scheme) rather than acknowledging the positive effect of smart risk allocation on average generation costs. *Again, a programmatic GET FiT approach combined with burden sharing and KFW/BMZ, UK DECC and UK DFID as unbiased stakeholders could add significant value in shaping this discussion.*

Development activity is often extremely limited, increasing the "blind pool risk" for GET FiT. The quality of developers varies greatly across the region, and in many cases the status of preparatory work remains at an early stage. While GET FiT as an instrument to create an enabling environment and consequently trigger developer appetite would be highly needed in these countries, the lead time until the first projects would be realised is almost certainly longer. *We will address these timeline considerations for GET FiT in our assessment in the context of cost-benefit analysis from the perspective of the donors.*

Need for scalable mini-grid/off-grid financing mechanisms. The emphasis on mini-grid and off-grid solutions was mentioned in many discussions with stakeholders in many countries, indicating an increasing relevance and awareness in the sector. While renewables are often put into the off-grid and/or rural electrification box, we do not believe that the GET FiT toolbox and approach is efficient in the off-grid context on account of different risk profiles and more complex risk drivers, among other factors. *However, this experience demonstrates that donors and consultants should think about how the successful GET FiT approach would need to be adapted to serve this market segment.*

Challenges and opportunities associated with gender and renewable energy are being addressed. In reviewing the key strategy, policy and planning documents, the Team has assessed the degree to which the specific challenges associated with gender and energy access and planning are addressed. To the degree that specific policy statements, targets or actions are stated, they are noted in the section on policy and regulatory framework. *We find that most countries indeed include high-level statements regarding the specific challenges related to gender and energy access and as gender-mainstreaming in the planning and strategic processes within the sector. A few also include rather specific action plans to support these statements.*

3. Methodology

A key aim of the market assessment is to select three out of the ten countries for a deep-dive analysis and GET FiT implementation preparation. The topics to be covered by the country and regional assessments are provided for both in the ToR and our proposal. However, as the intention of KfW/BMZ, UK DECC and UK DFID was to employ up to three separate consultants, the methodology and criteria to be applied to the comparative analysis and eventual recommendations was not detailed. As our consortium is now carrying out all three regional studies, the necessity for an alignment of analysis approaches per region was more limited and our proposed approach is summarized below.

In recent years, several methodologies have been developed to assess the attractiveness of investment in renewables. Most recently, for example, the World Bank published a report that applies a "Readiness for Sustainable Investment" indicator. Bloomberg publishes its Climatescope as another example. The Team has reviewed these recent methodologies and adjusted them in order to address both the specific focus (i.e. potential for success of a GET FiT program) and the level of detail most appropriate for this study.

For the in-country due diligence, we have defined 16 criteria, which are universal and in our view essential for a truly successful small-scale grid-connected renewables enabling environment. Put another way, if all criteria were to be fully satisfied in a country, there should be no remaining gaps which would need to be addressed by GET FiT. In addition to these 16 criteria, we have included 6 criteria analysing the implementation outlook for GET FiT.

It is important to note that the Team is **not** looking to rank countries within this framework. Rather, the team looks to apply the framework so as to highlight the key opportunities, gaps and risks associated with a potential GET FiT implementation. Further, the framework should provide a basis for pinpointing specific areas where GET FiT can play a role and parts of the toolbox may be adjusted to fit the realities of the given country.

As exhibited in Table 1 below, the indicators fall into five broad categories, which by and large reflect the structuring of the due diligence in the ToR. In the section that follows, we have provided a "traffic light" system in which each country is assigned a red, yellow or green rating for all criteria. To be able to reflect that some countries have made significant progress and are well progressed in comparison to others and while acknowledging that even these countries might face minor gaps, we have introduced an additional light green rating. Additionally, provided the importance attached to political will and timely results, we have looked to capture and incorporate an independent view regarding current priorities and dynamics in the country and sector – with a "near-term outlook" factor. Full ratings for all 22 criteria follow in the country-specific chapters. It should be emphasized that a red rating does not necessarily equate with "poor" or "bad" but rather illustrates a gap that should be considered. We will elaborate on the dilemma around significant needs as a key driver for a donor intervention v a cost-benefit-approach also in the development cooperation in the context of our recommendations section. Our aim is that this comparative assessment takes a more holistic approach to each market rather than merely summing the scores from each category to reduce each country to single figure.

Table 1: Key indicators of analysis

RE Potential and Power Market Situation	
1	There is technical feasibility for grid-connected RE IPPs, preferably near grid and load centres.
2	There is strong economic justification for promoting the scale up of grid-connected RE IPPs.
3	The power sector is largely financially sustainable; revenues from end-consumers are in line with the cost structure of the sector
4	Important institutions are capable and well-staffed to fulfil their missions and to interact with the private sector. A RE champion exists.
Legal/regulatory/policy framework for RE and IPP	
5	There are limited and surmountable fundamental legal, regulatory and/or policy gaps for enabling RE IPPs.
6	Policy-making, target-setting and decision making pertaining to renewable energy promotion as well as donor interventions are well coordinated.

7	Relevant institutions are empowered to make required changes to the framework and have convening power for cross-institutional arrangements/processes.
8	The bureaucratic and licensing frameworks are well coordinated, transparent and expedient.
9	A standardized bankable PPA, which should allow for project finance solutions in S/M RE IPPs, should be attainable with limited efforts.
10	Off-taker risk is limited or possible to mitigate.
IPP Pipeline	
11	The country has a track record with S/M RE IPPs.
12	There is a pipeline of well-developed S/M RE IPPs.
13	The market offers a number of competent local developers and is attractive for regional/international developers.
14	There is a genuine interest amongst policy makers to support RE IPPs and to see the best projects realized.
Financial landscape	
15	The country is generally attractive for FDI, with a private sector oriented Government.
16	The established local and/or regional financial sector is relatively mature, offering potential for commercial finance for RE IPPs (including appropriate tenor and decent financing costs under project finance transactions).
Implementation considerations	
17	The overall political situation and timeline for political change are conducive to a GET FiT intervention.
18	The GET FiT approach could be adjusted to effectively target the specific bottlenecks that are preventing scale-up of RE IPPs.
19	A GET FiT intervention would; i) create additional development or climate change mitigation benefits; ii) take a lead development role within S/M grid-connected RE IPP scale-up; and iii) complement on-going support.
20	The scale of effort required is realistic for a GET FiT intervention, and target outcomes should be achievable within a 3-4 year timeframe.
21	There is a candidate GET FiT lead agency who has sector clout to implement required reforms and champion RE IPP scale-up.
22	No unsurmountable barriers for GET FiT have been identified.

In the comparative analysis, the key question to be addressed for each country is:

"What is the probability of GET FiT providing a decisive contribution to fast-tracking economically viable investments in small & medium-scale grid-connected renewable energy within the foreseeable future?"

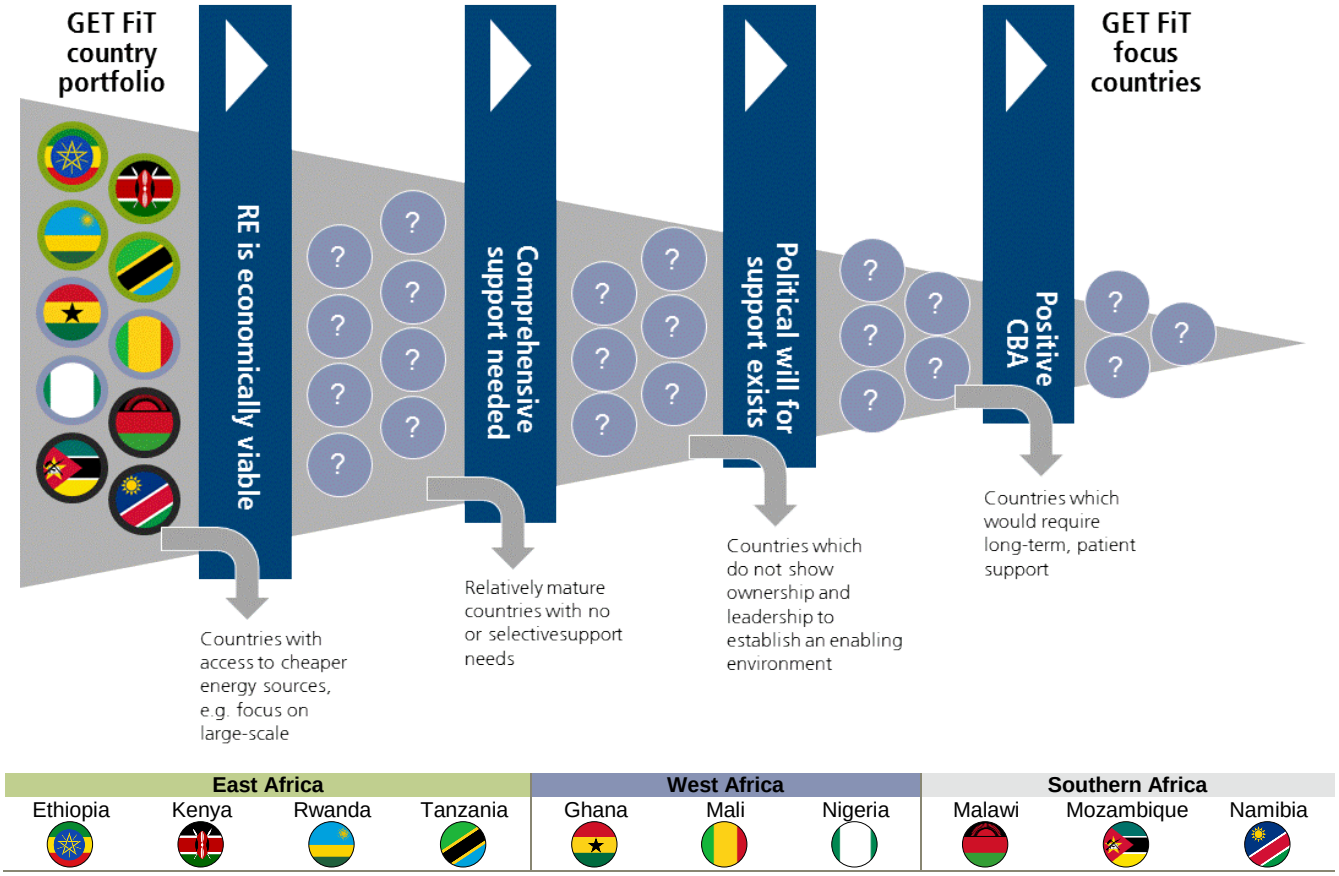
We have broken down this question into four major gates to derive our recommendation (see Figure 1):

- **Are small and medium-scale renewables economically viable?** This question concerns the policy priorities of the country as well as its natural resource endowment. As such, if there is a strong focus on large-scale, low cost infrastructure, or if the country is endowed with plentiful sources of cheaper energy generation with a track-record of implementation, then small and medium-scale renewable are unlikely to be economically viable relative to the system's avoided cost. GET FiT would most likely not be an appropriate intervention in these markets.
- **Is comprehensive support needed?** This question aims to identify among the remaining markets, which ones have already reached a level of maturity such that only very selective support (or possibly no support at all) is required to bring small and medium-scale renewable projects online. Among the

target countries in this market assessment, we anticipate only one or two would fall into this category, but consider it an important factor that should not be omitted from the analysis.

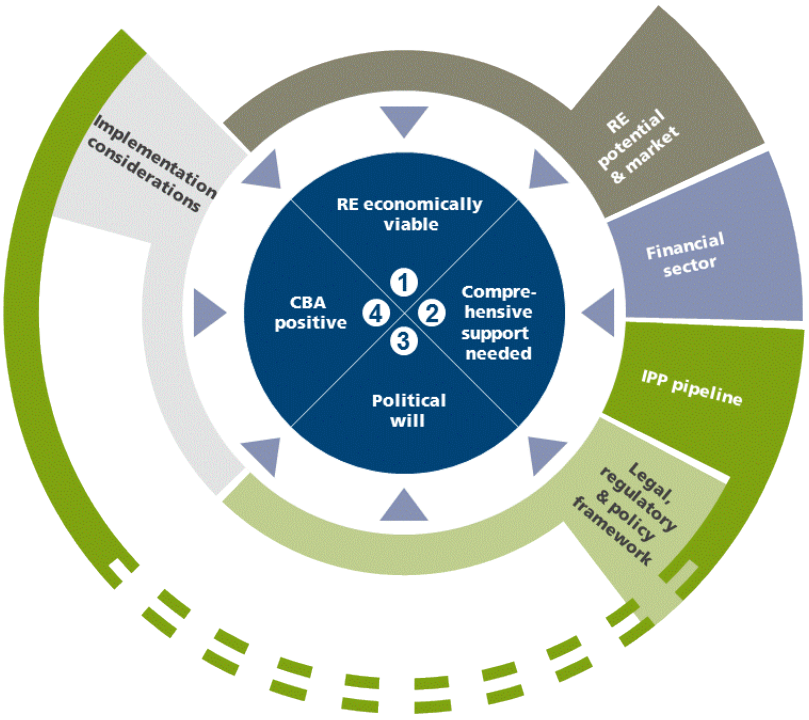
- **Does political will for RE support exist?** GET FiT requires a strong national champion which is backed by donors and the implementing entity. While individual support instruments could be implemented by a donor even "against the host government", this would be impossible for GET FiT. For all remaining countries, the GET FiT intervention would be helpful and should, in principle, be envisaged and should not be excluded.
- **Is the cost-benefit-analysis positive from a donor perspective?** Finally, we consider whether GET FiT could, in each country, achieve the donors' implementation targets through an efficient use of funds. It is important to note that Uganda should not be considered as a benchmark, as this will likely lead to unrealistic expectations, but that a program in the countries passing through this gate should be able to achieve significant outcomes in terms of new, on-grid generation capacity within the foreseeable future. The required time horizon to realise the impacts of a programme will vary from country to country, depending in particular on the maturity of the pipeline. In the near-term, the programme may provide limited incremental contributions that allow for already mature projects to cross the hurdle to come to fruition. However, the primary and lasting benefits will only begin to emerge over time (at least 2-3 years), as the enabling environment is improved and new project development activities are initiated. It is these types of impacts that will reflect a sustainable intervention. Such projects have only begun to emerge in Uganda, following three RfPs.

Figure 1: Prioritizing Markets for GET FiT



The country or countries passing the third gate (i.e. the "political will for support exists" criteria) will be worthy of being recommended for GET FiT implementation. Based on our assessment of donor priorities, patience and existing on-ground activities of donors, we present a recommendation of the countries passing the fourth gate. We would, however, like to stress that our assumptions, perception and conclusions in this regard should be critically reviewed by KFW/BMZ, UK DECC and UK DFID.

Figure 2: Due diligence criteria for selection gates



To inform the decision making process with respect to which countries should pass through each of the gates described above, we utilize our findings from the due diligence missions. Figure 2 indicates which due diligence areas directly impact the use of each gate, in some cases overlapping as two or more areas are relevant for a particular gate.

For example, in the determination of whether or not comprehensive support is required (gate 2), we review the findings pertaining to each country's RE market and potential, financial sector, IPP pipeline, and regulatory framework. Similarly, to assess the cost-benefit analysis of a GET FiT program in each country, the key due diligence areas are the IPP pipeline and the implementation considerations.

4. General considerations on the GET FiT toolbox

This section provides a brief overview of a selection of what the Team views as the most likely types of instruments to be included in the GET FiT toolbox. It describes the overall state of affairs across the region, including current gaps and opportunities, and offers some preliminary thoughts on which kinds of market conditions and partnership opportunities should inform the selection of each instrument.

Aligning on domestic overarching targets for grid-connected RE

In establishing the program and relevant toolbox, it is critical that the relevant champion, backed by high levels of government, set clear and well-defined targets within defined timeframes. While this is technically not a tool to be deployed, it can be viewed as a key starting point in order to ensure commitment and align expectations. It would be recommended that a specific country-level renewable target, ideally also defining the market share for S/M IPPs, is adopted by the relevant ministry, the host institution and the GET FiT program, to remove any doubt as to what is to be achieved. This would also create transparency for private sector developers and financers with regard to the expected market volume, pipeline and business opportunities.

Coordination and mediation support for the RE champion in the host government

Putting in place a powerful and sustainable enabling environment for small and medium IPPs requires a holistic approach and deep understanding of energy market structures and dynamics on the one hand and private sector investment decision making processes on the other hand. If the required knowledge is not given, consultation processes can quickly become a tug of war for maximising the benefits of the involved parties ignoring the effect that economic value will only be created if a sustainable and for all stakeholders acceptable solution is put in place. To address this challenge, GET FiT can first and foremost play a central coordination role, mediating between the public and private sectors. It can do so by ensuring that the public sector speaks with one voice and supports a coherent and transparent agenda, while simultaneously adding credibility toward the private sector and providing governments with the confidence that their counterparts are negotiating in good faith. In addition to this coordination/mediation role, GET FiT can also streamline processes, laying out a relatively clear path from project concept to a bankable project, which is viewed as a key contribution to the success of the program in Uganda. Finally, GET FiT's donors add credibility to projects; their involvement reduces the need for guarantees while keeping some pressure on host governments to see their commitments through.

Technical assistance to create a sustainable enabling environment

GET FiT aims to create an enabling environment which should remain well maintained once donors phase out their support. This will require a well-planned and strategically defined TA support which provides the resources and expertise to both overcome barriers to a successful program and ensure sustainability of the intervention. As GET FiT is committed to, and actively working towards, the realization of the Country's own renewable targets, the implementing staff is uniquely positioned to identify relevant gaps and work together with the host institution to fill them. In Uganda, the TA component covered a range of topics including grid integration studies and support, reform/streamlining licensing and permitting, REFiT modelling and GET FiT secretariat support to the regulator in performing due diligence on projects. Requirements in new GET FiT countries will likely remain as broad and demanding as in Uganda, as confirmed by the findings of assessments of each of the ten countries. However, a critical point is the need to maintain flexibility in the TA design so as to be able to address barriers and needs as they arise during both design and implementation of the programme. This is a key lesson from Uganda, where several of the critical areas of support were not identified until implementation. Therefore, the design of the TA budget should be such that it accommodates this need for flexibility. One should acknowledge that the true success of the GET FiT intervention will only be seen after the phasing out of donor support. If project developers continue to invest in new projects and expand their activities while relying only on the host governments action and support, a sustainable enabling environment has been created. Therefore, the required TA costs should not only be assessed in the context of the supported pipeline but also the mid-term technical potential and should therefore be seen as an investment in the sustainability of the intervention.

Risk mitigation instruments

Risk allocation was a significant issue identified in several of the countries visited as part of the regional assessment. Because almost every off-taker in Sub-Saharan Africa is considered, to a greater or lesser extent, to not be creditworthy, there is likely to be a necessity for some form of off-taker support in nearly all of the target countries. Sovereign guarantees are highly sought after by investors in some markets, and in some

cases DFIs have had conversations with developers about providing partial risk guarantees or similar instruments. As in Uganda, GET FiT should be able to play a role in facilitating access to instruments in markets where this represents a significant obstacle. Despite the fact that several countries express reluctance to these guarantees, especially for small projects, the programmatic approach with high targets, combined with cost-sharing and technical support, sovereign guarantees should be possible in some countries. Helping countries to structure guarantees or softer comfort letter (or even a letter of acknowledgement) in a way that they address investor needs while minimising government exposure will be key. For example, the commitment of the Government of Uganda specified in the Implementation Agreement is rather narrow, only kicking in under highly specific circumstances. While this was an acceptable solution for the Government, it also represented a major improvement in the perceived risk on the part of investors. We recognise that in selected markets, deals have gone through without hard sovereign guarantees. The GET FiT approach should therefore seek to find a balance between making investors' lives easier and challenging their perceptions of, and willingness to take, risks. In this regard, the GET FiT programme offers an opportunity to the Government, armed with trusted advisors, to establish the minimum cover that is required in the market for a scaled-up program, but nothing more.

Given that the World Bank's reputation in the small and medium-scale RE sector is weak, and that the African Development Bank has been less active in the provision of PRGs, there may be opportunities for the African Trade Insurance Agency (ATI) to play a more significant role in the risk mitigation elements of a GET FiT implementation. While we have not explicitly considered ATI membership in our cost-benefit analysis and implementation considerations below, it is worth noting at the outset that of the ten target countries, four (Kenya, Malawi, Rwanda and Tanzania) are currently member states of the Agency.

In several countries, it is reported that the SPPAs have other specific important bankability gaps. One specific one is the lack or insufficiency of the liquidity guarantee offered for the case of late payment. We understand that KFW with the support of UK DECC aims to implement the Regional Liquidity Support Facility which could also be used as part of the risk mitigation toolbox.

Power Purchase agreements

Our review of PPAs highlights – besides the above mentioned lack of liquidity support – other bankability gaps, for example the lack or insufficiency of the deemed energy clauses, such as remedies for investors in the case of grid down-time preventing electricity sales. These issues must be addressed in the PPA if they are to stimulate low-cost financing. However, because PPAs are in very different states of development and/or revision across the target countries, we hesitate to make additional generalisations across the entire region. Rather, we have included more detailed observations about the potential gaps and shortcomings that are present in each market. The extent to which legal support would be required for a GET FiT intervention therefore varies considerably.

Currency risk mitigation at the end of utilities

At present, of the target countries that have REFiTs in place, the majority have elected to denominate them in USD. On the other hand, electricity consumers earn their income and pay for electricity in local currency. This creates a mismatch between revenues and costs and – since market-determined exchange rates move in unpredictable and volatile ways, which are determined by factors that are exogenous to the project – introduces an element of uncertainty regarding the profitability of a renewable energy project. Indeed, some of the target markets have experienced quite severe depreciations over the past several months. With regard to hedging options, there are liquid markets for hedging products for all hard currencies, but the situation is different for emerging markets. Since these markets are less liquid and have higher exchange rate volatility, hedging instruments are usually either costly or not available at all.

As such, at present, the currency risk is primarily residing with the utilities. This suboptimal allocation could be addressed either within or outside the GET FiT program. Should it be decided that currency hedging options be included in the GET FiT intervention, a cooperation with The Currency Exchange Fund (TCX) should be considered. In some markets, such as Namibia and Mozambique where FiTs are denominated in local currency, hedging potential hard currency-denominated gap financing could also be considered.

Instruments for gap financing

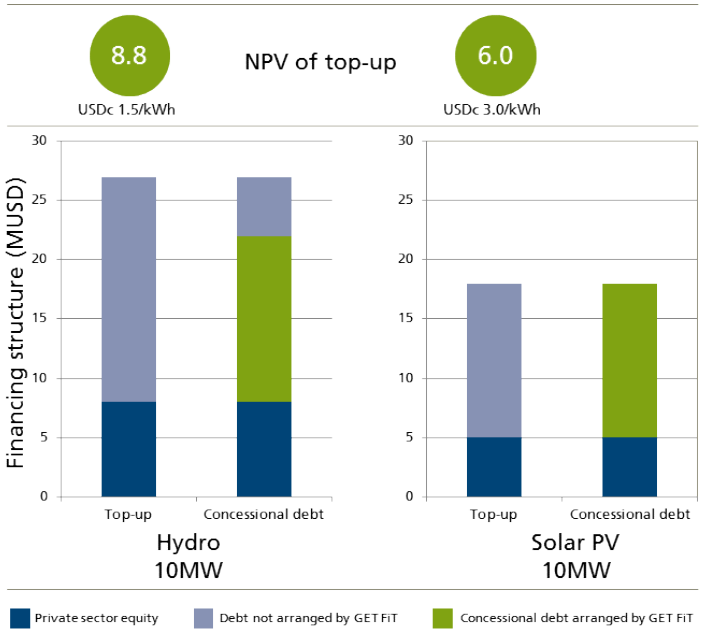
As discussed above, a burden sharing arrangement related to (perceived) incremental costs of small and medium-scale renewables is needed in some countries, but even where it is not strictly "needed" from an economic viability standpoint, it could send a positive signal that would increase the partner governments'

appetite to implement required policy changes in all countries. In general, one could envisage there to be options to channel support funds to the IPP:

- **FiT top-up payments (as used in Uganda):** These trigger grant funding requirements. Disbursement can be adjusted and frontloading can be considered, thereby balancing results-orientation and implementation considerations and taking into account available loan tenors as well as donor preferences. In some markets, with a cost-reflective FiT but a reluctant off-taker, the top-up could be structured as cost-sharing so as to kick-start investments in the market. Both pre-defined FiTs and auction-determined top-ups can be considered.
- **Use of the carbon mechanism:** In this case the IPP would have to register for the Clean Development Mechanism (CDM) and GET FiT would enter into a forward contract with the IPP to buy the certificates at a pre-defined (and above market) price. This carbon price would be calculated based on the required top-up as well as the emission baseline in the partner country. GET FiT would cancel the certificates to avoid any double counting of emission savings. This mechanism likely triggers higher implementation costs than a straightforward top-up payment but should be considered if it would be preferable that IPPs get used to a market-oriented and sustainable mechanism. Given the current situation and market price levels, we have not found many developers that have already invested in CDM registration and would face sunk costs.
- **Concessional financing:** Financing costs are a major driver of levelized costs of electricity (LCOEs) and consequently the buy down of financing costs by providing concessional loans can replace a top-up payment. This instrument particularly beneficial in immature financial markets where long-term loans are very difficult to arrange. In the context of GET FiT, IPPs would apply for a concessional loan (directly or via a partner bank) rather than a top-up, which would change the implementation structure slightly (e.g. standardized loan agreement documentation needs to be published before) and increase due diligence requirements.

We understand that the future funding of GET FiT will rely heavily on concessional loans and as a consequence, gap financing to IPPs would also be driven by concessional loans. Figure 3 below illustrates the impact of a gap financing via top-up or concessional loan on the overall financing structure and the public sector financing needs. In most of the countries, PV still faces higher incremental costs and required top-up payments are likely to exceed those of hydro. For our analysis we have assumed top-up for hydro coming in at a level we have faced in Uganda (USDc 1.5/kWh). For PV, we have assumed a higher top-up payment of USDc 3/kWh. Taking also into account the lower investment costs for PV, the required concessional financing to replace the top-up becomes a more dominating part of the capital structure.

Figure 3: Top-up vs. concessional debt on financial structure



The chart indicates that in such a scenario, there might be no space for outside lenders to finance projects that receive all of their debt from concessional loans arranged by GET FiT, while in others (hydro in this example) there may be opportunities to structure senior and subordinated debt tranches.

The indicative analysis underpins the increased risk of commercial lenders being crowded out in mature markets. The availability of the traditional top-up instrument therefore needs to be considered when discussing the attractiveness of the toolbox. Or, to view this question from another angle, if GET FiT aims to develop the energy market only, the concessional loan instrument is appropriate. If GET FiT, however, aims to develop the financial market in addition to the energy market to pave the way for a sustainable and scalable financing structure, the concessional loan instrument bears risks. Naturally we recognise that GET FiT need not provide *only* a grant top-or or concessional debt, but that of course there are plenty of blending options in between, which can be optimised to even crowd-*in* local lenders. For example, this could be relevant in hydro projects with less robust hydrology data, where

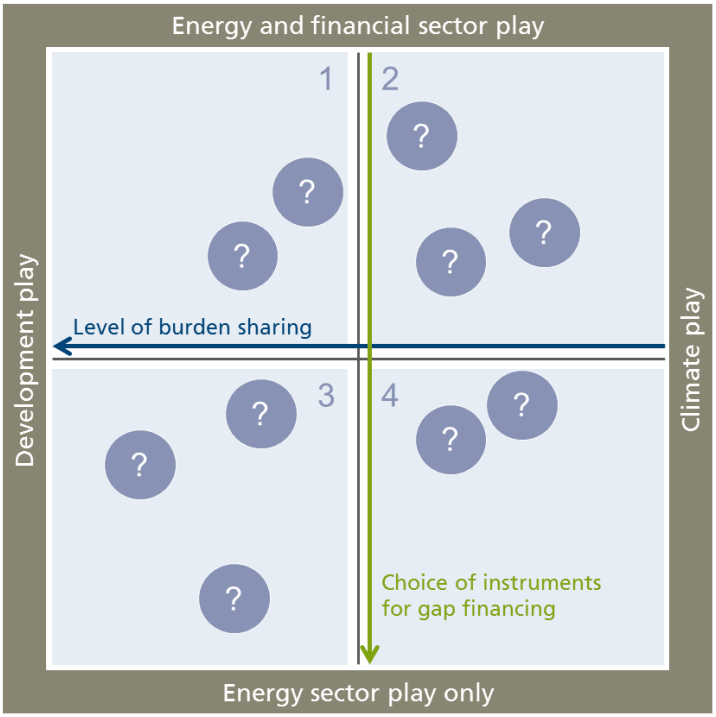
commercial lenders would be unwilling to deploy the full debt tranche, but where a subordinated concessional loan could help to create a senior investment opportunity for them. We merely make this observation to suggest that, in these more mature markets, a discussion about the role of concessional loans, or, for example, whether or not to include a minimum requirement – or an additional incentive – for a commercial lending tranche and whether this can be combined with a concessional loan based financing support would be highly worthwhile.

Level of gap financing and underlying storyline

The required level of gap financing is primarily dependent on the announced FiT and the required revenues per kWh from the IPP perspective to cover all costs, including capital costs. As described above, the announced FiT, however, may not always be the right benchmark and the level of burden sharing will then need to be negotiated with the partner country in the framework of the implementation preparation. The willingness of donors to accept a higher level of support will certainly also depend on co-benefits and the development status of the country.

In our view, GET FiT can be positioned as a programme in the context of development cooperation, but also as an instrument of climate cooperation. The underlying storyline is slightly different, but this difference might be important for the partner government. For example, we experienced in Namibia that the appetite for "donor" programmes is very limited. However, becoming a partner in the context of climate cooperation raised interest among public stakeholders. In Ghana, which is classified as a middle income country, the climate-change story will surely have to be an important motivation for the intervention.

Figure 4: Climate/development and energy/financial sector plays



Thus, in our view this aspect needs to be considered, and framing the nature of the cooperation as such can be important. In the case of climate cooperation more emphasis needs to be put on the aspect of implied carbon abatement costs and on ensuring that the gap financing remains within a range that reflects societal costs of carbon (not market price levels). The categorization is certainly not black and white and development and climate cooperation are not mutually exclusive. Also, it will be challenging to calculate the actual abatement costs as TA should be seen as an investment in the long-term sustainability of the intervention. Nevertheless, this indicator can be a helpful tool. In this stage of the analysis no budgets for a potential GET FiT invention summarizing top-up requirements and TA needs have been prepared which could serve as a basis for an implied abatement cost analysis. In section 5.2., however, an initial indication is given on the basis of current and future emission baselines. Figure 4 summarizes the implications of our considerations on gap financing instruments as well as gap financing level. It might serve as an instrument to categorize countries.

5. Overview and Recommendations

The table below summarizes the findings of the in country analysis. The detailed ratings per criteria (not only category) are given in the detailed country sections.

Table 2: Rating overview for West, East and Southern Africa[1]

Country		RE potential and power market situation	Legal/ regulatory/ policy framework	IPP pipeline	Financial landscape	Implementation considerations
East Africa						
Ethiopia	Readiness	🟡	🟡	🔴	🔴	🟡
	Outlook	➡	↗	➡	➡	
Kenya	Readiness	🟢	🟢	🟢	🟢	🔴
	Outlook	➡	↘	➡	↗	
Rwanda	Readiness	🟡	🟢	🟡	🟡	🟡
	Outlook	↗	➡	➡	↗	
Tanzania	Readiness	🟡	🟡	🟢	🟡	🟢
	Outlook	?	➡	↗	↗	
West Africa						
Ghana	Readiness	🟡	🟡	🟡	🟢	🟢
	Outlook	➡	➡	↗	➡	
Mali	Readiness	🟡	🟡	🟡	🔴	🟡
	Outlook	➡	↗	➡	➡	
Nigeria	Readiness	🔴	🔴	🟡	🟢	🔴
	Outlook	➡	?	?	➡	
Southern Africa						
Malawi	Readiness	🟡	🟡	🔴	🟡	🟡
	Outlook	➡	➡	➡	↗	
Mozambique	Readiness	🟡	🟡	🔴	🟡	🟢
	Outlook	?	?	↗	↗	
Namibia	Readiness	🟢	🟢	🟡	🟢	🟢
	Outlook	➡	↗	?	➡	

1 Note that in some countries the "Outlook" depends heavily on key decisions to be taken in the near future, and we therefore view these events as tipping points, which can have positive or negative implications. The "?" indicates this current uncertainty, rather than missing due diligence.

In the following section, we want to derive our recommendations based on the four gate approach defined in Section 3, taking into account the due diligence findings. We believe that the benchmarking in the group of all ten potential countries helps to derive regional recommendations and all charts and analysis therefore are based on the wider group.

5.1. Economic viability

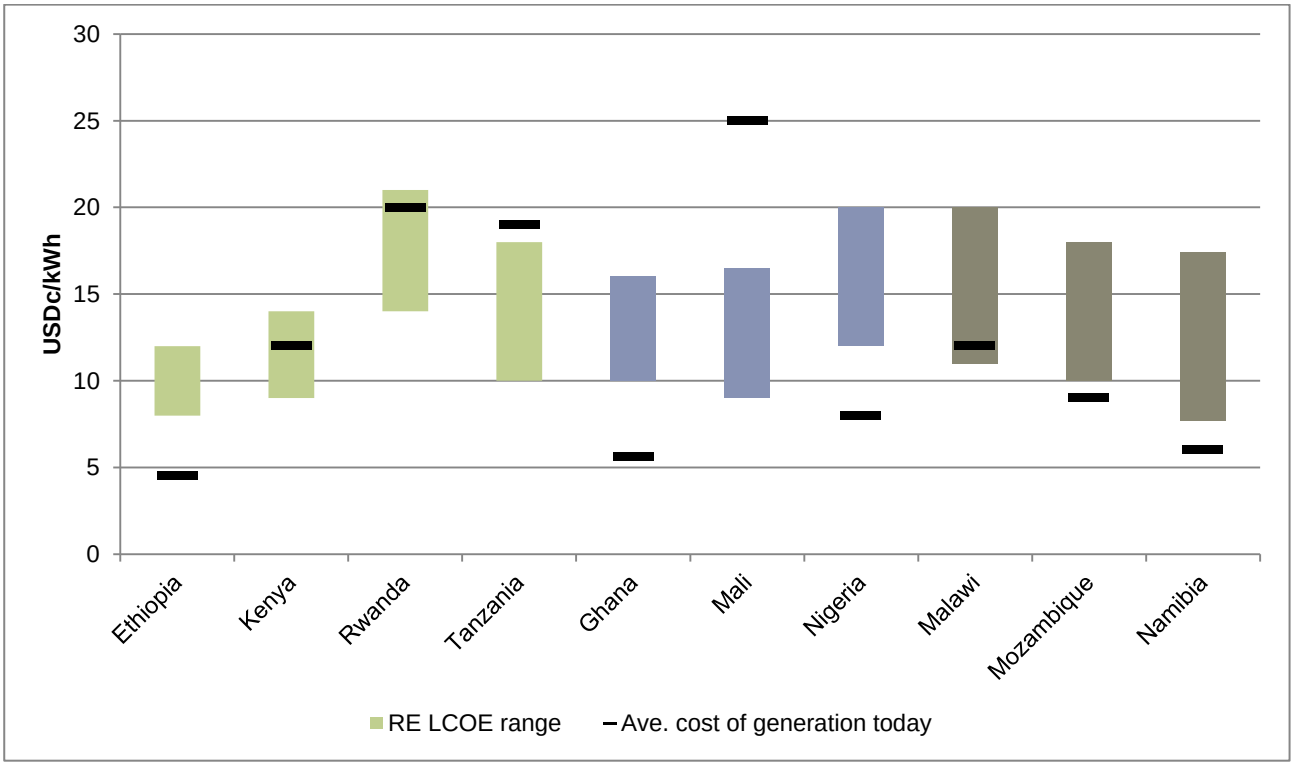
Economic viability can be driven by three major effects:

- Decreasing average generation costs: As in Uganda, small to medium-scale RE can help to diversify the generation mix and harvest cheap energy sources.
- Closing the near- to medium-term demand-supply gap: In this case one could even accept an increase of average generation costs to counter societal costs of unavailability of electricity
- Improving (quality of) access in remote areas and/or improving grid stability: Small and medium-scale RE in more remote areas (with grid access) can accelerate rural electrification and provide more stable power supply, especially to industrial users. These technologies can further reduce technical losses by adding disbursed generation sources to the grid, especially in large countries with concentrated generation sources.

The analysis of economic viability of small and medium-scale renewables in terms of reducing average generation costs often implies significant levels of uncertainty, in particular as future developments of the generation mix, and consequently average generation costs, are not clearly predictable. Also, the data made available by governments and/or utilities is often biased and aims to protect existing technologies/project categories. On the other hand, the costs of renewable generation are also often underestimated and grid integration costs are not taken into account in comparative analyses.

The data we have used for the following chart is of course imperfect. We, however, see a value in providing a rough overview which illustrates major differences across the country portfolio.

Figure 5: Average Generation Costs vs. RE LCOEs



The chart highlights that in most cases the anticipated LCOEs of small and medium-scale renewable energy is not completely out of range of the current generation costs in each of the target markets, making the case for economic viability somewhat stronger. The major example where this is very clearly not the case is **Ethiopia**, where large hydro and other cheap generation will make small and medium renewable uncompetitive. In **Ghana,** the low average cost is driven by the significant share of generation coming from fully amortized hydropower (built in the 1960s), and is not at all reflective of the cost of new capacity additions in the near- or short-term. In **Rwanda**, the high average costs are driven primarily by diesel generation, which should be partially phased out in coming months, and eliminated in the medium-term. In **Nigeria**, S/M RE generation costs come in significantly above the average generation costs in the grid, but nevertheless, RE can be competitive in more remote areas close to underserved load centres. As this holds true for certain areas in many of the portfolio countries we do not reflect these special cases when assessing general positive impact on average generation costs.

Table 3 below summarizes our assessment of economic viability in terms of the three categories introduced above:

Table 3: Economic viability of small and medium-scale RE in each country

Country	Decreasing generation costs	Closing the demand gap	Improving access or grid stability	Overall viability
East Africa				
Ethiopia	✗	✗	(✓)	🔴
Kenya	(✓)	✗	✗	🔴
Rwanda	(✓)	(✓)	(✓)	🟡
Tanzania	(✓)	(✓)	(✓)	🟢
West Africa				
Ghana	(✓)	(✓)	✗	🟢
Mali	✓	✗	✗	🟢
Nigeria	✗	(✓)	(✓)	🔴
Southern Africa				
Malawi	✗	✓	✓	🟢
Mozambique	(✓)	✗	✓	🟢
Namibia	(✓)	✓	✓	🟢

The overview table illustrates that the reasoning for small and medium-scale renewables varies significantly from country to country, which may imply different capacity targets and mechanisms to attract investments. For example, in a country where the economic viability of small and medium-scale renewables is driven by grid stabilisation effects, the required capacity will be linked to different regions and as a consequence a broad FiT might be more appropriate than a tender process.

Overall, the table reveals that only **Ethiopia** seems to lack robust drivers of economic viability of small and medium-scale renewables. Except for the captive biomass sector, expected generation costs come in significantly above the average generation costs for large scale RE power plants. Sticking to the least cost development path is crucial for Ethiopia, which aims to become the biggest net exporter of electricity in the

region. Taking into account that the least cost option is large-scale RE, the environmental value added for small and medium renewables is limited. The food production sector is dominated by state-owned companies and consequently the only viable technology, co-generation power plants, could not be implemented as IPPs. For these reasons, Ethiopia does not pass the first gate.

Although there are opportunities for economically viable small and medium-scale renewables in specific contexts, we also exclude **Nigeria**. This is driven by the fact that the overall energy market situation in Nigeria remains challenging with areas for action other than generation that should be addressed first. Nigeria still faces massive challenges on the DISCO level, which have not really improved after the privatisation process. Any additional investments by donors should therefore be directed towards the priority subsectors of transmission and distribution. Also, political focus should be on improvements of regulations for this sector.

The assessment for **Rwanda** is heavily dependent on the question of whether the country wants to pay a high premium for its own generation or should rely on imports. In **Kenya** there is no significant supply gap and there are cheaper baseload alternatives, casting into question the value of additional support for small and medium-scale renewables. We let both countries pass the first gate, however, with a question mark.

5.2. Need for comprehensive support

The intention of this step is to exclude countries which are already well developed and which are no longer in need of comprehensive support. In addition, we already mark the countries that will require very intense support as this will influence step 4, the cost-benefit analysis, from the donor perspective.

The basis for this analysis is in particular the group of criteria included in the four due diligence categories (i.e. Power Market Situation, Legal/Regulatory/Policy Framework, IPP Pipeline and Financial Landscape). When analysing the scorings it becomes clear how different the profiles are and that only limited correlations exist. The remaining countries in East Africa appear most mature with **Kenya** clearly leading the overall portfolio. This is in line with the Bloomberg Climatescope ratings as well as World Bank RISE indicators.

Namibia has also to be flagged in the context of step 2. The country has made significant progress in terms of the regulatory framework, offers a decent though less diversified pipeline and a relatively strong financial market. We believe there are good chances that the Government and NamPower will manage to finalise the interim REFIT process as well as the solar tenders in a smooth way and thus create further traction. Nevertheless we see a significant upside potential in terms of a steady and continuous increase in renewable capacity replacing thermal energy and imports in case of a cooperation with Namibia and therefore do not question whether the country should be excluded in step 2.

The following table summarizes our findings:

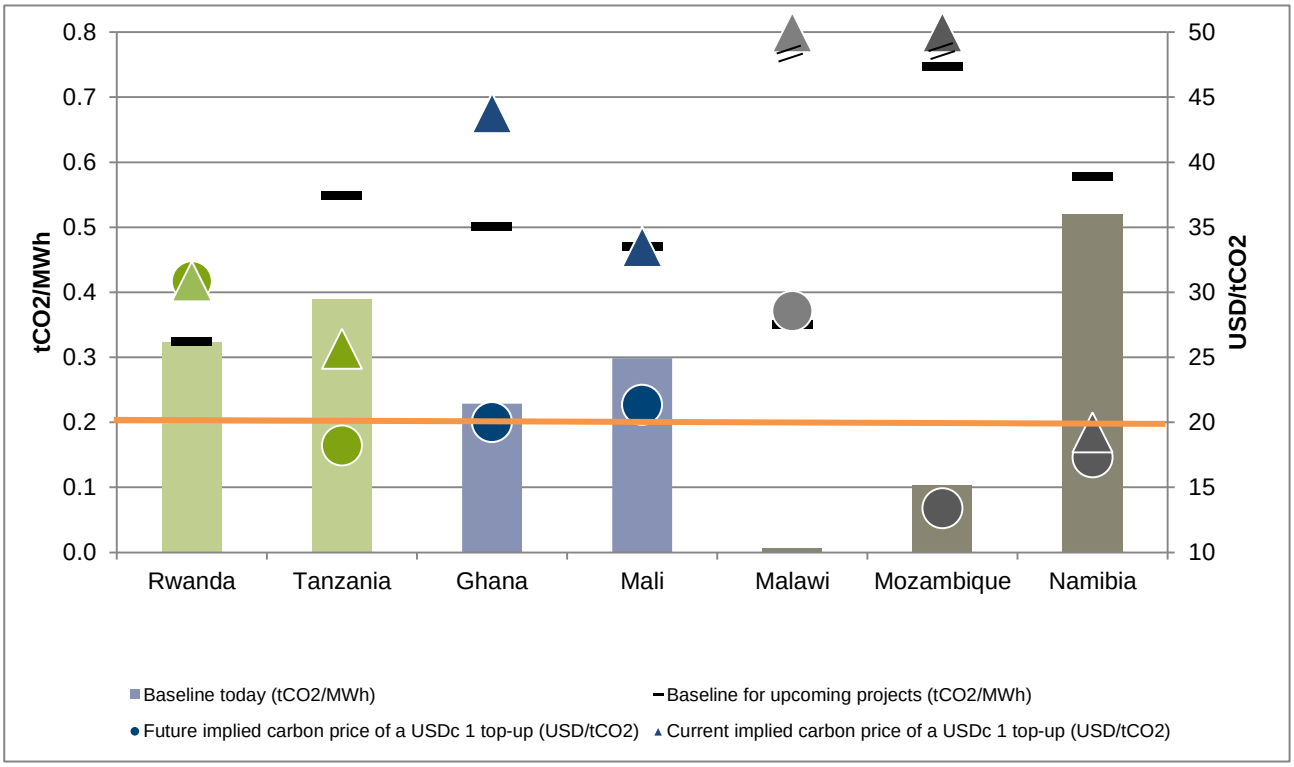
Table 4: Relative maturity of the different target markets

Relatively mature countries	Relatively immature countries	Countries with significant gaps
▪ Kenya ▪ Namibia	▪ Rwanda ▪ Tanzania ▪ Ghana	▪ Mali ▪ Malawi ▪ Mozambique
Exclude Kenya Keep Namibia because of significant upside	Continue	

As stated above, countries with significant gaps will require more patient support. This will be addressed in step 4 when analysing the cost-benefit ratio.

As introduced above, we believe that the underlying storyline for support can be critical in some countries. Assuming that countries with significant gaps need more intense and patient support, we see an intervention there primarily driven by considerations of development cooperation. In contrast to that, Namibia is relatively mature and "only" needs support to keep the momentum and to finance a sustainable expansion of RE. This approach could be further fine-tuned to include expected top-up requirements and TA costs to actually derive implied abatement costs. For the detailed Project Concept Notes this elaboration will be included. As an indication the following chart shows current and projected baselines based on the initial assessment of current electricity mix and the pipelines of upcoming large projects. It also illustrates the resulting differences in implied abatement costs of a USDc 1/kWh top-up.

Figure 6: Abatement cost considerations

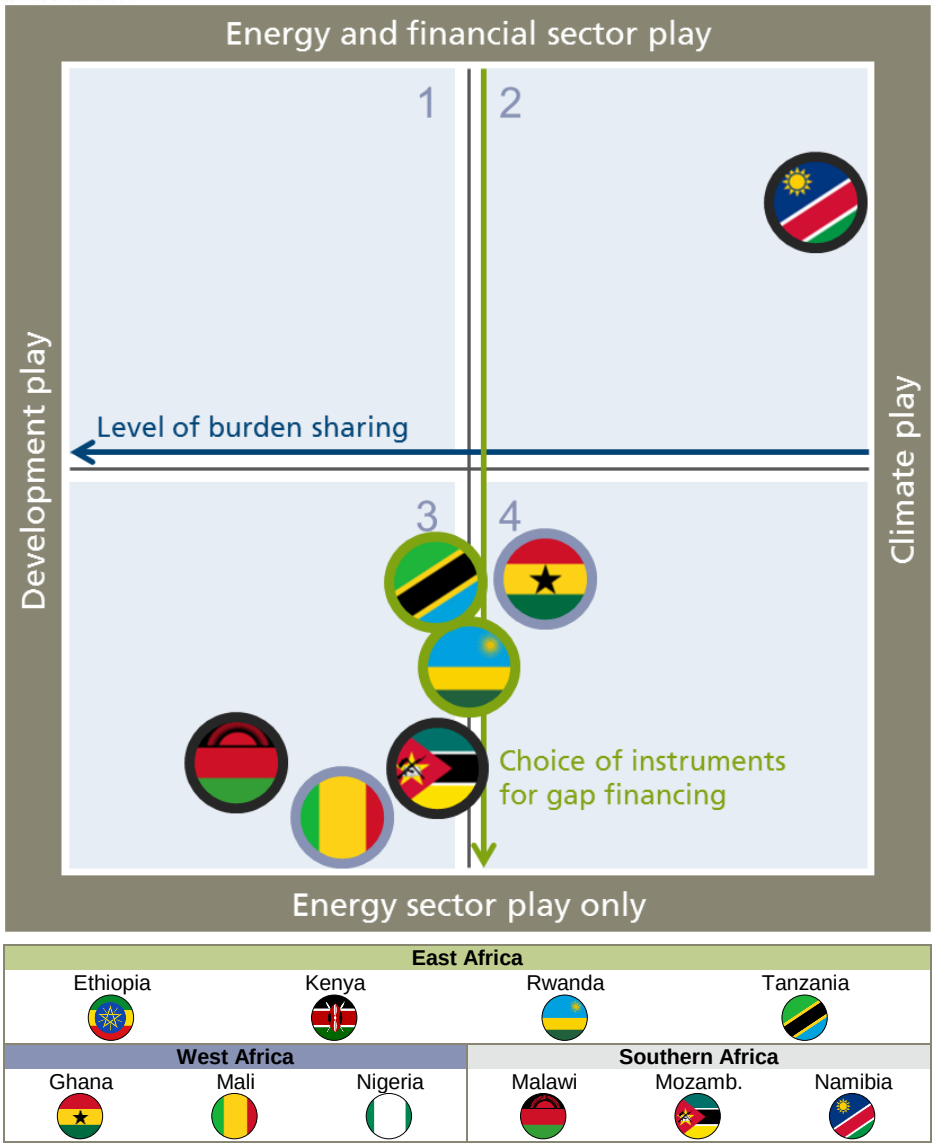


Note: Highly indicative analysis only.

The chart highlights that emission factors are expected to increase considerably in many (though not all) countries driven by the fact that large hydro potential is mainly harvested and new additions are primarily coming from coal and natural gas. Implied GET FiT abatement costs could therefore also be based on emission factors of newly added capacity which would reduce the overall level of implied abatement costs. Taking into account the very rough estimates and resulting errors, the chart nevertheless clearly shows that the implied abatement costs will vary significantly from country to country. At an accepted abatement price of USD 20/t, top-ups per kWh (based on future generation mix) could come in at a level in a range between USD 0.88 in Rwanda and USD 1.50 in Mozambique.

Based on these findings as well as our assessment of the strength and appetite of the financial sector we have allocated the countries to the different categories as introduced in Section 4.

Figure 7: Potential country allocation categories



5.3. *Political will of the partner government to create an enabling environment for small and medium IPPs*

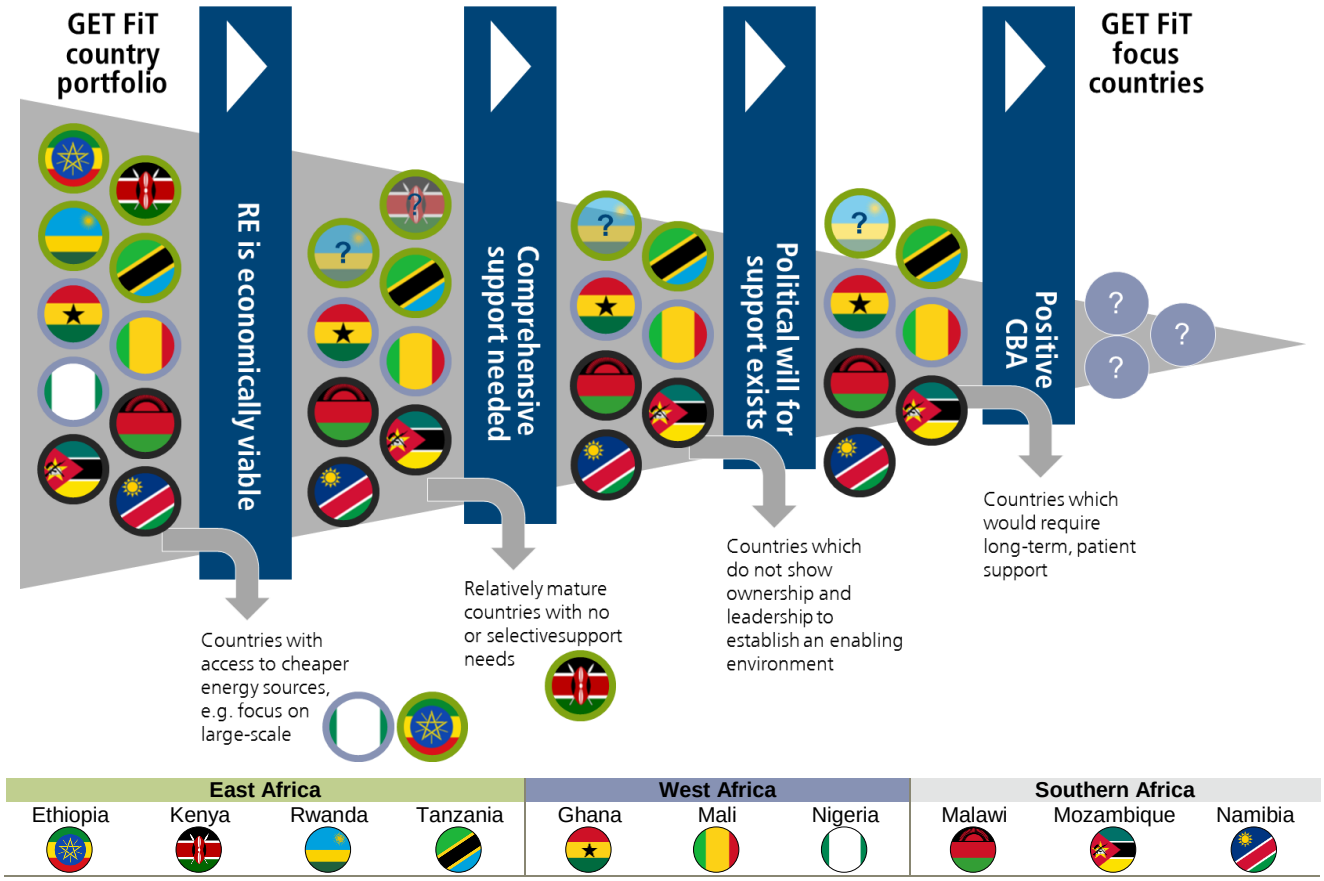
The third consideration that we apply to the group of target countries is whether or not there exists the requisite political will to enable an implementation of a GET FiT program. In this category we consider both the perceived interest of the key public sector institutions (e.g. ministries, regulators, utilities) as well as the presence (or absence) of a harmonized vision of how the sector should evolve in the coming years. In terms of interest, we gauge whether government counterparts appear to have a strong demand for a development cooperation and/or climate finance partnership with the international community, particular Germany and the UK. In terms of harmonization, we factor in that in some markets there is considerable disagreement about the respective power sector reform agenda, and what implications this would have for a potential GET FiT.

Somewhat surprisingly, the Team found that nearly all countries expressed political will – of course to varying degrees – to both work towards increasing IPP investments and promoting small renewables. Thus, no country has been eliminated based on this criterion. However, in the case of Tanzania, the poor track-record of reform efforts and implementation of plans raises serious concerns, as does the sheer number of donors and volume of support involved in the sector. Progress in implementing the key aspects of the Parliamentary-approved Energy Services Industry Reform Roadmap will be a critical issue in the near term. The recent approval of the MCC compact to support these efforts has partly influenced the decision to allow Tanzania to

pass this gate. The Team would also contend that even had Ethiopia made it through the first two gates, we would have excluded them at this stage.

As stated in Section 3, all countries passing the third gate should in principle be considered for GET FiT support. Figure 8 summarizes the development of the portfolio in the first three steps. The remaining portfolio shows a wide variety of countries with very different characteristics in terms of gaps but also implementation prerequisites. The underlying storylines for a GET FiT support are highly individual, and the choice of the three focus countries out of those remaining is very much dependent on donor preferences. We therefore believe that it is worth reviewing the summary country profiles, which present the very different storylines and pitches for a prospective GET FiT in each country.

Figure 8: Prioritizing markets for GET FiT: Results



5.4. *Cost-benefit analysis from the donor perspective*

For the final gate, we have not made concrete final recommendations based on the due diligence exercise. We are rather of the view that this gate also depends on the preferences of the donors, and as such the evaluation will be somewhat subjective without a priori transparency. As such, we have presented a few different options for the partners to consider, while weighing the pros, cons, and underlying storyline of each potential option for in-depth feasibility study as a next step.

For countries to move through the cost-benefit analysis gate, the donor partners should consider the five implementation considerations criteria as well as the fact that in some cases the countries with the greatest need are likely to be excluded from consideration because of the focus on low hanging fruits and relatively quick results (value for money in the short term). We remain neutral on this determination, but only aim to highlight it for the final decision makers at KfW/BMZ, UK DECC and UK DFID.

We summarize our key findings below with respect to the level of support needed in the remaining seven countries alongside our ratings for implementation.

Table 5: Support needed and implementation considerations[2]

Country	Support needed	Implementation considerations	Political risk	Effectiveness	Impact	Scale of effort	RE champion	Deal breakers
East Africa								
Rwanda	Medium							
Tanzania	Medium							
West Africa								
Ghana	Medium							
Mali	High							
Southern Africa								
Malawi	High							
Mozambique	High							
Namibia	Low/Med.							

The key conclusion that we can draw from the table above is that there are no high-need countries with red scoring for implementation considerations, and therefore none of them has been explicitly excluded.

Four countries are scored green. Ghana appears to be an obvious candidate with a very positive outlook for an implementation. We also note that Namibia continues to look attractive, given its good scoring and the expected upside of a GET FiT intervention. The light green rating is a result of the need for a fast-track approach. Besides Ghana and Namibia, Mozambique and Tanzania score high. For Mozambique, capacities within the ministries are limited, but generally we believe that it could be done. In Tanzania on the other hand, we believe that the general environment is positive, and therefore a GET FiT could be implemented, even though there is a very negative track record in the energy sector. As such, the light green ratings of course do not reflect the very different risk profiles between the countries, but taking into account their relative positions within the target group of countries, we believe that this scoring is warranted.

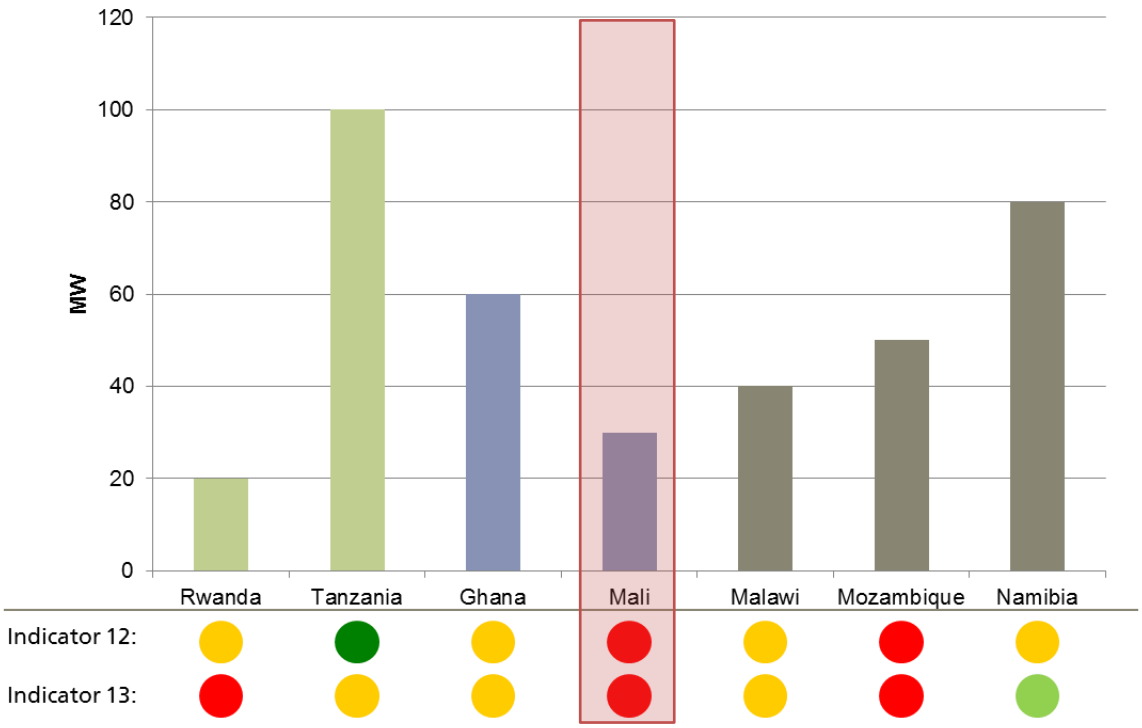
A consideration that should not be overlooked is the political risk of operating in each market. These differ in nature, and the risks in some countries far exceed those of others. Note that we do not believe that these risks should exclude any single market from an in-depth implementation design phase, however we recommend that KfW/BMZ, UK DECC and UK DFID do not omit these considerations from their final decision. While several countries carry specific risks, we would like to highlight two. Tanzania is highly uncertain because we have little insight as to what will happen after the elections in October. As such, choosing Tanzania for a GET FiT "deep dive" would require that KfW/BMZ, UK DECC and UK DFID accept that there is a certain "black box" element. In Mali, on the other hand, the security situation is highly threatening, and may prove, in combination with the relatively weak scoring in other indicators, to be a deal breaker for GET FiT. We would therefore recommend excluding Mali.

Another related consideration is the size of the pipeline in each country, in terms of arriving at a positive cost-benefit analysis. Given the costs of designing and implementing a program, the potential generation capacity

2 Note that the six indicators to the right of Implementation Considerations reflect the sub-indicators, as listed in Table 1: Key indicators of analysis in the Methodology section. As such, these ratings have been taken directly from each study.

supported should be taken into account. As the Figure 9 demonstrates, the pipelines vary considerably across the target countries.

Figure 9: Prospective relatively mature S/M RE pipelines in MW



Note: The indicators below refer to Table 2 in the overview above. Indicator 12 is "There is a pipeline of well-developed S/M RE IPPs" and Indicator 13 is "The market offers a number of competent local developers and is attractive for regional/international developers."

Generally, we would oppose an automatic exclusion of a country based on a lacking pipeline, as often developer activity follows the maturity of the regulatory framework. In particular, concepts like GET FiT should aim to create an enabling environment, which unlocks developer activity and in principle this time lag should be accepted. In Uganda, a strong good pipeline prior to the launch of GET FiT and subsequent development activity triggered by GET FiT can only be seen since the third RFP round. However, we respect the fact that KfW/BMZ, UK DECC and UK DFID have their own limitations and constraints with respect to an implementation timeline, and as such have taken the status of the pipeline into consideration.

These pipeline figures should also be qualified by the anticipated timelines. We expect that Mozambique and Ghana will take some time to develop, as the developed pipeline of the latter is by-and-large confined to solar. GET FiT could certainly play an important role unlocking the hydro and biomass pipeline in Ghana, but this is not likely to be a quick process. Taking the more positive perspective, there appear to be fairly significant opportunities in Tanzania and Namibia. The pipeline figure in Malawi is tempered somewhat by the fact that it is approx. 2/3 solar PV, of which we believe that only half could be commissioned in the near to medium term on account of grid constraints.

This analysis demonstrates quite clearly the dilemma that we face in this step: those countries with the largest need fail in a cost-benefit analysis with a time horizon of 3-4 years, as the benefit (i.e. realised projects) is linked to a pipeline in place before the creation of the enabling environment.

Availability of risk mitigation instruments

As stated above, risk mitigation instruments could also play a critical role in a GET FiT replication, particularly if commercial lenders become part of the deal, though the importance will be somewhat reduced should the subsidy be structured as a concessional loan. Overall demand will also depend on the commitment shown by the host government, the PPA structure and the involved development partners:

As Table 6 below shows, the availability of third-party risk mitigation instruments varies across the region, with some member states more actively pursuing options than others.

Table 6: Availability of risk mitigation instruments across the countries

Country	Indicator 3: The power sector is largely financially sustainable…	Indicator 10: Off-taker risk is limited or possible to mitigate.	ATI member state	Regional liquidity support facility (RLSF) focus country
East Africa				
Rwanda			**Yes**	**Yes**
Tanzania			**Yes**	
West Africa				
Ghana			**[Prospective]**	**Yes**
Mali				
Southern Africa				
Malawi			**Yes**	**Yes**
Mozambique			**[Prospective]**	
Namibia				

As the table indicates, there appear to be potential risk mitigation instruments in place for the remaining countries with the greatest need – such as Malawi and Tanzania (Mali would be a major gap, however as indicated above we argue that the combination of security considerations and low ratings render it a poor choice for GET FiT at this stage). ATI should be considered as a partner, and there is unlikely to be a significant need for a more formalized partnership with the World Bank or MIGA.

Quantitative cost-benefit analysis and assessment of implied abatement costs

As described above, a quantitative cost-benefit analysis should be performed in the next step. This, however, will require a deep dive on the required toolbox and resulting costs and cannot be seriously presented at this point in time.

Preliminary recommendations

Based on the analysis before, we recommend considering the two following countries for the next step:

Namibia – A GET FiT in Namibia would be a clear climate cooperation approach, with the goal of reducing Van Eck (coal) utilisation and heavily coal-based imports from South Africa as much as possible with RE. Winning Namibia as a strong and committed partner and realising GET FiT in a climate context could represent a unique chance of presenting the programme as a powerful climate cooperation tool just as much as an instrument for development cooperation. It needs to be acknowledged, however, that the inclusion of Namibia in our view only makes sense, if some kind of fast-track approach can be followed or interim support can be made available.

Ghana – A GET FiT Ghana would likely have substantial economic and climate mitigation benefits, as a successful program would result in bringing power on the grid while the country is likely in a prolonged power shortage. Further, as the country continues to struggle with gas supply issues, it is turning to HFO, coal and likely diesel, if the situation persists. The timing for a GET FiT programme may be good, if it is able to make renewables an attractive option for a privatizing ECG. Finally, a real long-term contribution could be made by

adding clarity and providing opportunities to investors within biomass and small hydropower - to date largely un-studied but surely present resource potential. The dual regulator model will none-the-less present a unique set of implementation risks.

The selection of a third country for a detailed GET FiT study depends heavily on donor preferences and in particular risk appetite:

Tanzania – From a GET FiT perspective, Tanzania is high-reward/high-risk country. If successful, the programme would unlock significant potential and investment in the short-run and a policy framework and track-record to drive future investment in the long-run. This potential however will not be easily won, with a poor track-record of reform implementation, a financially distressed TANESCO, a crowded donor space and threats of corruption presenting ever-present risks to the programme. The current election also adds an element of risk, particularly to the sector reform efforts. Nonetheless, with the strong reputation and eagerness for the program shown by EWURA, we believe that the programme would stand a reasonable chance for success. Finally, it should be noted that many DFIs and regional investors expressed an eagerness for GET FiT in Tanzania.

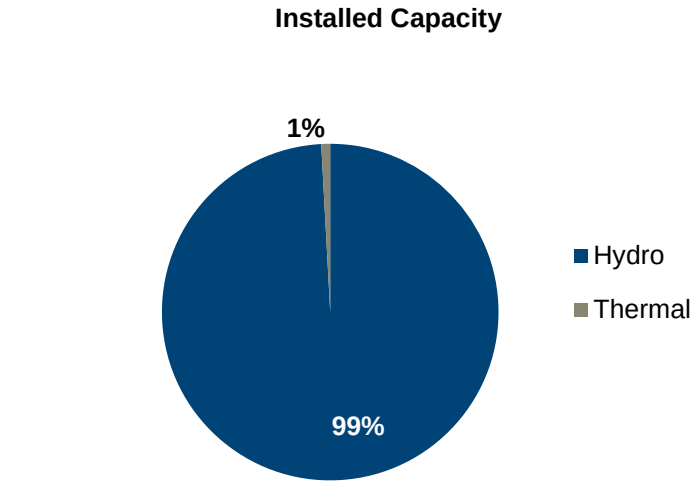
Mozambique – Mozambique's energy sector, and in particular the RE sector, lacks a holistic approach with takes into consideration the implications of actions on various stakeholders. A GET FiT intervention would target fundamental elements in the enabling framework for private investments in small-scale renewable energy in general and in the REFIT process in particular. Patient and perseverant technical assistance and strong financial support will be needed but could be justified if commitments for investments in coal-based energy production could be redirected towards investments in renewable energy. The scale of effort is thus considered significant and achievement of significant results may require an extended time-frame (compared to the envisioned 3-4 years), which could still be justified through the high relevance and potential positive impact of a possible GET FiT program.

6. Country Summaries

Malawi

RE Potential and Power Market Situation	Legal/ regulatory/ policy framework	IPP Pipeline	Financial landscape	Implementation considerations
●	●	●	●	●
→	→	→	↗	

Country Snap-shot



Source: MCC

Population:	16.7M
GDP/capita:	$255
5-yr growth rate:	4.6%
HDI rank:	174
Ease of doing business:	164
Access rate:	9%
Installed capacity:	351MW
Generation:	ESCOM, IPP
Transmission:	ESCOM
Distribution:	ESCOM
IPPS:	0%
Refit in place:	No
Ave. cons tariff (per kWh)	USDc 9.8

Sources: World Bank, UNDP, and Climatescope 2014

Which role should & could medium-scale RE IPPs play?

Based on significant larger scale hydro resources and potential cheap coal imports in the future, combined with an extremely fragile grid with sparse geographical coverage, there seems to be ***a rather limited role to play for medium-scale RE IPPs in Malawi in the short to medium term***. There is also little consensus among key actors and institutions around targets and overall strategies, and a very thin pipeline of RE IPP projects under development.

The current electricity generation mix of Malawi is almost exclusively based on medium to larger scale hydro (20-64MW). Average costs of service are indicated at approx. USDc 12-14/kWh. The existing generation facilities are old and facing severe operational difficulties, which, compounded by reduced hydrology, has led to frequent load shedding in recent years. Planned upgrades and rehabilitations are not expected to be realized until 2018. In addition, suppressed demand for the current year is estimated to be roughly 30% of installed capacity, and is projected to increase rapidly over the coming years. This will have a significant negative economic impact, e.g. through barring the development of the mining industry and restraining foreign direct investment. To cover the foreseen increasing demand, the GoM focuses on development of large hydro schemes in combination with some coal-fired plants to be fed with coal supply from Mozambique. However, such generation capacity will only be available in 2020, at the very earliest. There are also ambitions to integrate Malawi into the South African Power Pool but no firm time table is available. Thus, there is a significant short to medium-term supply gap which could be filled through either emergency power fossil fuel plants (some expected in 2016) or through exploiting the country's RE potential. Hydro and solar

power potential is relatively good, but faces certain significant challenges: (i) potential new hydro resources are quite far away from the existing grid, and (ii) the existing grid is extremely weak and will have serious challenges to absorb in particular any utility scale intermittent solar PV capacity. These challenges are likely the main reasons why there are only three RE IPP projects in reasonably advanced stages: one 41MW hydro and two 30-40 MW solar PV plants.

Although there is a general willingness of the government and the key institutions in the energy sector to push the RE agenda, there is little consensus of views and approaches on targets and strategies, in particular how to attract private investment into this space. Further, the tariffs indicated for the currently proposed projects (approx. USDc 11/kWh for hydro and up to USDc 22/kWh for solar) are higher than the current generation costs as well as the expected long-term marginal cost of energy. This makes RE appear economically unattractive to the stakeholders.

What needs to be done and why should GET FiT get involved?

Despite a National Energy Policy already enacted in 2003 and a Power Sector Reform Strategy in place, on-the-ground progress has been slow. In its efforts to increase the generation capacity and attract private RE investment, the regulator (MERA) drafted a REFiT policy in 2012 with technology-specific tariffs. However, this policy has to date not been implemented. A draft PPA template has also been developed, but is not considered bankable. A complete set of standardized legal documents also needs to be developed.
Further, as noted above, the awareness of the potential economic value of SM RE projects as a solution to cover some of the significant supply deficit in the medium term is low.

Against these fundamental weaknesses, ***a GET FiT program could*** provide significant, transformational impact and kick start private investment, but only ***if it is able and willing to take a holistic and long-term view***.

A GET FiT program would likely be a highly welcome sparring partner for the MNREM and MERA to provide strategic support on implementation of the RE policy, e.g. in the choice between REFiTs versus a tender-based approach.

The off-taker ESCOM is plagued by historically non-cost reflective end-user tariffs and has undergone a heavy restructuring in recent years. Although positive results have been seen in several consecutive years, a question mark remains with regard to the sustainability of this trend. A GET FiT intervention would certainly have to take this into account, particularly in respect to convincing the utility of the value of IPPs, which may have higher prices than current and future assumed generation costs from large hydro or imports. Additionally, international investors will need to mitigate off-taker risk, but with sovereign guarantees putting increasing constraint on the national budget, the GoM's appetite and ability to provide guarantees is limited.

The local financial sector is largely unaccustomed to long-term project finance instruments, and projects would need access to low cost long tenor debt. Moreover, foreign exchange mechanisms are needed, as tariffs are paid in local currency, and convertibility is a major issue due to very shallow FX markets.

What needs to be considered for a potential implementation and what are realistic targets?

In light of the above, a potential GET FiT program would require a more generous timeframe than the envisaged 3- to 4-year period to show tangible results in terms of generation capacity.

Although the pipeline of projects under development is rather weak and there is little visibility on early stage development, based on the good RE potential we assume as a first estimate that ***approximately 60-80MW of RE potential could be realistically achieved***. The main technologies would likely be hydro and solar PV.

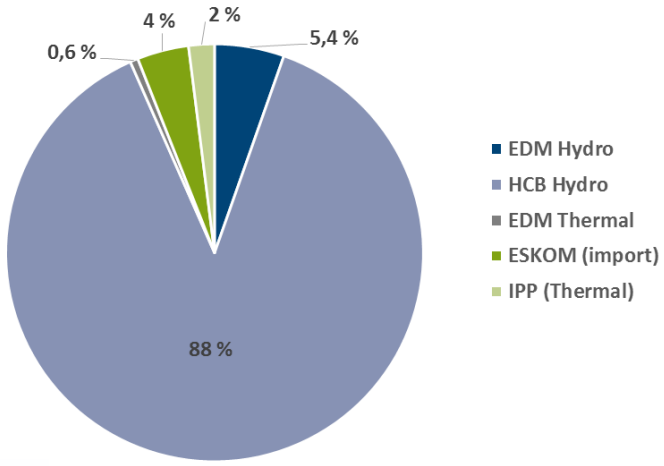
With regard to a local host institution, the regulator MERA seems to be best placed. MERA has a fairly good competence level, but would nevertheless require further capacity building efforts, as well as a reinforcement of its role within the energy sector.

Mozambique

RE Potential and Power Market Situation	Legal/ regulatory/ policy framework	IPP Pipeline	Financial landscape	Implementation considerations
●	●	●	●	●
?	?	↗	↗	

Country Snap-shot

Electricity supply



Note: Only includes share of HCB used for domestic purposes.
Source: EDM 2014

Population:	26M (2014)
GDP/capita:	$619 (2014)
5-yr growth rate:	5.0%
HDI rank:	178 (2014)
Ease of doing business:	127
Access rate:	26.0% (2014)
Installed capacity:	2300 MW (2014)
Generation:	EDM, HCB, IPPs
Transmission:	EDM, MOTRACO
Distribution:	EDM
IPPs:	2% of market (not including HCB)
Refit in place:	In law of 2014, but not implemented.
Ave. cons tariff	USDc 8.5/kWh

Sources: Energypedia, Climatescope, World Bank Database, HDI Index, EODB, EDM, SAPP 2014

Which role should & could medium-scale RE IPPs play?

Mozambique's total power generation capacity far exceeds the country's domestic electricity needs, but most of the production for HCB is committed in long term sale contracts to the region, primarily South Africa. For this reason, the country has to invest in new capacity in line with demand growth. Given the country's vast and well-mapped RE potential, S/M RE projects could replace some of the envisaged large power projects, in particular coal-fired plants. There has so far been little development of the small hydro and biomass resources. Thus, taking into account long lead times for these technologies, their possible contribution to the overall generation mix is hard to pitch for stakeholders." However, the use of S/M RE as local energy generation assets to help stabilize the complex and severely constrained transmission and distribution system is be a low-hanging fruit. This approach is already recognized by and pursued by EDM. While we are confident that also the economic viability of S/M RE compared to large coal-fired plants could be demonstrated, the chances for increasing the Government's S/M RE target will certainly improve once S/M RE has proven a track-record as local generation asset in regions suffering from constrained supply, and assuming that large projects will be further delayed.

In contrast to most other countries, PV intermittency is not considered a major challenge in the Northern part of the country where radiation is said to be stable during daytime. Consequently, the interest of grid stability

is rather a driver for S/M RE scale up than a barrier in Mozambique. In addition, this reduces our concerns with regard to a too strong and potentially unsustainable focus on PV technology raised in some other countries.

What needs to be done and why should GET FiT get involved?
Mozambique's energy sector, and in particular the RE sector, lacks a holistic approach with takes into consideration the implications of actions on various stakeholders. A tangible example is the development of the REFIT regulation, which has not sufficiently addressed the issue of incremental costs for EDM nor searched for solutions to this important barrier. A GET FiT intervention would target fundamental elements in the enabling framework for private investments in small-scale renewable energy in general and in the REFIT process in particular. It could presumably play a key and leading role in this space, well aligned with SEFA's program. It could assume the important role of moderating between the different stakeholders and showing that the societal value from IPPs can be realized only if the framework is accepted by all stakeholders, in particular the off-taker. GET FiT's good reputation as an honest and unbiased partner could be a unique asset in this context.

While incremental costs of S/M RE might be limited, we see a significant need for financial support. This "carrot" might also be a powerful tool to focus EDM and GoM attention to a project category which is not on top of their agenda. Risk mitigation instruments would also be crucial to make deals bankable: the creditworthiness of EDM is extremely weak and there are no initiatives in sight to significantly improve the financial sustainability of the utility in the short to medium term. Mozambique is currently negotiating their membership with the African Trade Insurance, and we are confident that an ATI involvement in GET FiT would further strengthen the powerful toolbox. Further, there are recent positive signals in terms of significant increases in end-user tariffs that may improve the financial sustainability; however this is still a significant challenge and risk.

In light of the above, the total costs of a GET FiT intervention will most likely be high. On the other hand, the potential benefits are huge. Experts within EDM have already stated that high financing costs make new coal-fired plants relatively unattractive, which improves the outlook for renewables. Yet, the GoM has not officially shared this view. If a GET FiT deal could "buy" a stronger position for RE in the GoM's sector strategy and turn them away from coal, the cost benefit ratio would certainly be positive.

What needs to be considered for a potential implementation and what are realistic targets?
The immaturity of the REFIT system and EDM's limited and only recent interest in RE, combined with a very thin pipeline with no projects approaching maturity, implies a need for a generous timeframe to achieve significant results. Still, the fact that PV can be deployed without burdening the grid, makes us optimistic that PV projects could be generated also in an initial GET FiT phase while other RE technologies would require more lengthy development processes.

While the economic reasoning for S/M RE is robust, a GET FiT team on ground would certainly have to spend significant time on building awareness, improving coordination and paving the way for private sector developers. This will require substantial resources, perseverance and patient support. We are confident that the donor community would welcome a well-coordinated approach in the energy sector.

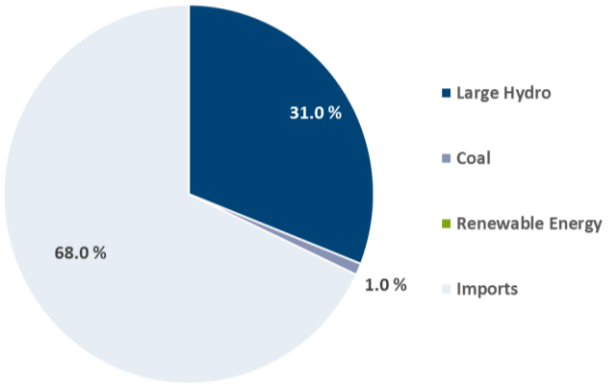
Overall, we believe that it is possible to unlock 100MW of additional S/M RE over a reasonable timeframe of 3-5 years, if sufficient financial support can be made available and if the government demonstrates true buy-in and commitment. A successful implementation would certainly represent a very significant contribution to the enabling framework and ensure a sustainable framework for continued exploitation of the RE resources in Mozambique.

Namibia

RE Potential and Power Market Situation	Legal/ regulatory/ policy framework	IPP Pipeline	Financial landscape	Implementation considerations
●	●	●	●	●
→	↗	?	→	

Country Snap-shot

Power Supply



Source: ECB, 2014

Population:	2.4M (2014)
GDP/capita:	$5,719 (2014)
5-yr growth rate:	4.5%
HDI rank:	127(2014)
Ease of doing business:	88
Access rate:	47.6% (2014)
Installed capacity:	492 MW
Generation:	NamPower, IPPs
Transmission:	NamPower
Distribution:	REDs, local authorities and NamPower
IPPs:	<1% of market
Refit in place:	No
Ave. residential tariff:	N$ 2.00 /kWh (USDc 0.15/kWh - 2015)

Sources: Energypedia, NamPower annual report World Bank Databank, USAID Power Africa and Climatescope 2014

Which role should & could medium-scale RE IPPs play?

Namibia faces a serious supply crisis which is accentuated by the termination of import contracts. Two large gas-to-power projects, which could close the expected gap, have been in the pipeline for a while but have been delayed by disagreements amongst Government ministries. The coal-fired Van Eck power plant, which has been unavailable for several years, will be back on grid early next year, albeit with a reduced capacity, but average generation costs are too high to use Van Eck as base load power plant. Namibia also struggles with the length of its transmission grid and the significant distances between load centres and generation assets and the resulting technical losses. The appealing economic rationale for RE is therefore resting on two strong pillars – closing the supply gap and stabilizing the grid in more remote areas. In addition, and of particular relevance for projects utilising the country's abundant invader bush resources, significant social and environmental co-benefits could be created while being of high economic viability, even though it is noted that such undertakings are complex.

NamPower has announced a target of 10% of energy generation from RE other than large hydro. Based on the installed capacity including Van Eck (after rehabilitation), this would translate into approx. 50MW. It seems likely that NamPower will reach these 50MW already with the interim REFIT process and the award of the outstanding solar tenders. However, the consultant team is optimistic that an additional 100MW S/M RE could be added if structured appropriately. Taking into account strong solar radiation in Namibia as well as a certain learning curve effect, we expect solar PV to be or to become competitive with Van Eck over the next few years and invader bush to economically substitute diesel based electricity generation.

What needs to be done and why should GET FiT get involved?
Namibia has a relatively well developed regulatory framework and positive investment climate. We consider it likely that there are good chances that the Government and NamPower will finalise the interim REFIT process as well as the solar tenders and thereby create further traction. On the other hand, we are sceptical whether a further scale up of PV projects could be supported by NamPower as single offtaker without burdening its financial sustainability. Therefore, assisting to finance the incremental costs of PV could unlock future growth of RE. Financial support at levels reflecting the abatement of Van Eck emissions could be an incentive for NamPower. In addition, technical support to revise the REFiT regulation after the interim process has been completed should be considered. Such efforts could contribute to a more optimal distribution of PV capacity across the country and lead to its optimisation within the country's future energy mix, and in this way represent important learning curve effects.

We believe that GET FiT in Namibia could act as a creative and unbiased sparring partner for the stakeholders with support instruments that could also unlock additional activities in other RE technologies. In particular, and in view of the potential offered by using invader bush, in the context of invader bush we see – in spite of the significant challenge – massive opportunities could be unlocked and bring about high social and environmental co-benefits, as well as an opportunity to demonstrate consistency of international cooperation and continued support based on the existing GIZ programme.

NamPower enjoys a solid reputation and benefits from strong credit ratings. Although off-taker risk mitigation might become an issue, we are of the opinion that this could be addressed by way of minor structural changes. The need for external guarantees/insurance support seems, and based on our preliminary assessment, to be limited.

It is also noted that a GET FiT in Namibia would constitute a climate cooperation approach, with the goal of reducing the use of Van Eck and other diesel-powered generation capacity through the use of RE. Winning Namibia as a strong and committed partner and realising GET FiT in a climate context could represent a unique opportunity of presenting the programme as a powerful and meaningful climate cooperation tool, just as much as an instrument for further development cooperation.

What needs to be considered for a potential implementation and what are realistic targets?
Namibia is already heavily impacted by climate change, and awareness around environmental protection is high. In July 2015, Namibia's Environmental Investment Fund was accredited to the GCF as first national fund in SSA. Entering into a climate cooperation with international partners will allow the government to remain consistent in their messaging relating to their targeted status as a middle-income country. In fact, we have got to know the Namibian public stakeholders as self-confident and competent sparring partners. The GET FiT program will be a good opportunity to establish a dialogue at eye level and to support the Namibian energy sector with an unbiased sparring partner and moderator. In this context one has to keep in mind, that the cooperation with NamPower and others are expected to be highly capable but consequently also demanding partners which will require strong commitment and professionalism.

The selection of a committed GET FiT champion appears a mere "luxury problem": While we have not identified one dominating advocate for RE IPPs in Namibia, the key institutions in the sector appear generally aligned in their positive approach towards IPPs, and good candidates can easily be envisioned. The support of NamPower and the MME is certainly needed to refine the policy framework and to develop specific RE targets for small and medium scale RE which are to become a part of the energy mix. Besides the Electricity Control Board, which has managed the REFiT process, two relative newcomers in the sector, i.e. the Namibia Energy Institute and the Environment Investment Fund could potentially be considered as implementing partners, even though it is recognised that both institutions would require considerable additional capacity enhancements. The required support should, however, be seen as an investment in a further strengthened institutional set up.

The timeline for a possible GET FiT programme could represent a key challenge: Namibia is expected to sign initial RE PPAs and be ready for the next steps in the coming months. The GET FiT timeline, as is currently envisaged (detailed feasibility study to start end of Q2 2016 only) could imply a risk of the programme being too late to make a real impact. We therefore recommend considering fast-tracking this option for Namibia, so as to benefit from and build on the momentum that has already been achieved to date.

While the inclusion of invader bush projects in the REFIT regulation as a goal of GET FiT would certainly add complexity, we are nevertheless confident that the associated social and environmental co-benefits would justify going this extra mile.

Overall, we believe that an additional 100MW of S/M RE could be unlocked over the next 3-4 years. We expect incremental cost financing needs to come in at a level appropriate in the context of climate cooperation, and implementation costs to be reasonable, given the excellent departure point that exists in terms of the regulatory environment and human capital that is already in place in most of the key institutions in the country.

7. Market Assessments

7.1. Malawi

7.1.1. Country context

Malawi is among the least developed countries in the world. Nevertheless, it has managed to sustain a positive growth due to pro-growth policy reforms that were implemented, as well as debt relief. Annual growth rates were in the range of 4-9% between 2007-11, approximately 5% since 2013. The political environment is stable; the positive growth is expected to be maintained. The country's economy and labour supply is primarily based on agriculture which constitutes one third of the GDP and 90% of export revenues. Malawi's main exports are tobacco – representing 62% of export for foreign earnings – tea, and sugar.

The country's economy is highly dependent on foreign development assistance, with ODA per capita of around USD 70 (representing more than 25% of per capita GDP). Malawi ranks number 164 of 173 countries in the 2015 World Bank's Ease of Doing Business, and number 174 of 187 countries on UN's 2014 Human Development Index. Inflation is high, averaging almost 24% in 2014, and the persisting fiscal deficit deepened with the withdrawal of donor budget support subsequent to an embezzlement of public funds' scandal in 2013 (the "Capitol Hill Cashgate" scandal). The Malawian currency, the Kwacha (MWK) has been depreciating, implying a significant currency risk on investments.

The long term development goals of Malawi are outlined in Vision 2020, which was developed in the late 1990s and launched in 2000. Vision 2020 sets out a long-term development perspective for Malawi and emphasizes long-term strategic thinking, a shared vision and visionary leadership, participation in development activities by all the people, strategic management and national learning. The vision is currently being implemented according to the Second Malawi Growth and Development Strategy (MGDSII) (2011 – 2016), which elaborates a policy framework that articulates issues related to both economic growth and social development, including energy infrastructure and private sector development, among others. Indeed, the MGDSII recognizes that Malawi is endowed with a variety of energy resources whose full potential is not being realized due to structural, operational and institutional challenges.

SE4ALL's 2012 rapid assessment gap analysis shows biomass as being 89% of Malawi's primary energy mix, while petroleum and coal represented 6% and 2% respectively, with electricity being only 2.8% of the total primary energy mix. Further, Malawi has an aging generation infrastructure, with most of the hydropower plants existing from the 1966-2000 period, and the state utility's maintenance record of these facilities is mixed. The hydropower plants on the Shire River, located downstream of Liwonde Barrage, have operated without major problems until recently when floating aquatic weeds/plants and debris being transported in the river have caused severe operational problems and damage to intake structures, aggravated by siltation of power plant reservoirs. Concern of the vulnerability stemming from the dependence on the Shire River for electricity supply is growing, and diversification to other sources of supply is considered crucial.

The system has become unreliable to the extent that load shedding is extremely common amongst grid-connected customers, with one 2013 estimate suggesting that outages may be responsible for the loss of 6.5% of GDP. Many commercial and industrial actors having turned to captive diesel generation, and poor power supply has deterred development of the nascent mining sector. With such critical consequences already being felt, the country has flagged investments in the power sector as one of its most urgent priorities.

7.1.2. Power market situation and RE potential

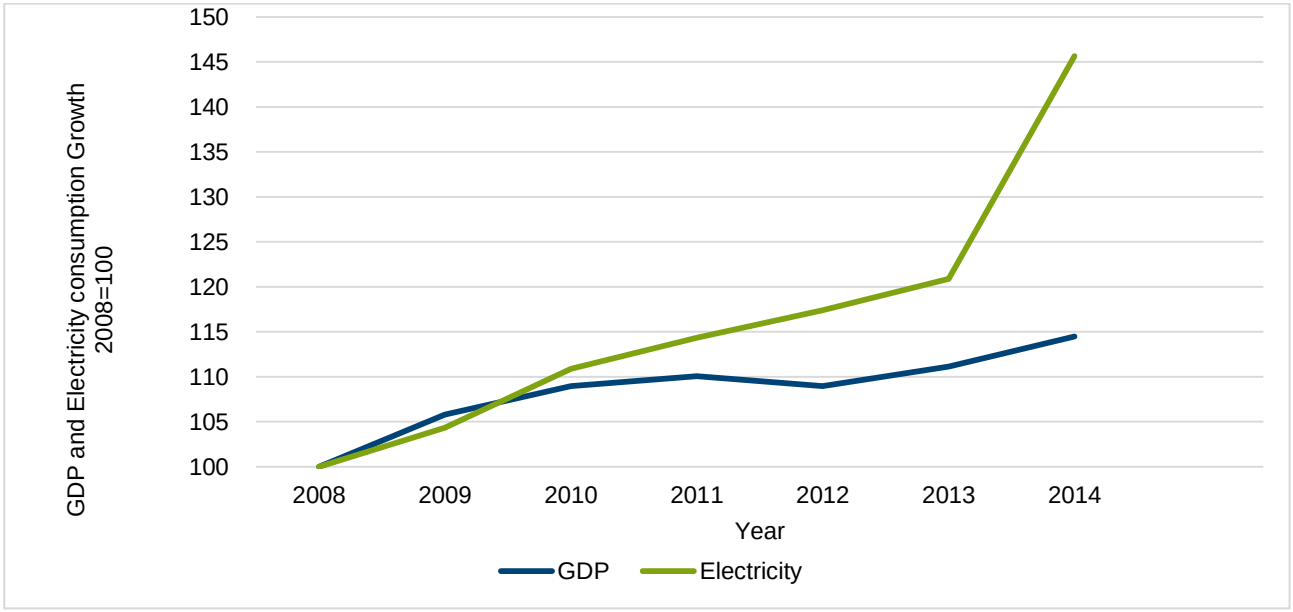
Overall Readiness		Key Points – Malawi
Technical potential: There is technical feasibility for grid-connected RE IPPs, preferably near grid and load centres.		While a resource potential exists, the absorption capacity of the grid is likely to be a critical limiting factor for RE capacity addition in the short term.
Economic potential: There is strong economic justification for promoting the scale up of grid-connected RE IPPs.		Although RE is more expensive than the expected cost of planned hydropower projects, the economic cost of the current and foreseen suppressed demand creates an economic justification in the short to medium term.

Financial sustainability: The power sector is largely financially sustainable; revenues from end-consumers are in line with the cost structure of the sector.		In spite of recent improvements, tariffs are not at cost-reflective levels, and ESCOM's financial situation is fragile. Although significant improvements have taken place, building a credible credit track-record will take time.
Institutional support: Important institutions are capable and well-staffed to fulfil their missions and to interact with the private sector. A RE champion exists.		The convening power of the Ministry of Energy and Mines is weak, and ESCOM lacks experience as off-taker in IPPs, and a very limited ability to act as an efficient counterpart in negotiation and conclusion of private sectors deals.
Near-term outlook: Currently, there are positive policy signals and/or momentum in this DD area.		The outlook for the near future is dependent on the continued improvement of ESCOM's financial situation and successful implementation of ongoing support to grid strengthening, sector reform etc.

Level of Electrification. The country has the lowest electrification rate in the Southern African Development Community (SADC) and one of the lowest in the world. Currently about 9% of the population has access to electricity – and only 2% of the rural population, which comprise 75% of the population. The Government's primary goal for electricity is to increase access from the current level to reach 30% by 2030. There is a major emphasis, particularly within the donor community, to focus on off-grid solutions for the majority of the population that is underserved by the country's electricity infrastructure.

Electricity supply and demand. Electricity is supplied by the sole state owned Electricity Supply Corporation of Malawi (ESCOM), which is also the grid operator. ESCOM owns the country's hydropower generation assets, 98% of which are located along the Shire River (see Table 7). In addition to these facilities, ESCOM owns two small diesel-run standby plants (Mzuzu 1.1 MW, and Lilongwe 6 MW), and two fossil-fuel run generators of 750 kW and 300 kW for the islands Likoma and Chizumulu. A number of privately owned diesel-run generators are also registered with the regulator, MERA, adding up to approximately 52MW, and the sugar producing company, Illovo, owns biomass-based electricity generators. Neither of the aforementioned, at present, feed into the grid. Consumption has grown over the past 15 years in line with GDP (see Figure 10), though it is widely agreed that there is considerable suppressed demand.

Figure 10: Electricity Consumption and GDP Growth in Malawi



Sources: World Bank, CIA World Fact Book

In 2013, Malawi's total installed capacity was 288 MW, of which 285.8 MW was hydropower. 2014 saw the first addition of new capacity in 13 years, through the commissioning of the 64MW Kapichira II hydro project, increasing total installed capacity to its current 351 MW. 99% comes from hydropower stations as shown in the table below, with minor installations based on diesel and thermal representing the balance. Households represent the large majority of the demand, consuming around 85% of the electricity, with peaks in the morning and later afternoon.

Table 7: Hydropower Stations and Installed Capacity in Malawi

Power Station	TOTAL (MW)	Year installed
Nkula A	24.0	1966
	60.0	1980
Nkula B	20.0	1986
	20.0	1992
Tedzani I	20.0	1973
Tedzani II	20.0	1977
Tedzani III	51.3	1996
Wovwe	4.5	1995
Kapichira I	64.0	2000
Kapichira II	64.0	2014
TOTAL HYDROPOWER	**348.0**	

Source: ESCOM website

Power demand is expected to grow at an average annual rate of 8%, to reach 541 MW in 2020 and 630 MW in 2025. It is generally accepted that the supply figures hide a significant suppressed demand. Specifically, there appears to be a substantial potential demand with the most important driver being the mining sector. Reportedly, several prospective mining operations are put on hold due to lack of capacity to supply power. The deficit, depending on estimates, is estimated to range from 100MW to 400MW.[3] Highly diverging demand forecasts exist, for example, unofficial demand calculations by the Ministry of Natural Resources, Energy and Mines (MNREM) estimate a need for 2,830MW by 2030, based on expected demand from mining, manufacturing, households, the service sector, and the Green Belt Irrigation Initiative.[4]

Currently, three ESCOM projects are under way which are expected to add over 78MW of capacity by 2018, boosting Malawi's total capacity to 429 MW:

- A refurbishment of the existing Nkula A hydropower plant, which is expected to add 12MW of capacity, funded by the Millennium Challenge Compact (MCC) and targeted for completion by 2018.
- A 21MW expansion of the Tedzani hydropower station, financed by a grant from the Japan International Cooperation Agency (JICA). Completion date is expected sometime in 2018.
- A procurement of three diesel generators with total capacity of 45 MW to manage peak power.

At present, Malawi has significant large hydropower projects planned, but it is unlikely that any of these will be commissioned prior to 2020. The country is actively seeking out alternative generation in the meantime, with some consideration of thermal, as well as solar PV and hydro, which are the main renewable energy sources being discussed in the country, at least in the short term.

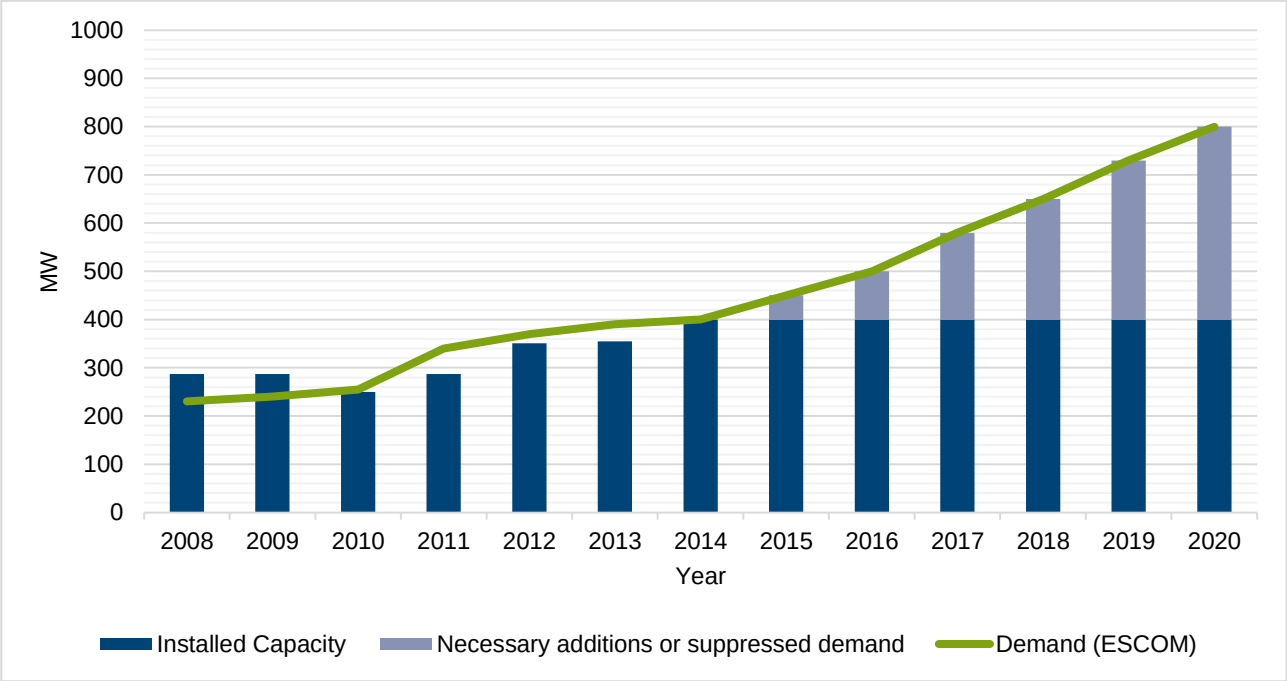
The near total dependence on one resource, the Shire River, makes supply highly sensitive to hydrological risk. Historically, the system utilization and availability have in recent years had factors of 75% and 88%. Due to flooding in early 2015 causing damage to two installations, an estimated 40 MW is currently unavailable.

3 Saha, 2015
4 MNREM Brief, 2015

With unusual low rainfall following the floods, the flow is currently critically low, and the remaining installations are running below installed capacity.

It should be noted that the large generation capacity gap is a key challenge in the context of economic development in Malawi, and scaling-up renewable development is only one piece of the puzzle to solve the problem. As such, public sector attention towards renewables is rather limited, and thermal (coal) will likely play an important role in a least cost development plan.

Figure 11: Supply and demand in Malawi



Source: ESCOM

Transmission and distribution. With the exception of a small hydropower facility on the Wovwe River in the Northern part of the country, almost all electrical power is transmitted from the generation point in the South to all other parts of the country through a network of more than 2,000 km of 132 kV and 66 kV lines. ESCOM's transmission system is isolated from neighbouring countries – except from supply to small cross-border towns from Mozambique and Zambia – and is therefore not benefiting from being part of the Southern African Power Pool (SAPP). Two interconnection projects to Mozambique and Zambia are planned, though no firm dates are foreseen for the commissioning of these projects. In the meantime, the country's capacity to absorb additional generation is uncertain, which adds uncertainty to the value of significant additions of intermittent sources of power on the grid.

In addition to the planned interconnections, there are significant upgrades and investments requirements for the national grid. Currently, Malawi suffers up to 30% in technical and non-technical transmission losses (22% in 2014 according to ESCOM statistics).

Distribution is divided into three geographical regions, namely Southern Electricity Supply, Central Electricity Supply, and Northern Electricity Supply. About 60% of the power distributed by ESCOM is supplied to the Central and Southern region, given their higher levels of industrialization and population.

In addition to the constraints on the supply capacity related to the over-dependence on one power resource (the Shire River), Malawi's supply security is constrained by high technical and non-technical losses, aging equipment, and inadequate preventative maintenance procedures.
This situation leads to a high frequency of load shedding, and it has been estimated that Malawi loses about USD 16m annually due to power outages.

RE resource potential. While hydro potential does exist and may be cost competitive, the currently exploited resources are mainly concentrated on the Shire and Wovwe Rivers (98% of installed capacity) and

thus highly sensitive to variations in flow. Diversification away from the Shire River is needed to both reduce climate variability risk and to mitigate transmission losses flowing north. Approximately 10% of the 1,500 MW potential is considered relevant for small- to medium scale project development.

Solar energy could also contribute to filling the gap of energy needs in Malawi, with global solar radiation on a horizontal surface ranging between 4.3 kWh/m^2/day and 7 kWh/m^2/day. An ESMAP initiative on full solar mapping will be completed in 2018. However, solar is considered expensive and, as a highly intermittent source, a major challenge for the aging grid. One recent price indication for PV is that it could come in at up to USDc 22/kWh (without fiscal incentives/sovereign guarantee). This is higher than the Ugandan price level, although proposed plant sizes are larger in Malawi, indicatively 25-40 MW. PV (incl. captive) does, meanwhile, look relevant in the off-grid area, with more than 90% of the population unconnected to the grid. Solar resources are exploited for various purposes, including electrification of 6 villages, solar water heaters, small PV systems and solar home systems. The total capacity of these small systems is estimated to be 165 kWp, divided by approximately 10,000 installations.[5] The potential of solar as an important element in providing energy in rural and off-grid areas is being addressed actively within the donor community.

Biomass could represent a potential for power production from municipal waste, sisal and coffee production. Also geothermal resources exist, estimated to approximately 100MW mainly located on the shore of Lake Malawi. However, these resources have not been studied in detail, and no project at advanced development stage exists. Resource studies for solar and wind are ongoing.

Although the wind resource is adequate for activities such as livestock water supply provision and irrigation, as well as milling of grains and other off-grid applications, preliminary results from Malawi's Meteorological Department suggest that with an average speed of 1-7 m/s, wind is not sufficiently abundant and stable to contribute significantly to firm power generation. A World Bank study on mapping this resource is also planned.

Tariffs, cost-reflectiveness and sector financial viability. Consumer tariffs have traditionally been very low, at an average of USDc 6.8/kWh.[6] Recently, however, an automatic tariff adjustment formula has been introduced, implying that any movement of 5% or more in the combination of the exchange rate to USD and inflation will result in a tariff adjustment. Using this methodology, tariffs were raised in 2015 to reach approximately USDc 9.8/kWh. However with the steady depreciation of the Kwacha, the equivalent USD rate has already been reduced to around USDc 7/kWh. Time-based tariffs have been introduced, and a cross-subsidized social tariff is available for poor households.

ESCOM's financial position is challenged due a history of low tariffs; high customer default rates; and political interference. However, according to assessments through the Millennium Challenge Account capacity strengthening component, significant improvements have taken place, with debt converted into equity and an EBITDA positive for several consecutive years, in parallel with recent tariff increases.

The positive figures do, however, hide the fact that the current consumer tariffs are still too low to ensure revenue levels allowing for capital replacement. They are rather a result of depreciated assets and low running costs (including low spending on maintenance), than of a long-term sustainable financial position. The increased use of expensive emergency power, foreseen from 2016 onwards, is likely to threaten the positive development in the utility's financial position.

While there is no official figure on the current cost of generation – as the country does not have the tools to undertake the necessary analysis to make such a determination – MERA has indicated that this is likely to be in the range of USDc 12-14/kWh. The tariffs are thus generally considered to be significantly below the cost-reflective level, despite the increase in end-user tariffs.

Sector strategies, plans and targets. The Power Sector Reform Strategy, approved by the Government in 2003, provided for the unbundling of ESCOM and private sector participation via long-term licenses in transmission and distribution and entry of IPPs for new generation capacity. The reform process is being supported by international development partners, but has been hampered by major delays, with a carving out of generation only foreseen in 2016.

5 UCT, 2015
6 SAPP Annual Report, 2014.

The Government is deeply concerned by insufficient generation capacity and suppressed demand, and is therefore focused on developing large-scale generation projects – though specific plans are inconsistent:

1. The Government's target of 1,900 MW by 2020 includes expected demand from mining, manufacturing, households, the service sector, and the Green Belt Irrigation Initiative. The implementation of this long-term, least cost-based plan is significantly delayed.
2. In view of the increasing demand, focus is partly shifting toward the short term. A recent unofficial 'energy sector brief' by the MNREM refers to a Draft Plan of Action for Power Development Projects 2015-2020. The Action Plan contains 1,600 MW of potential generation projects based on a range of technologies, public and private, that are prioritized to cover the supply deficit:

Table 8: Project Pipeline According to MNREM Action Plan

Technology	Ownership	Capacity (MW)	Outlook through 2020
Solar	3 IPPs	400	Exceeds the grid's capacity to absorb intermittent power. Likely total solar power in the short term is 40-60MW
Hydropower	4 IPPs, 3 ESCOM projects, 1 SPV	623	One IPP in advanced development stage, one at pre-feasibility. With expected capacity to finance ESCOM projects, a maximum of 300-350 MW is likely in the short term
Coal	3 IPPs, 1 GOM	540	
Diesel (EPP)	ESCOM projects	46	10+6MW expected to come online in 2016. Additional peaking power facilities of 30 MW planned but not yet commenced.

Source: MNREM brief 2015, draft

3. More recently, MCC's investment outlook[7] only partially overlaps with the above-mentioned Plan of Action, indicating 300 MW of coal and 50 MW of hydropower as 'highest priority' projects, with an additional six hydropower schemes in feasibility stage, totalling 500-800 MW.

These examples of diverging plans indicate a lack of power to coordinate and concentrate efforts around a set of commonly agreed targets. An Electricity Sector Investment Plan drafted in 2011 but never approved and put into effect, strengthens this impression. Uncertain priorities in combination with the uncertainty of the key institutions' capacity to implement and finance projects make it difficult to make realistic projections of future power generation capacity.

With regard to transmission and distribution, significant rehabilitation and strengthening of a number of critical lines and other infrastructure is considered essential to allow for the planned additional generation capacities and secure future supply. The importance of such investments has been noted by the relevant authorities, and the Government's development partners have grid upgrades as central features of their near-term plans. The MCC includes such support, planned to be completed by 2018. An important upgrade of the transmission backbone to 400 kV will be supported by the World Bank.

7.1.3. Legal/regulatory/policy framework for RE and IPP

Overall		Key Points – Malawi
Fundamentals: There are limited and surmountable fundamental legal, regulatory and/or policy gaps for enabling RE IPPs.		Positive developments have taken place in developing a framework for IPP's and a REFIT policy, however, significant efforts remain before the framework will effectively support a scaling up of private sector investments in the sector.
Coordination: Policy-making, target-setting and decision making pertaining to renewable energy promotion as well as donor interventions are well coordinated.		While exploitation of the renewable energy potential seems to be gaining attention from several stakeholders, there is little consensus around targets, lack of clarity of overall

7 MCC, Business Opportunities in the Malawi Power Sector, 2015

		strategies, and to some extent unclear role sort among the key institutions. Further, in the quest to find a solution to the critical supply gap, small scale RE may lose political attention to large-scale generation projects.
Institutional empowerment: Relevant institutions are empowered to make required changes to the framework and have convening power for cross-institutional arrangements/processes		The Ministry's capacity to set clear strategic goals, coordinate processes and lead the sector institutions seems weak. MERA seems to be a relatively competent institution, however with capacity constraints.
Rules & procedures: The bureaucratic and licensing frameworks are well coordinated, transparent and expedient.		The establishment of a one-stop shop for formal procedures is strength while the actual effectiveness of the bureaucracy is unknown.
PPA: A standardized bankable PPA, which should allow for project finance solutions in S/M RE IPPs, should be attainable with limited efforts.		While a draft PPA has been developed, and further elaborated through ongoing negotiations, significant gaps remain before the PPA will be considered bankable.
Off-taker risk: Off-taker risk is limited or possible to mitigate		Off-taker risk mitigation mechanisms would be a requirement for IPPs. With little perspective of sovereign guarantees, risk mitigation would need to be sought through external partners.
Outlook: Currently, there are positive policy signals and/or momentum in this DD area.		The efforts undertaken by MERA may, if successfully formalized, create a basis for more standardization and predictability in the framework. The ability of the institutions to support the active promotion of RE/IPPs may be a limitation to the development, particularly with increasing challenges related to supply deficit.

Institutional framework. The interviews with various institutions indicate weak coordination between the different key stakeholders in the sector. Role division and reform responsibilities are unclear, including for REFiTs, standardized project documents, etc. with regard to the reform agenda, different actors offer at times contradictory signals.

- The Ministry of Natural Resources, Energy and Mines (MNREM) provides oversight to the sector. The role of the Department of Energy Affairs is to advise the Ministry of Energy on energy policy, plan and implement energy programs, and coordinate sector activities. It is organized with the following three sub-divisions; (i) Policy and Planning Division, (ii) Alternative Energy Division, and (iii) Rural Electrification Division. The Ministry's capacity to fulfil its coordination and oversight duties is considered limited by several stakeholders.
- The Electricity Supply Corporation of Malawi (ESCOM) Limited is the only electrical power supplier and a publicly owned company. Established in 1998, it underwent restructuring in line with the provisions of the Energy Law of 2004, becoming vertically integrated and owning on-grid generation, the transmission and distribution system, and operating the system. However, ESCOM has constrained capacity, and lacks central skills related to power system analysis, simulation and planning, and project appraisal, yielding reluctance to negotiate with IPPs. ESCOM is subject to restructuring as a part of the Power Sector Reform plan, with generation likely to be carved out from transmission and distribution, and single buyer and market operator modalities established. Significant support to ESCOM in this process is required, and is foreseen through the MCC as well as possibly Power Africa.
- Malawi Energy Regulatory Agency (MERA) is an independent regulatory body established under the Energy Regulation Act 2004. MERA's roles include (i) reviewing tariff applications from ESCOM and recommending tariff changes to the Government, (ii) granting licenses for generation and distribution operators, and (iii) arbitrating commercial disputes that arise under the 2004 energy legislation.

A candidate for the host role for a GET FiT program is not obvious, but MERA is likely to be best suited for this role. MERA is at the core of the process of establishing the REFIT scheme and development of documentation to allow for IPP development. While MERA certainly is in need of capacity strengthening, they appeared the most interested and open to the concept. MNREM does not appear to have the required capacity and setup, and the focus on the longer-term development plans and the larger projects could make it difficult to get the required attention on the smaller-scale renewable issue.

Key legal and policy documents. The National Energy Policy 2003 is the energy sector's central steering document, and states the following objectives:

- Make the energy sector sufficiently robust and efficient to support the Government's socioeconomic agenda of poverty reduction, sustainable economic development, and enhanced labour productivity;
- Catalyse the establishment of a more liberalized, private sector driven energy supply industry in which pricing will reflect the competition and efficiency that will develop in the reform process; and
- Transform the country's energy economy from one that is overly dependent on biomass to one with a high modern energy component in the energy mix as shown in the table below.

The Policy laid the basis for sector structure, through four Acts from 2004. The fact that the 2004 Acts were not gazetted until late 2007 was likely caused by a change in policy direction with respect to unbundling the power sector. As part of this process, the Government issued a 'Letter of Intent' setting out a program for adjusted implementation of the energy sector reform including revision of current framework and legislation, with the intention to clarify the electricity market structure and ESCOM's role through revision of relevant legislation. This process is on-going, as the revised Energy Policy should be announced in 2016.

The Government has also developed a number of sector-specific strategies, including for power reform, rural electrification, biomass energy and renewable energy.

Table 9: Key Malawi Policy Documents

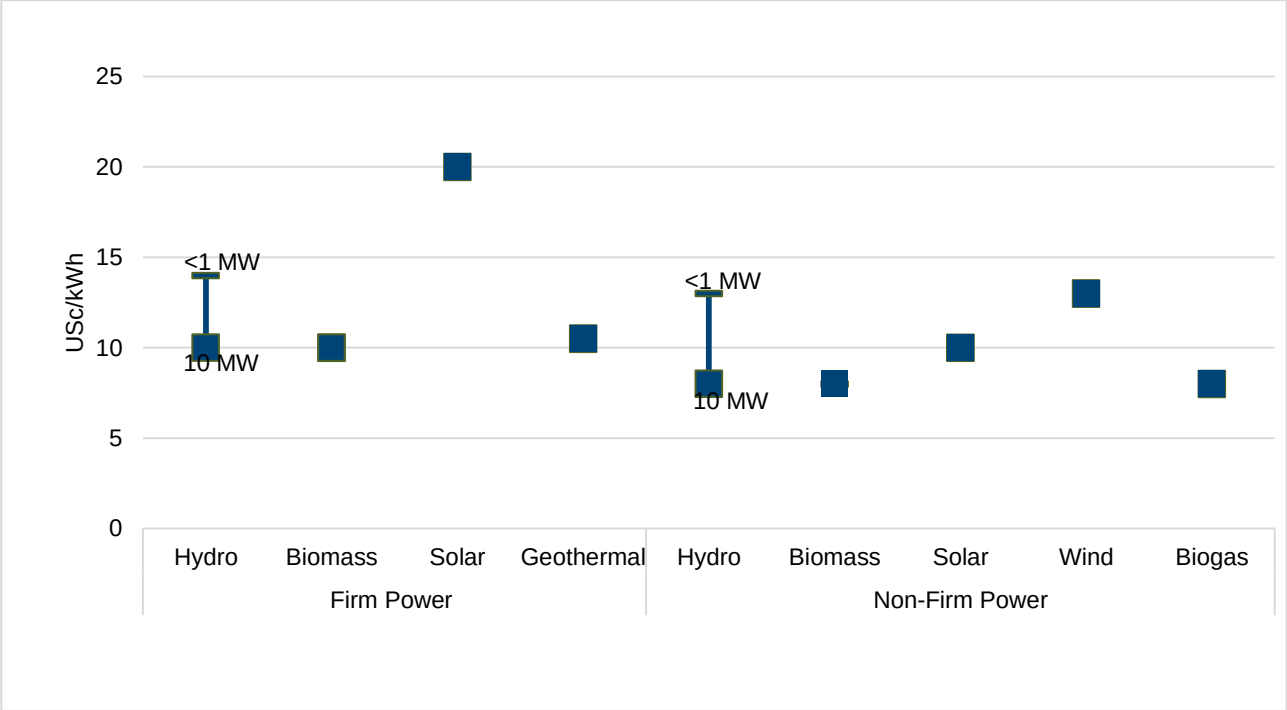
Key policy documents	Main points
National Energy Policy	2003. The central steering document, but outdated. Currently under revision, with an updated Policy expected to be published early 2016
Malawi Growth and Development Strategy	Period no. II covering 2011-2016. Establishes as main goal for energy related issues: Generate sufficient amount of energy to meet economic and social demands.
Act 20, the Energy Regulation Act	Drafted in 2004, gazetted in 2007. Established Malawi Energy Regulatory Authority (MERA)
Act 21, the Rural Electrification Act	Drafted in 2004, gazetted in 2007. Laid the foundation for the formation of Rural Electrification Management Committee and Rural Electrification Fund
Act 22, the Electricity Act	Drafted in 2004, gazetted in 2007. Deals with electricity issues in terms of licensing, tariffs, generation, transmission, distribution, sales contracts and related issues;
Malawi Grid code	Developed in 2012

RE policy framework. With a supply deficit and an attractive potential mining sector that represents a significant potential market, there is political will to urgently increase generation capacity.

To achieve such targets, a key pillar in the Power Sector Reform Strategy is competition and private-sector participation in the power sector. However, while the regulatory framework appears clear on paper, the interviews suggest that the implementation of the reform agenda is slow, and indicate lack of firm decision-making and limited ability to implement the policies.

As part of an effort to reduce transaction costs and attract IPPs, MERA drafted a REFiT policy in 2012. The REFIT establishes proposed tariffs, as shown in the table below. There is, however, a wide-spread opinion that the levels are outdated and in need of review. The policy has not yet been gazetted, and explanations of the delay vary among stakeholders. Several institutions believe that Malawi should move toward a tender-based system rather than predetermined FiTs, but no concrete plans for such tender processes are in place.

Figure 12: Renewable FiTs in Malawi, proposed



Source: MERA, Malawi FiT Policy, 2012

ESCOM currently does not have a clear estimate of its actual cost of service, and bases tariff considerations on the current low outlays due to depreciated generation facilities. Without such insight, the Government and ESCOM remain concerned about locking themselves into long-term, expensive commitments.

IPP regulatory framework. Private participation is allowed in the energy sector.[8] In the absence of standardized processes for establishing agreements, REFIT regulation, and standardized PPAs, the unsolicited bids received to date have relied on a 'learning-by-doing' approach and direct negotiations with ESCOM. The absence of pre-defined tariffs is a particular challenge for ESCOM, which lacks capacity to review projects' financial plans and consider reasonable tariff levels. Without support, ESCOM will likely not be able or willing to champion IPPs.

A draft standardized PPA document was developed in parallel with the drafting of the REFIT. The PPA is based on a series of similar documents from the region, and several stakeholders indicated to the team that it did not reflect the Malawian reality, is not bankable, and that individually negotiated projects were requesting significant adjustments. There are clear shortcomings in the document, for example the PPA does not incorporate many key bankability and investor requirements. There are also certain key risk allocation areas that are not addressed or left blank. A preliminary review of the document is in the box below.

Overview of PPA and contractual structure

The PPA is intended to be a standard PPA for hydro, geothermal and gas-fired power projects. However, in its current form it may not be appropriate for each of these technologies (e.g. tariff, dispatch, fuel supply, etc. are only applicable to gas projects). It is intended to be entered into between a Malawian incorporated special purpose project company as seller (Project Company) and the Off-taker. The role of the Malawian Government in the project structure is unclear. The PPA is intended to operate alongside a development agreement (DA), which has not been adequately defined. We have not been provided with the DA and would recommend that it is also reviewed.

Extent to which the PPA satisfies typical bankability and investor requirements

The risk allocation is broadly satisfactory in respect of the following key issues:

8 It should be noted that some stakeholders have questioned ESCOM's willingness to approve IPP projects as it views them as competition to its generation activities.

- Term: placeholder kept; payment formula suggests 20 years (no extension for force majeure).
- Delay protection: extension of deadline for commercial operation of whole plant for force majeure (no equivalent delay protection for Off-taker breach or specified Off-taker risks).
- Force Majeure ("FM"): relief from obligations and extension of deadlines (no payments during Project Company FM and payment during Off-taker FM restricted to variable energy charge).
- Permits: Off-taker to assist with permitting process (though no relief if permits not granted).
- Commissioning: includes an objective (though basic) commissioning and testing procedure (detailed procedures to be agreed prior to commissioning).
- Tariff: transparent tariff regime with indexation (though consider if CPI is adequate, references to indices are outdated and whether the formulas are appropriate for the specific technology). No payment basis for electricity produced during commissioning.

Key bankability and investment risks

The PPA does not incorporate many key bankability and investor requirements. Since there are many placeholders (e.g. cure periods, liquidated damages, arbitration, etc.), it has not been possible to assess certain key risk allocation areas. It may be that these are intended to be negotiated on a project-by-project basis. We would strongly recommend that all aspects of the document are reviewed in detail and redrafted to include necessary provisions and to clarify the existing drafting. We would highlight the following key issues of concern to potential lenders and investors:

- Deemed commissioning: trigger event insufficient and compensation only covers interest payments under financing agreements.
- Deemed availability: no provision for deemed energy payments where dispatch instructions are not given for Off-taker-related risks (e.g. grid failure).
- Credit support: no credit support for Off-taker's obligations.
- Site risk: no clarity on who is responsible for acquiring the site and no protection for site risk.
- Availability adjustments: concept of revisions to Contracted Capacity to be clarified (not clear which capacity used to calculate payment adjustments, periodicity of capacity tests or availability calculation).
- Political force majeure: no payment protection/deemed availability for political force majeure.
- Expropriation: no protection against expropriation and other political risk events.
- Change in law: no cost protection, except for where changes in indirect taxes affect tariff: also definition of change in law is narrow.
- Termination triggers: cure period not specified and will need to be tailored to corresponding default; cross-default provision with no materiality qualification and no definition of "abandonment".
- Termination compensation: compensation on termination/ consequences of termination not covered.
- Lender rights: not addressed.
- Scope of work: lack of clarity on the Project Company's scope of work for construction of the connection facilities and the metering system.

One example of a signed implementation agreement with the Government exists. It is not clear whether implementation agreements will be made available for new IPPs or considered as a part of the REFIT scheme. Risk allocation is a special challenge for IPPs. Sovereign guarantees are unlikely to be available, and developers are concerned about ESCOM's creditworthiness, in spite of a strong financial improvement over the last five years. The apparent overall positive trend in both the liquidity and debt burden should, however, be seen in light of the fact that one of the key factors underlying the improvement of the utility's

finances has been the conversion of public sector debt into equity, improving ESCOM's balance sheet on paper.

A grid code exists, establishing voltage requirements and responsibilities of players with regard to infrastructure, but is not specifically oriented to the connection requirements of renewable energy, and will need revision to allow for supply of significant amounts. Transmission of less than five kilometres is the responsibility of the developer and according to one IPP (H.E. Power), the division of responsibility for the connection is subject to negotiation.

Thus, efforts are being made to improve the framework for IPP development, but considerable gaps remain. Until these are addressed, a significant scale-up of renewable energy IPPs, in particular hydropower schemes with long development lead-times, is not likely to materialize. To that end, several international cooperation partners are supporting the reform processes, including the development of the framework for IPPs, but the expectations for the IPP framework development are diverging among stakeholders.

7.1.4. IPP pipeline

Overall		Key Points – Malawi
Track record: The country has a track record with S/M RE IPPs.		No successfully implemented IPPs so far, some experience with engagement with projects developers is gained.
Pipeline: There is a pipeline of well-developed S/M RE IPPs.		The pipeline is thin, with three reasonably developed projects, and a small number of projects in relatively early development stages.
Human capital: The market offers a number of competent local developers and is attractive for regional/international developers.		Only one of the pipeline projects is developed by a local firm, and the experience-base is assumed to be very limited. Malawi is promoted as a generally investor-friendly country, but international developers have thus far been slow to engage on a larger scale.
Institutional support: There is a genuine interest amongst policy makers to support RE IPPs and to see the best projects realized.		The interest to address the critical supply deficit is high; however the willingness or ability to implement the necessary steps to enable the development is questionable.
Outlook: There are positive policy signals and/or momentum in this DD area.		Successful implementation of 2-3 projects would provide invaluable experience to ESCOM and MERA, however momentum has not yet picked up.

So far, no IPPs have reached financial close. While the pipeline of projects at the feasibility stage is relatively thin, with three IPPs currently being in the advanced development stage, and a few others still at prefeasibility, interest from private investors and developers has been increasing over the past years. In a recent business and investment symposium, 75% of the attending companies were apparently from the energy sector. Further, MNREM has received many unsolicited bids to generate power from solar and hydro.

Due to current grid weaknesses and instability, otherwise viable yet intermittent projects are unlikely to be realized until transmission and distribution upgrades have been made. This is particularly key for the outlook on solar projects, as the first developer to sign a PPA is likely to take all of the current grid absorption capacity. As discussed above, grid upgrades are part of the World Bank/MCC support programs, but implementation has been delayed, and it is unclear whether current timelines are realistic.

Apart from government-sponsored projects, the following projects with sponsors from the IPP community are at either feasibility study or early negotiation stages:

- A proposed 41MW hydropower plant on Bua River at Mbongozi. The project promoter H.E. Power Ltd has a feasibility study and environmental impact assessment, and has been looking for financial partners after securing its debt from a Chinese bank. The developer has an off-taker term sheet and an implementation agreement with the government in place, and indicated tariffs in a range that is likely within the payment capacity of the off-taker – said to be USDc 11.15/kWh.
- A proposed 30-40MW solar PV project sponsored by a local company, Atlas Energies of Malawi, with American financing at the feasibility stage, which is currently awaiting an anticipated guarantee from the Ministry of Finance and final approval from the ESCOM Board. On account of the high perceived tariff – approximately USDc 22/kWh without fiscal incentives – the Government has been wary about finalizing an agreement.
- A proposed 30MW solar energy project with the Canadian developer firm JCM Capital. The project is in advanced prefeasibility, with its equity secured, and next steps include securing the land rights for potential sites and performing full feasibility.

It appears that on account of high required PPA prices, as well as the fact that ESCOM's capacity of integrating solar into the grid may be limited to one of the two projects, signing of a PPA for the two latter projects may become a race between the developers.

A few other projects are at the very early stages of development, including very large solar project and two hydro schemes, totalling altogether approximately 360MW.

7.1.5. Financial landscape

Overall		Key Points – Malawi
Investment environment: The country is generally attractive for FDI, with a private sector oriented Government.		Corruption is still wide spread and the country is in the bottom 15% of the Ease of Doing Business index; on the other hand, MITC as a one-stop-shop for foreign investors is quite active and the upcoming IPP framework should hopefully provide more clarity on private investments.
Maturity of financial sector: The established financial sector is relatively mature, offering potential for commercial finance for RE IPPs (including appropriate tenor and decent financing costs under project finance transactions).		By and large, the highly concentrated local banking sector is very immature and not familiar with RE asset finance concepts; therefore making long-term, stand-alone financing difficult. There is, however, the notable exception of Standard Bank with project finance know-how and access to international teams within the bank.
Outlook: There are positive policy signals and/or momentum in this DD area.		Depending on the outcome of the IPP framework on the one hand, and the existence of an apparently fairly sophisticated banking partner on the other, there might be upside potential for attracting future investors in RE.

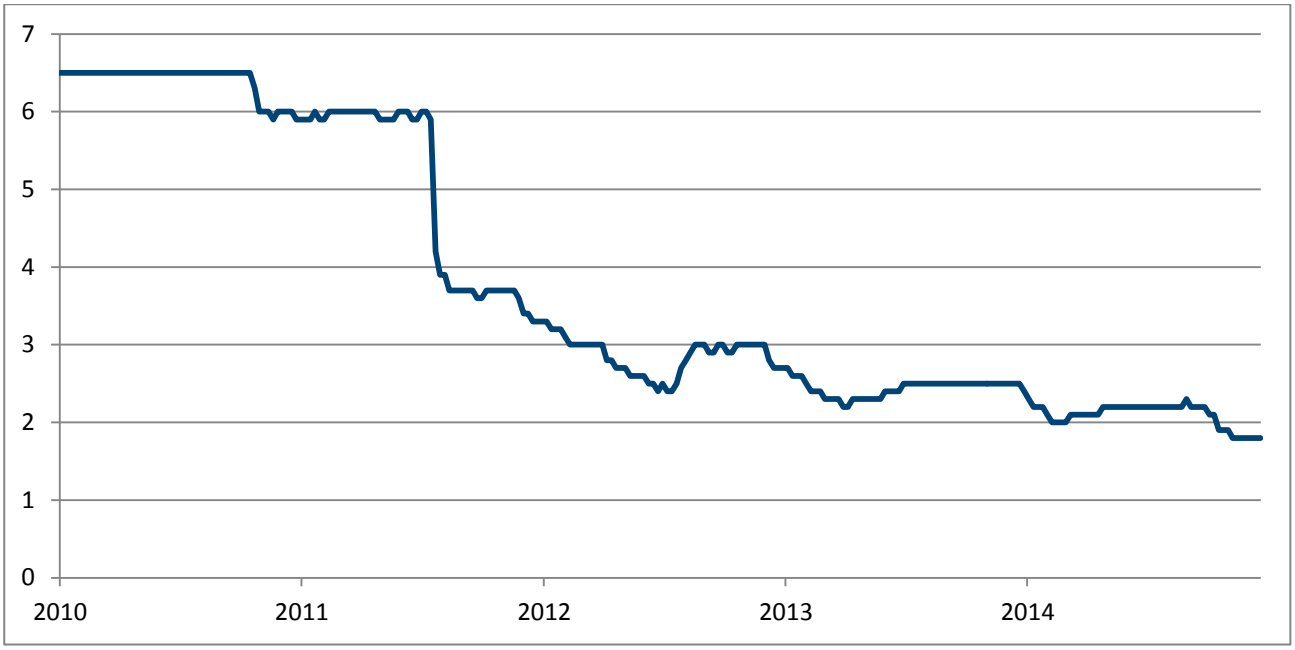
Recognizing the need for private sector investment in its priorities sectors to complement strained public fiscal outlays, the country has actively sought to improve its investment environment, with the creation of a new agency: the Malawi Investment and Trade Centre (MITC). Mandated by the Investment and Promotion Act of 2012, MITC aims to be a one-stop-shop for international investors in terms of providing information and facilitating introductions and documentation from relevant ministries and other Government offices, assisting with formal/legal processes related to registration, land lease, taxation, etc. While lacking the full status of a ministry, the MITC does play an important facilitation and coordination role, especially for first-time investors, and has been cited by project developers as an extremely useful tool.

Malawi's financial sector is highly concentrated around a few banks, with the National Bank of Malawi, Standard Bank, NBS Bank, and First Merchant Bank being the only four listed on the national stock exchange and accounting for a large proportion of total assets. Access to finance is generally limited, especially for entities and sectors with higher perceived risk profiles or for which there is not a clear credit history or conventional collateral. Long-term finance is even more difficult for these borrowers, and rates tend to be high on account of tight monetary policy and insufficient competition. Other key challenges faced by projects developers in managing the local financial sector include high currency risk, given the Kwacha's extremely poor performance over the past year (see Figure 13), in addition to questions about currency convertibility for IPPs being paid in MWK. Investors have expressed concerns that they are not confident that they will be able to obtain hard currency when and in the quantities required to service their debt.

To date, longer-term project financing has by and large not been available in Malawi. The country has several reforms prepared to address these constraints, however local commercial lending for IPPs is likely to remain challenging in the near and medium term.

That said, Standard Bank is highly active in the power sector, engaging with the Ministry of Energy and Mines to provide comments on the draft PPA, and attending power sector conferences and stakeholder consultations. Unlike the other actors in the sector, Standard Bank is also capable of standalone project financing arrangements. However, given their balance sheet restrictions, the bank would be eager to partner with DFIs for tenor support, while providing risk and credit assessments locally or in collaboration with their other branches in the United Kingdom, South Africa, etc. on specific transactions.

Figure 13: Five-year depreciation of the Kwacha (USD/1000MWK)



Source: Oanda.com historical exchange rates

In the highly volatile and elevated interest rate environment (commercial lending rates are over 30%) of Malawi, long-term commercial lending portfolios are not considered sustainable, though Standard Bank can offer both local and hard currency lending. In local currency, the bank is able to tap into certain local pools of capital, which enable it to offer tenors of up to 15 years under certain conditions. In hard currency, the bank is only able to offer shorter-term loans, with tenors more around 6-7 years for USD-denominated debt.

7.1.6. Implementation considerations

Overall		Key Points – Malawi
Political risk: The risk that RE projects are adversely affected by political changes or instability.		Next national election: May 2019 Despite some civil unrest in 2011/12, the country is regarded as political stable. Economic fundamentals are weak, with high inflation, steep depreciation of the kwacha, and corruption destabilizing businesses and investment. AON Political Risk Rating: Medium S&P Credit rating: N/A
Effectiveness: The GET FiT approach could be adjusted to effectively target the specific bottlenecks that are preventing scale-up of RE IPPs.		The introduction of standardised processes and project documents, further support in restructuring the off-taker combined with relevant risk mitigation instruments, and creating an enabling environment for long-term debt finance would make a GET FiT program very effective in Malawi.
Impact: A GET FiT intervention would; i) create additional development or climate change mitigation benefits; ii) take a lead development role within S/M grid-connected RE IPP scale-up; and iii) complement on-going support.		Impact of a GET FiT intervention would be considerable, in particular from a developmental perspective, it could equally take a lead role in S/M grid connected generation capacity and would constitute a good fit with existing donor programs.
Scale of effort and timeline: The scale of effort required is realistic for a GET FiT intervention, and target outcomes should be achievable within a 3-4 year timeframe.		The currently very thin deal pipeline, considerable upfront investment needed into the grid infrastructure combined with slow progress among energy market players would require significant effort and could compromise a compelling outcome within the envisaged time frame.
GET FiT Champion: There is a candidate GET FiT lead agency which has sector clout to implement required reforms and champion RE IPP scale-up.		Although a clear champion did not emerge, the regulator MERA seems to be best placed, as it had a fairly good competence level that would nevertheless require further capacity building efforts, as well as a reinforcement of its role within the energy sector.
Deal-breakers: No insurmountable barriers for GET FiT have been identified		Historical slow speed of reforms, current lack of political attention to RE and a slow progress of existing donor programs will require a longer than average implementation horizon of a potential GET FiT.

Assessment of expected effectiveness and impact. GET FiT could be an effective tool in Malawi, provided that a number of challenges could be overcome. Successful intervention would need to build on the positive momentum toward reforming the sector – first and foremost with the unbundling of ESCOM. Transmission bottlenecks that are expected to hamper the capacity of the country to take on intermittent generation would need to be unlocked. The grid upgrades that are scheduled for the next 2-3 years, will if successfully realized, create the necessary evacuation capacity to provide a space for GET FiT supported investments. The facilitation of a trusted guarantee scheme, presumably via a DFI or ATI would be an important element in an intervention. Further, development of standardized project documents could prove highly beneficial for the implementation of the new IPP framework once it has been designed.

If GET FiT were to support significant additional generation capacity, the development gains and economic benefits stand to be significant. Currently, unreliable and unavailable power is a major obstacle for the country's economy, hinders industrial growth, and deters investments by both domestic and international investors. The climate change mitigation effect is likely to be limited in terms of substituting fossil-based energy, as the country currently has a small amount of diesel generation. Also looking forward, although Malawi is likely to bring online one coal-fired plant in the medium term, the future power generation mix will likely be hydro-dominated.

With the regulator willing to pass-through incremental costs to the consumers, care should be taken to avoid renewable energy becoming a scape-goat for higher energy prices. Detailed calculations of incremental costs would be necessary to undertake to determine the right level and could require significant work as existing information is limited.

The ability to get the necessary political attention, firm decision-making and institutional support to the GET FiT program would remain a concern and should be closely assessed in a feasibility stage. The capacity of several key institutions is limited, and the need for technical assistance would be significant.

Potential additionality and role of a GET FiT program. Several international partners are implementing programmes and interventions with relevance for the renewable energy IPP space. Most importantly, the MCC has placed consultants in some of the key institutions to support the development of the IPP framework, provide transaction advice, and support to the reform process. Other major players on the donor/partner side are Power Africa and the DFIs, particularly the World Bank and the African Development Bank. Power Africa is considering its support, but is in the short term expected to place a transaction advisor within ESCOM, to assist in the processing of IPP proposals. Several of these above partners are also providing financial support to important infrastructure investments. The upcoming IPP framework, coupled with ESCOM's generation being carved out, should play an important role in improving the enabling environment for IPPs, and a base from which GET FiT can work. Any technical assistance for MNREM, MERA or ESCOM should complement ongoing efforts, and would need to be carefully coordinated with these, first and foremost the MCC Compact.

Scale of effort and timeline. GET FiT's effectiveness will depend on a number of factors that are beyond its control, including continued reform in the power sector and planned infrastructure investments being implemented as scheduled. Successful achievement of the Government's and international partners' high ambitions by the end of 2018 would create a more promising baseline for a GET FiT intervention.
The fact that there are very few IPPs in the pipeline, further strengthens the view that a GET FiT intervention would need an extended timeline before significant private investments could be realistically achieved.

GET FiT champion and host institution. While a clear champion did not appear during our mission, MERA might be the best potential host for an undertaking to support REFIT and IPP support. This assessment is based on the fact that MERA has led the process of establishing a REFIT policy, and on the impression that MERA has a good competence level to build on, as well as the highest level of conceptual understanding and interest for the GET FiT concept. In the case of moving forward with Malawi as a GET FiT candidate, a contact with the Ugandan regulator to exchange experiences would be welcomed by MERA.

7.2. Mozambique

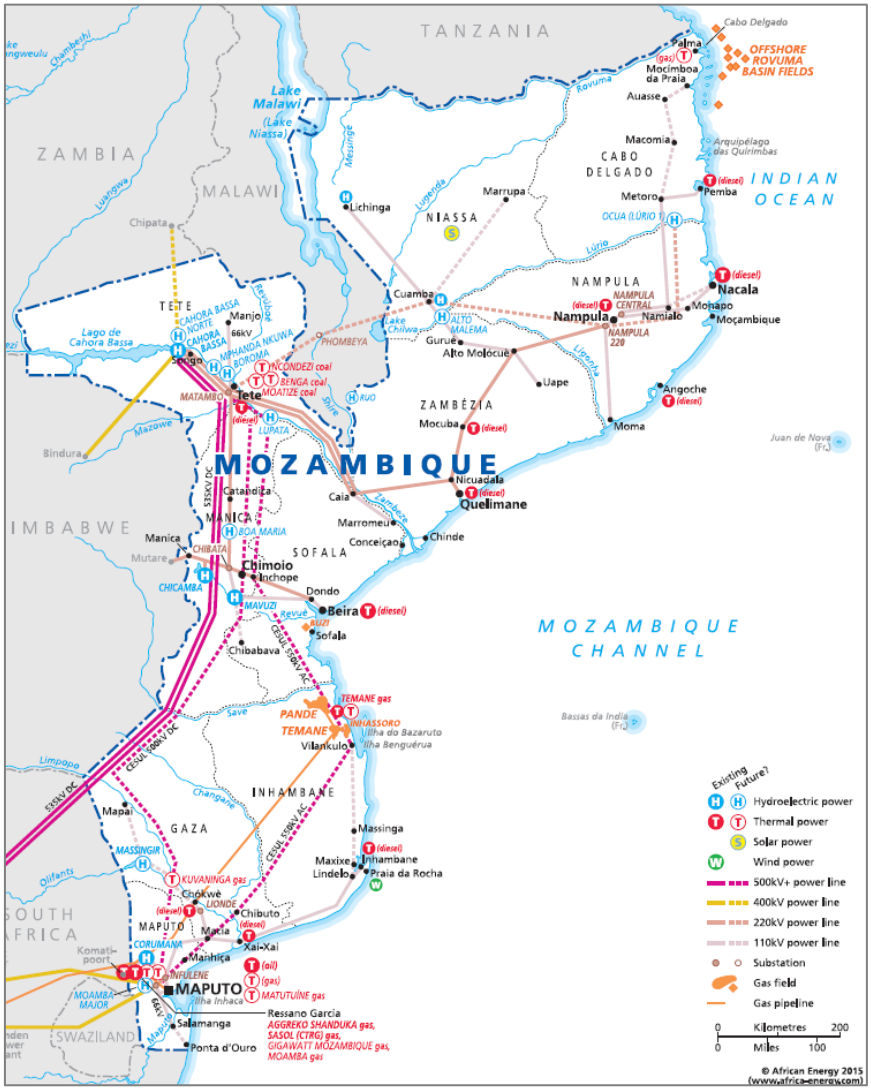
7.2.1. Country context

Mozambique is one of the fastest-growing economies in sub-Saharan Africa, with inflation remaining controlled at an average of 5.9% from 2009 until 2015. Despite the strong growth, about 54% of Mozambique's population still lives below the poverty line.

Mozambique's exports significant amounts of clean power from the largest hydropower plant in the Southern African region, Cahora Bassa Hydropower (HCB), through the Southern African Power Pool (SAPP). This represents an important source of foreign revenue for the country and gives Mozambique a unique position in the SADC region. Still, the country's great energy resources are to a large extent untapped. In addition to an estimated 12 000 MW hydropower potential, the country has important coal reserves, and a vast pool of renewable energy resources. Importantly, some of the world's largest gas reserves were recently discovered off the Mozambican northern shore, and is expected to represent a game-changer for the country's economy and geopolitical position.

Mozambique's main development strategy, the Action Plan for the Reduction of Absolute Poverty (PARPA) does not specify energy targets as goals by its own means; rather, energy is considered a fundamental prerequisite for achieving the development goals set in the PARPA. The strong emphasis on the energy sector is also witnessed in the Integrated Investment Plan, where energy infrastructure investments are given a strong focus.

Figure 14: Mozambique Power Sector Map



7.2.2. Power market situation and RE potential

Overall Readiness		Key Points – Mozambique
Technical potential: There is technical feasibility for grid-connected RE IPPs, preferably near grid and load centres.		The RE resource base is significant and relatively well mapped. However, only very few projects have reached late stage development. In contrast to most other countries, PV intermittency is not seen as a major challenge in the Northern part of the country where radiation is said to be stable during daytime. As a consequence grid stability issues are rather a driver for S/M RE scale up than a barrier.
Economic potential: There is strong economic justification for promoting the scale up of grid-connected RE IPPs.		RE seems very competitive as a source of local generation capacity near load centres with constrained capacity. New gas and coal fired plants are expected to come in at USDc 9.5-10.5 kWh generation costs and S/M RE benchmarks would not be much higher. Planned large hydropower would reduce the cost of power and reduce economic viability of S/M RE, but the timeframe for this is highly uncertain.
Financial sustainability: The power sector is largely financially sustainable; revenues from end-consumers are in line with the cost structure of the sector.		Tariffs are below cost-reflectivity and EDM's financial position and credit worthiness is very weak. The alignment of EDM and GoM seems to be limited which makes it appear unlikely that the situation will improve in the short-term. This is a significant limitation to EDM's ability to finance and implement new projects, but also burdens IPP activity with EDM as sole off-taker.
Institutional support: Important institutions are capable and well-staffed to fulfil their missions and to interact with the private sector. A RE champion exists.		The Directorate of Renewable Energy in the former Ministry of Energy has been championing the promotion of RE, and is expected to continue this role in the new Ministry although from a lower starting point in terms of hierarchy. Overall, the alignment among public sector stakeholders is limited and even within institutions opinions vary significantly.
Near-term outlook: Currently, there are positive policy signals and/or momentum in this DD area.		The increasing interest in RE is a positive sign. There are recent positive signals in terms of significant increases in end-user tariffs that may improve the financial sustainability; however this is still a significant challenge and risk. The stakeholders' ability for timely implementation of the REFIT process and promote S/M RE in general is difficult to assess.

Level of Electrification. The electrification rate in Mozambique is among the lowest in Sub-Saharan Africa, with approximately 26% of the population being connected to the national grid in 2014. In addition, it is estimated that distributed installations in, mainly, public service facilities in off-grid areas cover another ca. 15% of the population. An aggressive rural electrification program by the Government has increased the electrification rate and number of customers on the national grid rapidly, with an average of approximately 130,000 new customers per year the last 6 years. The Government is pursuing continued electrification, and is poised to reach grid connection for 50% of households by 2024.

Electricity supply and demand[9]**.** In 2014, total electricity, excluding consumption by the MOZAL aluminium smelter (supplied with a separate transmission line, MOTRACO), was 4962 GWh. Of this, 6% was EDM's own generation, while 88% was purchased from HCB, 2% from Thermal IPP and 4% from imports. 40% of the consumption is represented by domestic connections. Average electricity consumption per capita

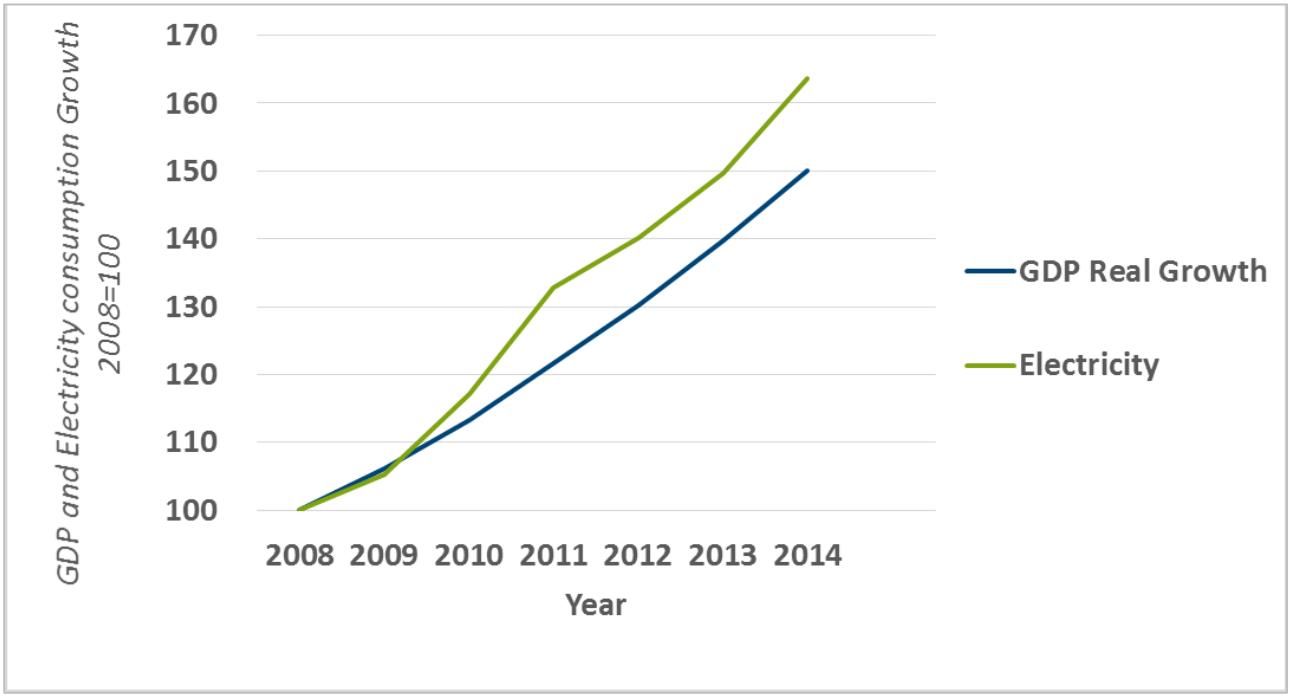
9 Information from EDM, interviews and statistics 2014, PSMP

increased from 121 kWh in 2000 to 450 kWh in 2014[10], but average invoiced energy per customer declined, due mainly to the significant increase in the number of connected customers

Mozambique has the highest electricity demand growth in the region, at an average rate of 10-12% over the last five years. The growth varies significantly across geographic areas: the northern area has experienced growth rates surpassing 20% in several of the recent years. The demand growth is expected to continue if allowed to increase unconstrained. The "Master Plan Update Report"1 presents three scenarios of annual peak demand evolution – low, medium and high – and most demand forecasts assume the medium growth rate at close to 12% p.a. However, lack of delivery capacity in terms of grid availability and robustness to serve remote load centres has become a limiting factor for the growth: demand increase in the northern area was reduced to ca 15% in 2014.

Peak demand reached 831 MW in 2014, and will reach approximately 1,700 MW in 2020 assuming 12% growth. This implies a need to add capacity of more than 100 MW per year to meet the increase.

Figure 15: Electricity Consumption and GDP Growth in Mozambique



Source: World Bank

Mozambique's total power generation capacity far exceeds the country's domestic electricity needs, and most of the production for HCB is committed in long term sale contracts to the region, primarily ESKOM (RSA). EDM's share of firm power from HCB is limited to 300 MW, with a recent addition of 200 MW non-firm power. EDM's own installed capacity is 211 MW of hydropower and thermal (gas) generation plants, of which ca. 180 MW effective capacity. In addition, a number of IPPs have more recently come online, including the 175 MW Ressano Garcia Thermic Central (CTRG). Commissioned last year, CTRG represented the first significant addition of generation capacity for decades, brought EDM's balance back in the positive and the utility became again a net exporter of electricity. The exported power, however, is off-peak energy, and the imported peak power comes at far higher prices. Emergency power has also been deployed, and it is foreseen that a certain capacity will be needed to cover demand during peak times, particularly in constrained areas.[11]

Mozambique has ambitious plans of adding capacity to the system, and has a sufficient pipeline of power generation projects in the pipeline to secure the export position. Gas-based production facilities dominate the pipeline, followed by coal. Large hydropower projects, geared for export, are equally in the pipeline; however,

11 Starting in February 2015, EDM leases an 18 MW temporary facility in the port city of Nacala, northern Mozambique, to cope with peak demand.

challenges in the project preparatory phase have caused significant delays, and the expected commissioning date has been changed repeatedly.

Due to the challenges related to transmission of energy, as noted above, EDM sees an urgent need to add local generation capacity to stabilize the system and secure supply in the most challenging areas. EDM is actively considering the possible role renewable energy sources, such as solar PV, could play. The generation plan in Table 7 includes two medium sized solar projects which will be added in the northern region.

Table 10: Pipeline of planned capacity additions

Current EDM project pipeline		Expected commissioning year (MW)				
Project	Fuel	2015	2016	2017	2018	2019
Kuvanginga	Gas	40				
Mavuzi/Chicamba rehabilitation	Hydro	23				
Mocuba Solar PV	Solar PV		30			
Gigawatt	Gas		100			
Electrotec	Gas		100			
Metoro Solar PV	Solar PV			30		
Moatize	Coal			50		
ENI	Gas			75		
Benga	Coal				300	
CTM	Gas				100	
Nkondezi	Coal					300
Total		**63**	**230**	**155**	**400**	**300**
Accumulated		63	293	448	848	1148

Source: EDM 2014

Average generation costs for new gas power plants are expected to come in the range of USDc 9.5 – 10.5 /kWh; coal fired plants slightly higher (before societal costs of carbon emissions). EDM experts, however, acknowledged that increasing financing costs for coal fired plants will make their realization less likely. We understand that for example the project preparation work for Moatize has been stopped. However, a clear and consistent messaging from the GoM is still missing. Nevertheless, the indicative generation costs underpin the economic potential of S/M RE.

Transmission and distribution. The AC transmission grid in Mozambique consists of two separate systems yet to be interconnected, and is divided geographically in four divisions: North, Central-North, and Central interconnected with the HCB system in north-west, and the Southern division interconnected through South Africa.

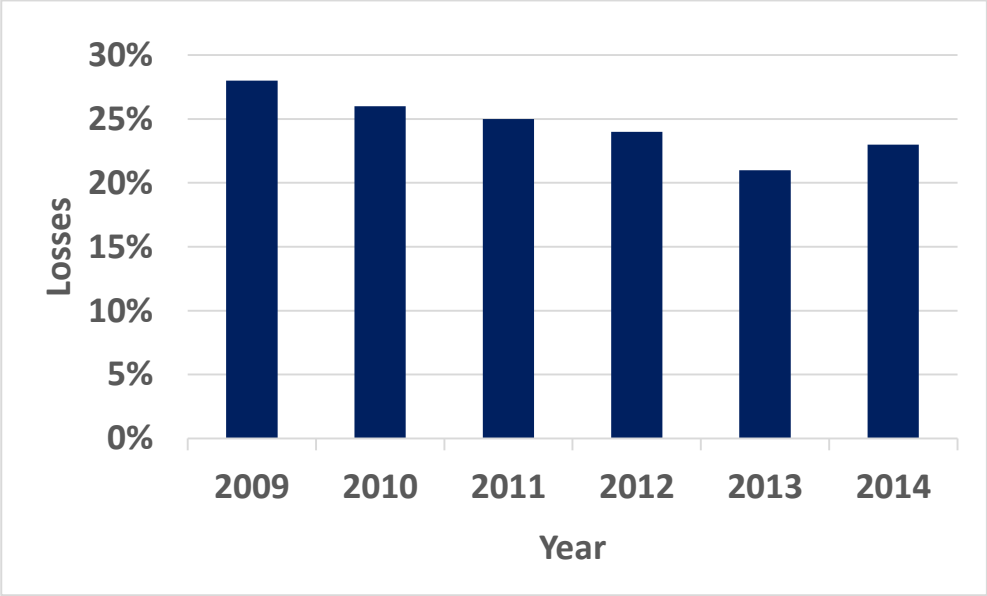
The northern region almost entirely depends on the 220 kV transmission system that covers about 1 000 km from the Songo substation to Nampula and continues at 110 kV to the town of Nacala. A separate 220 kV (operated at 110 kV) system extends from Tete to link with the central region at Chibata. The central region has a 110 kV system linking the hydroelectric power stations of Chicamba and Mavuzi with the load centres within the Beira–Manica corridor. The southern region comprises a 110 kV network extending from Maputo to Xai- Xai, Chokwe and Inhambane, together with a 275 km single circuit line from Maputo to the ESKOM system at Komatipoort in South Africa.

All provinces are connected to the main grid, and the Government's extension efforts ensured that by end 2014, 128 of 141 district capitals were connected.

The installed infrastructure suffers from advanced age and insufficient maintenance and rehabilitation. The long distances from the main generation location in the north-west to the load centres along the coast, represent particular challenges. In particular, the Caia-Nampula-Nacala transmission line, which connects the area with the country's currently highest economic growth rates, is running at full capacity, but also other growth areas lack capacity to support increasing demand. Technical and non-technical losses have been

high for many years, and a loss reduction programme is in place, with some results being seen (23% total losses in 2014 against 31% in 2011). As a result of these challenges, the Centre and Centre-North networks are now under load shedding schemes during peak hours resulting in loss of production in the industry.

Figure 16: Total system losses (technical and non-technical) in Mozambique



Source: EDM Annual Statistics 2014

In particular in the Northern part of Mozambique, solar radiation is said to be very stable and intermittency to be very limited. PV power plants are therefore seen as a generation source which can be deployed to stabilize the grid in more remote areas.

Tariffs, cost-reflectiveness and sector financial viability. Mozambique practices a policy of geographically universal prices for access to and consumption of electricity, and tariffs are differentiated based on consumer categories and consumption levels rather than the cost of supplying power.

In 2007, the SADCs Energy Ministers agreed on a target to achieve cost reflectivity by 2013. However, none of the countries met the deadline. In 2015, the target year for cost-reflectivity was adjusted to 2019.

Since 2003, Mozambique has a system for establishing and adjusting tariffs in place (Decreto no. 29/2003). The formula is based on three main elements: Inflation; exchange rate; and price of diesel. In principle, EDM can use the formula when the three indicators combined deviate by more than 3% from the reference12. It should be noted that the formula does consider the cost of power, which has significantly increased in recent years, when relatively inexpensive production from HCB and EDM's own assets falls short of covering demand. Further, with no independent regulator in place and all tariff increases being approved by the MNREE, EDM has effectively not been allowed to increase tariffs based on the formula. Adjustments have been requested and rejected at several occasions, and no adjustment has taken place since 2010. As a result of depreciation of the local currency, and increasing cost of supply, this has resulted in an increasing cost-reflectivity gap. Compounded with the high rate of rural electrification expansion connecting large numbers of low-use consumers to the grid, the result has been a steady deterioration of EDM's financial situation.

Mozambique's consumer tariffs are currently insufficient to cover the cost of supply of energy, even when infrastructure costs are excluded from the equation. The average consumer tariff was around the equivalent of USDc 8.5/kWh in 2014[13,14]. EDM has recently submitted a request for a substantial tariff increase of an average of 27%, varying across customer categories. There is a general belief that a tariff increase will be

12 ECSI, 2015
13 EDM (Sousa, 2014 and interviews).
14 It should be noted that the Mozambican metical recently has been significantly reduced: from October 2014 to October 2015, the metical lost close to a fourth of its value in USD terms. Refer. also to section 7.2.5

approved which would be an important first step to stabilize the sector and to demonstrate the government's willingness to make politically difficult decisions to improve EDM's position.

EDM expects average cost of supply to continue to increase at an average of 10% annually the next five years as a result of new generation assets which produce at higher costs as the currently dominating (and fully depreciated) HCB. It has established a roadmap towards cost-reflectivity which foresees annual increases of varying magnitude until 2019. Without the necessary tariff adjustments and an improvement of EDM's financial position, EDM's capacity to mobilize finance will remain a barrier to realize the ambitious expansion plans and will also burden IPP activity with EDM as sole off-taker. In our discussion in the context of our mission, particularly around the impact of the REFIT on average generation costs, the public sector did not appear to put much weight to the creditworthiness of EDM as a major driver of the energy sector development going forward.

Sector strategies, plans and targets. The National Integrated Investment Programme (PII), revised July 2014 for the period 2014-2017, targets a set of large, strategic projects within transmission and generation. EDM, however, remains the driving force in the actual project development. The early phase responsibility for strategic projects is foreseen to be taken over by a new Project Development Unit under the Minister of Energy which is staffed with experienced and very senior former decision makers.

The Transmission and Distribution Master Plan is EDM's guiding document for the development of the national grid. The Master Plan Update Study 2012 foresees substantial investments in the grid[15] in the period from 2014-2026. The implementation of the plan is delayed; several foreseen projects were clearly delayed already when the study was published. The pipeline of important projects in the plan includes, among others, the new 400 kV from Caia to Namialo, a new 275 kV line from Ressano Garcia to Macia, reinforcement of several substations in the Northern grid, and upgrading of distribution networks. The flagship project Systema Nacional de Transporte de Energia (STE), best known as the Backbone project[16] is given high priority.

A steadily deteriorating supply security situation in 2012 made both the Ministry and EDM acknowledge that immediate action was necessary to secure a minimum level of supply security, avoid system collapse, and ensure that the system could support the significant additional generation that was foreseen. As a response, EDM established a Short Term Investment Plan (STIP) for the most critical short to medium term reinforcement and strengthening projects. The document is currently used as a base document to solicit grant and concessional funding.

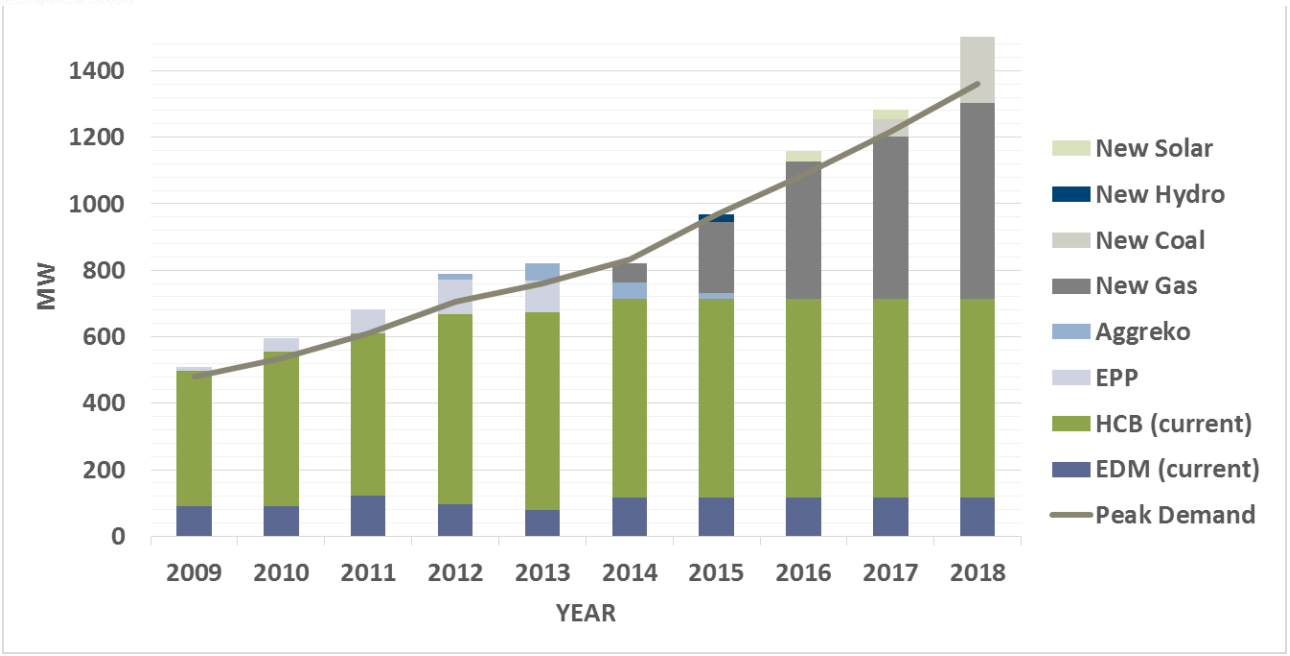
In parallel, EDM also established a short-term supply plan for the northern areas, to cope with the critical supply deficit in that area. The recent advances achieved for solar projects in that area is a direct outcome of the recommendations in that plan, which points out local solar energy generation as a part of the solution to secure supply and stabilize the system, and particularly points out the benefits stemming from reducing the use of emergency power generation units in the area.

For generation projects, EDM currently operates with a pipeline of gas and coal fired plants representing annual average additions of 200 MW, over the next five years. The current plan to a significant level deviates from the PII, which includes projects of a total of close to 4 GW, demonstrating the contrast between EDM's realism-oriented approach versus the long-term, highly ambitious orientation of the Government[17].

The Government's Renewable Energy Strategy 2011-205 adds targets for renewable energy to the ambitions, including grid supply from 100 MW of onshore wind, 125 MW of small hydro power, and 3 sugar-based biomass generation facilities, by 2025. EDM does not appear to have taken on these targets in their approach.

15 Master Plan Transmission and Distribution investments add up to a total of MUSD 7 834.
16 Major infrastructure project to connect the generation centre in the north-west to the southern system, and to the SAPP grid, through 1300 km each of a 400 kV HVAC and a 500 kV HVDC line.
17 The PII includes the major hydropower projects Mpanda Nkuwa (1500 MW) and Cahora Bassa North (1,245 MW). These projects have been on GOM's as well as SAPP's priority list for development for several decades, and been repeatedly delayed. Realistically, commissioning cannot be expected until several years into the 2020-ies.

Figure 4: Historical and future supply & demand[18]



Source: EDM Annual statistics 2014 and information on pipeline projects received during mission.

RE resource potential. The Renewable Energy Atlas, completed in 2013, is a solid and detailed database of renewable energy resources, available for prospective RE project developers. The Atlas includes cost projections and identifies a large number of potential sites with characteristics that are considered to represent cost-effective development opportunities, showing that renewable energy can offer a credible short term alternative to Mozambique both on- and off the national grid.

Development of renewable energy in Mozambique has until recently mainly focused on solutions for areas beyond the reach of the national grid. As mentioned above, EDM has recently started to consider renewable energy sources as a part of the solution to its supply security problems. The value of local generation capacity to alleviate transmission constraints, and/or substitute expensive emergency power, makes RE cost-effective in these cases. The advantage of PV not burdening the grid but rather being a solution to stabilize the grid is key differentiator for Mozambique and a key selling point for PV.

Solar power is abundant across the country. So far, solar has mainly been deployed for distributed solutions and mini-grids, largely driven by the government agency FUNAE. However, an on-grid potential of approximately 600 MW has been identified and offers opportunities for short term medium sized projects. EDM's recent growing interest also suggests a potential role for solar as a significant power source in the grid-connected energy mix. EDM has identified relevant locations where solar power is considered a valuable contribution to securing the quality of supply. The shortest commissioning time of the generation options (except emergency power) and the prospects to leverage low cost financing contribute to the attractiveness of the solar resource. EDM is currently actively pursuing two medium-scale solar PV projects to ensure local supply capacity in the northern area, and appears open to consider similar solutions for other load centres. Projects below the 10 MW threshold are, however, considered too small to make economic sense for EDM given the missing standardization.

There is a significant potential for mini and medium hydro projects across the country, which, according to the Atlas, can be developed at competitive electricity costs. The potential for small-scale hydropower projects has been estimated at around 1,000 MW, including 190 MW for plants < 15 MW, with sites in the mountainous terrain and on the perennial rivers of Manica, Tete and Niassa provinces. To date, however, no sites with sizes relevant for REFITs are at an advanced stage of development.

A mesoscale wind mapping exercise was finalized in 2011 and 35 places were selected for on-site wind measurement. After one year of measurements, 16 locations demonstrated winds above 6 m/s with sufficient

18 Demand projection based on EDM's expected 2015 peak demand and 12% annual growth from 2016. Supply projections based on current EDM pipeline.

area to deploy more than 4 GW of wind – of which around 25% could be connected to the grid in the short term. The strongest potential was verified in the South with 360 MW of short term grid compatible projects yielding average utilization rates of 40% and 34% in Maputo and Gaza provinces. Deployment speed could benefit substantially from existing ground measurements. Some development has taken place, but EDM's medium term plans do not count on significant contributions to the energy mix from wind.

For biomass and municipal solid waste (MSW), several projects with short term potential have been identified. In Maputo province large landfills could potentially supply an MSW power plant. Other resources include sugar plantations, residue from forest plantations, rice and coconut husk, palm trees, "elephant grass", as well as residue from fisheries. Recent feasibility studies[19] identify projects based on sugar cane and Elephant Grass with significant power production potential, and the government is promoting development of this resource[20]. Further, one sugar factory sells power to EDM, and several others have indicated their interest in establishing PPA's with EDM. The development of these resources for power generation for the grid is, nevertheless, at an early stage, and EDM does not count on significant contributions in the near future.

7.2.3. Legal/regulatory/policy framework for RE and IPP

Overall		Key Points – Mozambique
Fundamentals: There are limited and surmountable fundamental legal, regulatory and/or policy gaps for enabling RE IPPs.		Formally, the regulatory framework opens for private involvement and the first IPPs are creating important experience. The required process towards operationalizing the REFIT will be time demanding and still requires significant fine-tuning and adjustment to ensure economic viability.
Coordination: Policy-making, target-setting and decision making pertaining to renewable energy promotion as well as donor interventions are well coordinated.		There is a lack of streamlining of targets and convening of efforts towards a set of commonly agreed targets, including the targets for RE set in the RE strategy. The low level of involvement of EDM in the REFIT process is but one example of lack of involvement of all stakeholders in important processes.
Institutional empowerment: Relevant institutions are empowered to make required changes to the framework and have convening power for cross-institutional arrangements/processes		The roles of the respective stakeholders are relatively clear. However, strategies and views are not aligned (not even within institutions).
Rules & procedures: The bureaucratic and licensing frameworks are well coordinated, transparent and expedient.		The procedures to follow for private investors look good on paper and investors are supported by the Investment Promotion Centre. An investment code and PPP regulation exists. The licensing procedures for energy project development are, however, not standardized and transparent.
PPA: A standardized bankable PPA, which should allow for project finance solutions in S/M RE IPPs, should be attainable with limited efforts.		A draft standard PPA is available, with a few issues
Off-taker risk: Off-taker risk is limited or possible to mitigate		Risk connected to EDM as off-taker is likely to be a significant challenge for investors. Risk mitigating mechanisms will be necessary to enable foreign investment.
Outlook: Currently, there are positive policy signals and/or momentum in this DD area.	?	The efforts towards establishing an enabling framework, including the REFIT law, implementation regulations and standardized PPA and procedures are signs that there is political acknowledgement of the need for an improved

19 Presentation by FGV/Vale of feasibility studies on biomass and food production in Mozambique, 2014, refers to potential up to 600 MW and 200 MW for sugar cane and elephant grass, respectively.

20 E.g. the 29.000 ha COFAMOSA Sugar Cane Project, supported by the African Development Bank, which reportedly may produce up to 226 million litres of ethanol.

		framework. However, the outcome is still unclear. The positive outlook in this area depends on the timely implementing of the REFIT.

Institutional framework. The Council of Ministers is responsible for setting policies, strategies and regulatory tools to enable the development of natural resources for economic benefits in association with environmental responsibility.

- **The Ministry of Energy and Mineral Resources (MIREME)** was established after the presidential elections in 2014, when the former Ministry of Energy and the former Ministry of Natural Resources were merged. The structure of the new Ministry and the appointment of directors were recently announced[21], and some time must be expected until MIREME comes fully up to speed. MIREME supervises the electricity portfolio through the Directorate of Energy. Responsibilities include the major generating facilities operated by EDM, New and Renewable Energies (NREs), off-grid energy provision, as well as downstream oil and refined oil products (liquid fuels). The ministry is also responsible for natural gas, coal and other mineral resources. With the aim of improving the Ministry's oversight and ability to promote strategic energy projects, a special project development unit is planned to be reporting directly to the minister. The new unit will be responsible for early stage development and structuring of large projects of public and strategic interest, as well as monitoring of the project portfolio managed by EDM.

  It should be noted that as a part of the recent changes, the former Director of Renewable Energies was appointed as Managing Director for FUNAE. The former Deputy Director of Renewable Energies was appointed Deputy Director of Energy. This ensures the institutional continuity of the REFIT process in the Ministry. The new Director of Energy being the former Director of Electric Energy also indicates good institutional continuity of the operations of the previous ministry. It is not clear whether, as part of the same ministry, the power sector will have to compete with the important natural resources sector for political attention.

- **CENELEC (Conselho Nacional de Electricidade**), the Electricity Council, advises the Government on regulatory matters. The absence of an independent regulator is considered by key stakeholders to create uncertainty and lack of predictability of the future energy tariffs and EDM's financial sustainability. The Electricity law has been under review for several years, with the intention to strengthen and enhance the role of the regulatory entity and to improve sector efficiency to encourage greater private investments. It is expected that CENELEC's mandate will be expanded to that of an independent regulator, as well as to cover the whole energy sector (including electricity and distribution of natural gas and liquid fuels). No credible roadmap has so far been established, and a substantial capacity and competence augmentation would be necessary before the regulator will be able to fully assume such a mandate.

- **Electricidade de Moçambique (EDM)** is a state-owned and vertically integrated utility with responsibility for the generation, procurement, transmission, distribution and sale of electricity. In addition to project development of transmission, distribution and generation expansion projects, EDM also implements and sustains the portion of the rural and peri-urban electrification program that is based on grid extension.

  EDM's commercial competence has been much improved over the last years. The first joint venture experience, the 175 MW CTRG gas to power plant at Ressano Garcia, which opened in 2014, as well as advances in negotiations with several large, commercial undertakings involving international investors and cross-border power trade agreements, have given EDM invaluable experience. A commercialized framework with standardized procedures has been established and has improved EDM's position to negotiate. On the other hand, EDM faces critical capacity constraints in quantitative and qualitative terms, has by a large margin the highest number of customers per employee in the region[22], and a severely constrained financial situation.

- **FUNAE**, a public institution in charge of developing, producing and making use of different forms of low cost power production and distribution for off-grid rural electrification. It promotes conservation, rational and sustainable management of power resources.

21 Structure published in July 2015; Directors appointed in September 2015
22 SAPP 2014

- **Hidroeléctrica de Cahora Bassa (HCB)** is an IPP owned by The Mozambican state (85%), Companhia Eléctrica do Zambeze (CEZA – 7.5%) and Redes Energéticas Mozambique Nacionais (REN) of Portugal (7.5%) respectively. HCB owns and operates the 2075 MW Cahora Bassa hydro power plant and supplies power via an HVAC line owned by EDM to EDM, ESKOM of South Africa as well as ZESA of Zimbabwe.
- **Mozambique Transmission Company** (MOTRACO) was created as a joint venture transmission company between Eskom, EDM and Swaziland Electricity Board (SEB). The Mozambique Transmission Company MOTRACO S.A.R.L. [23] owns and operates two 400 kV overhead transmission lines transmitting energy generated in South African power plant Arnot and Camden to Maputo substation in Mozambique, with the bulk of the energy supplied to the aluminium smelter MOZAL.

We have to acknowledge that our mission took place during a difficult time for the sector with new responsibilities only being announced shortly before or announcement still upcoming. This might be a driver for inconsistent messages. Nevertheless, we got the impression that stakeholders rarely have a holistic view on the sector and can assess development and options from different perspectives. Also, we benefitted very much from existing contacts and personal relationships of our consultant and the resulting very open and frank conversations. Against this background, an apparently missing alignment within institutions should maybe not be over interpreted.

Assessment of host institution options. As opposed to in Uganda, where a strong regulator was the leading institution in the push to scale up renewable energy in the energy mix, Mozambique does not have an independent regulator. CENELEC's role is regarded – including by the institution itself – as that of a merely advisory body with no decision-making power. CENELEC's influence and power to take the lead on strategic initiatives is limited. Further, although CENELEC is foreseen to be reformed with expanded mandate and powers, the timeline for the process is highly uncertain, and the capacity of the new regulator to take a lead in a possible GET FiT program, will be very limited.

Although FUNAE has a mandate of promoting renewable energy, and that the recent appointment of the former Director of Renewable Energy points towards a possible strengthened focus on the private sector in FUNAE's approach, FUNAE has no tradition of market-oriented approaches, has so far worked almost uniquely in the off-grid space, and has little experience from promoting private initiative and investments. Further, the lack of coordination between EDM and FUNAE further weakens the prospective impact FUNAE host institution could have.

MIREME, with the main responsibility for promoting renewables and leading the development, would thus appear the natural host institution. MIREME was restructured after the elections last year, and several leading positions in key areas were changed. The appointment of the former Director for Electric Energy as Director of Energy, and the former Deputy Director for Renewable Energies as Deputy Director for Energy strengthens the prospect of a continued focus on RE under the new Directorate of Energy. The capacity of the Directorate of Energy to take on additional tasks might be limited while the Ministry is adapting to its new structure.

Key legal and policy documents. The National Energy Policy from 1998 is the key policy document, setting the direction for the development of the energy sector. The Energy Strategy was established to implement the Policy.

Key documents	Main points
Infrastructure Investment Plan (2014-2017)	Establishes the sector energy as one of five main 'Growth Poles', and specifies strategic energy infrastructure projects.
National Energy Policy, 1998, and the Energy Strategy, 2000 (revised in 2009)	With the Energy Policy giving the overarching direction, the strategy includes objectives related to increased access to electricity and fuels, dissemination of new and renewable energy sources, energy mix diversification, adoption of cost-reflective tariffs, incentives for private investment in the sector, and regional energy trade, among others. The strategy of 2009 foresees, importantly, review of the regulatory framework.
Policy on Development of New and Renewable Energy,	Specified and implemented through the Strategy for NRE.

23 MOTRACO is an independent transmission company owned in equal shares by three utilities: EdM from Mozambique, SEB from Swaziland and Eskom South Africa.

2009	
Strategy for New and Renewable Energy 2011-2025	Quantitative targets for wind, hydro and biomass, and objectives related to renewable energy resource mapping, feed-in tariffs and other renewable energy funding mechanisms, including guarantees.
Electricity law of 1997	Decree 25 of 2000: established CENELEC and Decree 25 of 2005: established the methodology by which tariffs are set

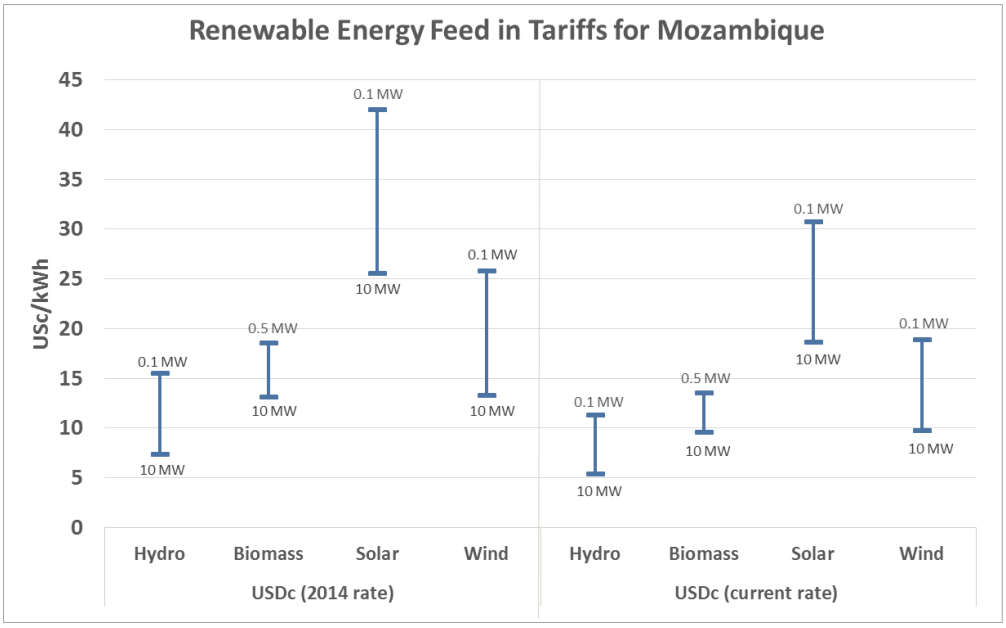
Gender issues are considered in all key policy documents, including the Energy Strategy revised in 2009. The Energy Strategy refers to the Strategic Gender Plan as the collective effort of the group of Gender Focal Points in the energy sector, and provides recommendations as to how to address a number of challenging realities related to energy and gender, both institutional and related to access to and use of energy in the population. The plan was equally an important fundament for a sector-wide effort from 2011-2014[24], to build capacity and knowledge of gender issues and implement specific activities targeting women and energy use.

RE and IPP policy framework. The Electricity Law (1997) opened up all areas of electricity production, distribution and sale to private operators through concession contracts, issued under the responsibility of the MoE. The Renewable Energy Strategy builds on this principle, and targets increased participation in the RE area by private companies, organizations and communities as well as government agencies, in both on-grid and off-grid areas.

In line with the ambition to enable private investments in renewable energy, improve the energy generation mix and ensure quality of supply as well as pave the way for increased access, the Ministry of Energy in 2012 embarked on a process to establish a REFIT system. The process was supported by USAID and facilitated by experts from the US-based consultancy firm Nexant. The REFIT law was announced in September 2014.

The REFITs are technology- and size specific and relevant for projects up to 10 MW, across four technology categories: Solar, Biomass, Wind and Small hydro. Table xx below shows, to the left, the USD values of the promulgated local currency denominated FITs, based on the exchange rates at the time of promulgation. The USD values based on current[25] exchange rates shown to the right illustrate the significant currency risk denomination in local currency represents.

Figure 6: Renewable Energy Feed in Tariffs 2014, Mozambique[26]



Source: REFiT Policy

24 Building Capacity for Gender Mainstreaming of Energy Sector Cooperation in Mozambique, supported by the Government of Norway 2011-2014.
25 October 2015, xe.com
26 Sources: REFIT Regulation, 2014 and Nexant, 2013

A draft standard PPA is developed. In contrast to the REFIT, the PPA states that the prices are quoted in USD, but payments will be made in local currency. The FITs will be adjusted annually based on a formula, and reviewed every three years. The ranges presented above trigger serious questions about assumptions which have not been made known to stakeholders, and can only be found (excl. explanations) in a model which is not publicly available. From our initial analysis of this model, however, the FiT levels would have to be adjusted across all technologies.

The proposed FITs represent incremental costs for EDM, with the exception of the largest sizes of hydro, biomass and wind.[27] MIREME considers the need of a burden-sharing mechanism as a prerequisite for EDM interest in the REFIT programme. A viable option is, however, not identified and the implementation of such a financing mechanism is not directly linked to the implementation of the FiT EDM has clearly stated that they believe that the FiT mechanisms needs to rests on two strong pillars; an appropriate price for the IPPs but also a fair deal for EDM which does not further weaken their financial sustainability. The level of EDM interest in the REFIT will likely depend on the degree to which their views will be taken into consideration in the development of the implementation guidelines. As an example EDM does not believe solar projects of less than 10 MW will be cost competitive, and would prefer tenders for solar, considering the learning curve, and allowing them to identify the most attractive locations.

The promulgation of the REFIT in 2014 was expected to be followed by the publication of Implementation Guidelines, including standard PPA and other documentation, but is now expected to be completed and promulgated within the current year.[28] The draft guidelines have not been shared with a large representation of stakeholders, but developed in a 'committee' directed by the Ministry. Stakeholders consider it unfortunate if the guidelines are published without a more inclusive process.

With respect to risk management, it should be noted that at present the Government's non-concessional debt window is closed, which will impact the project developers seeking sovereign guarantees.

We understand that the implementation guidelines could include very significant changes, for example the shift towards a tender process for PV.

Overview of PPA and contractual structure

We have been provided with a (non-extensive) term sheet for PPA. This term sheet was prepared in the context of the Renewable Energy Feed-In Tariff (REFIT) Program and can be used for different renewable technologies. It is intended to be entered into by a seller ("Project Company") and the Offtaker. The PPA does not stand alone, but is intended to form part of a suite of project documents, including in particular (a) a Transmission Connection Agreement; (b) an Implementation Agreement; (c) a Land Lease / Land Conveyance Agreement; and (d) an Operation and Maintenance Agreement. We have not been provided with these agreements and would recommend that these documents also be reviewed.

Extent to which the PPA satisfies typical bankability and investor requirements

The risk allocation is broadly satisfactory in respect of the following key issues:

- Term: To be agreed by the parties.
- Site risk: Project Company responsible for site acquisition (though no detailed site provisions; unforeseen site conditions and re-localisation of persons not addressed).
- Deemed energy charges: Deemed energy charges available (though not prior to Commercial Operation for delay in commissioning due to Offtaker's fault, FM affecting the grid or political FM events; nor if back down instructions from Offtaker).
- Sale and purchase of energy: Take if delivered approach (though not clear what Offtaker's rights and obligations are in respect of Non-Firm Energy); clear procedures for meters.
- Tariff: Suitable tariff structure with indexation; clear mechanism for invoicing and handling disputes; default interest payable; hard currency payments (USD); no set-off.
- Offtaker credit support: escrow account (though not as a condition precedent to energy delivery).
- Force Majeure (FM): Clear process for claiming FM relief; duty to mitigate. However, see further

27 In interviews, tariffs between 10-13 USDc/kWh for IPPs that currently are being negotiated with EDM was indicated.

28 The implementation guidelines including such changes do not need to be approved by the cabinet but rather by a group of three ministers only

below.

- Dispute resolution: Arbitral seat open to negotiation.
- Lenders' rights: Addressed (though no step-in rights nor reference to a direct agreement).

Key bankability and investment risks

We would strongly recommend that all aspects of the document are reviewed and redrafted in detail to clarify the drafting. We would highlight the following key issues of concern to potential lenders and investors:

- Construction: Offtaker's prior written consent required to subcontract.
- Permits: No Offtaker obligation to assist Project Company with permitting process; no relief if permits not granted.
- Commissioning: No commissioning procedure; no concept of deemed commissioning.
- Termination by Offtaker: No right for Project Company to cure abandonment; right for Offtaker to terminate if Project Company breaches its financial obligations vis-à-vis creditors and other investors; need to carve-out breach of Project Company arising out of Force Majeure.
- Termination by Project Company: No termination for Project Company if Offtaker re-organizes; no right to terminate for Offtaker insolvency events /proceedings.
- Change in Law: Treated as FM event (no payment or cost protection); change in law should be redrafted (as a political FM event or under a separate regime, giving rise to payment /cost protection).
- Force Majeure (FM): No automatic extension of Scheduled Commission Date or Term for FM events; no extension of time for failure to meet condition precedents due to FM; no distinction between political and other FM events; no payment protection/deemed availability for political FM; no payment if termination due to prolonged FM.
- Termination payments: PPA provides for an amount open to negotiation between the parties if termination for Offtaker default; no amount payable if termination for FM or for Project Company default (though Project Company liable for damages and reasonable expenses incurred by Offtaker as a result of such Project Company default).
- Performance liquidated damages: Need to be redrafted to ensure no double penalty on Project Company.
- Dispute resolution: No expert appointment; no waiver of sovereign immunity.
- Drafting clarity: The document needs to be reviewed and revised.

A grid code was published last year, mainly relevant for coal and hydropower projects, and specific considerations to accommodate RE may be required. The on-going processes to connect solar PV are based on the SADC general grid connection guidelines.

Development licenses and concessions are provided by the MIREME. The procedures have been reported to lack transparency, and concessions can lack deadlines and block sites for serious developers. Social impact mitigation requirements are relatively stringent, and large hydropower undertakings with reservoirs implying resettlement or land use change[29] have shown challenging.

The Centre for Investment Promotion (CPI) is set up to facilitate formal procedures for investors, both national and international, and the average number of days to set up a business in Mozambique is 13. One point of contact for investors is an advantage particularly for international investors. Nevertheless, bureaucratic processes related to e.g. work permits have been reported to be slow and frustrating.

29 E.g. Alto Malema HP

7.2.4. IPP pipeline

Overall		Key Points – Mozambique
Track record: The country has a track record with S/M RE IPPs.		No RE IPPs have signed PPAs yet.
Pipeline: There is a pipeline of well-developed S/M RE IPPs.		Only two solar projects are far advanced, while a number of licence holders have projects at early development stages. No well-developed hydropower projects exist.
Human capital: The market offers a number of competent local developers and is attractive for regional/international developers.		Activity of local developers very limited and capacity to be limited as well. We observe some interest from international investors.
Institutional support: There is a genuine interest amongst policy makers to support RE IPPs and to see the best projects realized.		Interest exists but we have not identified a stakeholder with a thought-through and clear argumentation for which sectors/technologies IPPs will add value
Outlook: There are positive policy signals and/or momentum in this DD area.		Solar that is going online, and EDM's interest picking up are positive signs that are expected to attract further developers and unlock development activity

Although the Electricity law (1997) opened up all areas of electricity production, distribution and sale to private operators, there was for many years limited involvement of private sector operators. In the recent years, a number of private developing companies have been leading negotiations with EDM, mainly on medium to large undertakings.

Currently, private investments are mainly coming into the gas and coal sectors, including Aggreko peaking power plants, Gigawatt projects and CTRG. CTRG was the first independent power generating plant of significant size, and the first example of joint ownership between EDM and a private company.

15 concessions has been provided to contending developers; however with the exception of two solar projects and possibly one wind project, no projects are far advanced and approaching implementation phase.

Two solar power plants have shown positive progress, and commissioning of 30 MW in 2016 and 30 MW in 2017 seems realistic. At least one of these projects will most likely be implemented as joint venture between EDM and the project developers. Both projects report relatively smooth negotiations so far, and consider EDM a competent counterpart. It is expected that these first experiences with this technology, if positive, EDM may be open to other, similar projects on specific sites where local generation capacity is considered an opportunity to secure local delivery capacity and quality.

While an interesting potential is represented by sugar factories with self-generating power plants exists, so far only one factory currently sells (non-firm) energy to the grid. The interest by the factories is allegedly there, and two of the factories have received concessions to feed in 160 MWh and 91 MWh[30] pa to the national grid, respectively, but EDM so far has not been proactive to establish power purchase agreements with such suppliers.

A number of potential wind power sites have been identified and concessions are given to at least two developers for energy generation in the magnitude of 40 – 60 MW. However, credible dates for financial close and commissioning are not available.

In spite of the availability of data of potentially viable small-scale hydropower sites, and the positive outlook for such projects' contributions to local supply, no such projects at an advanced stage were identified.

Examples of some projects under development are provided in Table 11. In addition to these, 11 other licence holding projects have been identified: three Solar PV projects for a total indicated capacity of 110 MW, and 8 biomass projects, including two sugar factories.

30 Vaz, 2015

Table 11 RE IPP pipeline projects

Project	Developer	Technology	Size	Status
Mocuba Solar PV Project	Scatec Solar	Solar PV	30 MW	Solar project in Mocuba, northern area. Well advanced negotiations with EDM; financial close expected 2015 end
Metoro Solar PV Project	SelfEnergy/ Neoen	Solar PV	30 MW	Solar project in Metoro, Northern area. Advanced negotiations with EDM; financial close expected mid-2016
Praia da Rocha Inhambane Wind Farm	Tecneira	Wind	30 MW	Wind project in Inhambane, southern region. Relatively early stage development
Alto Malema	Agua Imara/SN Power	Hydropower	50 MW	Politically prioritized project near Gurué national plans; negotiations started in 2010 but socio-economic and commercial challenges have caused delays.
Maragra sugar	Illovo	Bagasse	22 MW	Sugar factory in the south, currently selling small amount of non-firm power to EDM but with capacity to increase.

In conclusion, the pipeline of projects that could be fast-tracked is relatively thin. Solar and possibly bagasse projects appear the most realistically achievable in the short-term, while the long development lead-times for hydropower make project realization unrealistic in the short term.

7.2.5. Financial landscape

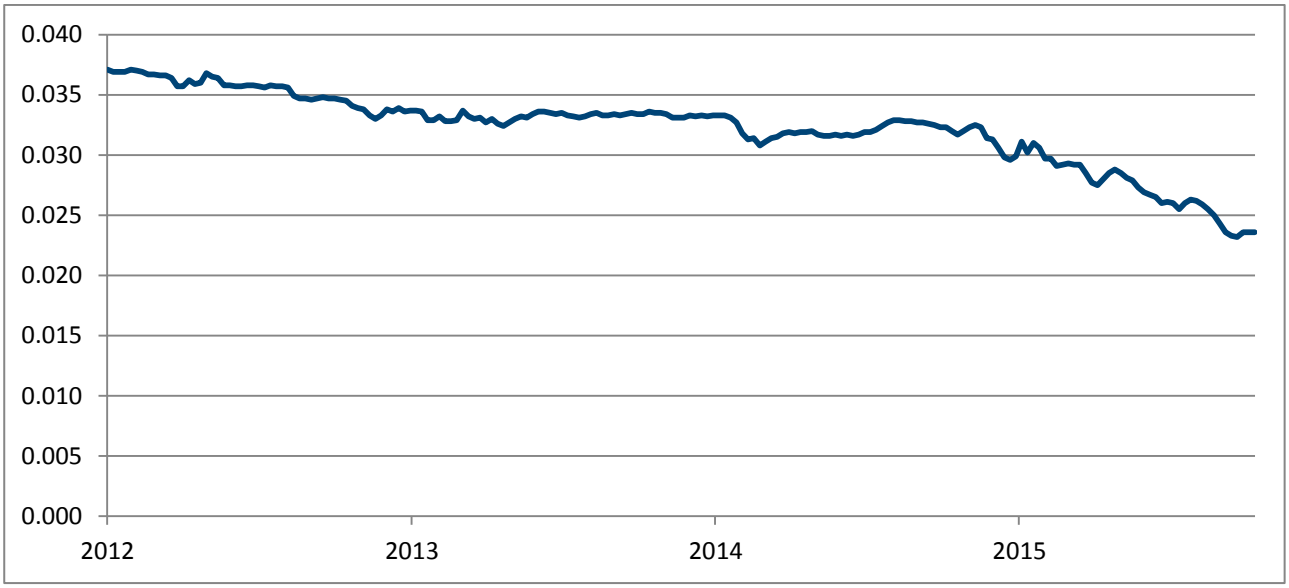
Overall		Key Points – Mozambique
Investment environment: The country is generally attractive for FDI, with a private sector oriented Government.	●	With big infrastructure and real estate projects, FDI inflows have surged in recent years. Mozambique is now among the top destinations for FDI in Africa and the Government is open to FDI, with no significant restrictions.
Maturity of financial sector: The established financial sector is relatively mature, offering potential for commercial finance for RE IPPs (including appropriate tenor and decent financing costs under project finance transactions).	●	Some commercial banks are familiar with project finance but have not been involved in the RE sector given the limited pipeline. The role of local banks will heavily depend on the PPA currency.
Outlook: There are positive policy signals and/or momentum in this DD area.	↗	

Commercial Banks can offer loans of up to 10-year tenors. Interest rates are floating (spread fixed) because of the changing financing terms of the Central Bank. They are concerned about the off-taker risk in RE IPP transactions although most of them are lending to EDM directly. In general, received proposals turned out not to be bankable in the past. In particular the smaller banks face restrictions by their single client risk, which for example comes in at USDm 8 for Banco Unico. Larger institutions like Millennium bim have single client caps of USDm 50. These, however, also have stringent minimum ticket sizes in project finance transactions of USDm 10 for the debt piece.

In general we have not heard concerns about a crowding out of the commercial lending sector. Banks appear to have sufficient growth potential in their traditional markets and fear long lead times for RE project finance transactions. While they would be willing to support the energy sector development, they clearly see the advantage of DFI involvement.

The Mozambican metical has continuously depreciated over the last few years, from MZN 0.0375/USD in 2012 to around MZN 0.0235/USD in October 2015.

Figure 17: Historic exchange rate of the Mozambique New Metical (MZN/USD)



Source: Oanda.com historical exchange rates

7.2.6. Implementation considerations

Overall		Key Points – Mozambique
Political risk: The risk that RE projects are adversely affected by political changes or instability.		Next national election: October 2019 Politically stable, despite recent tension from election disputed by opposition. High growth and abundant natural resources have attracted investors, and will continue to despite an uncompetitive business environment. AON Political Risk Rating: Medium S&P Credit rating: B- (negative)
Effectiveness: The GET FiT approach could be adjusted to effectively target the specific bottlenecks that are preventing scale-up of RE IPPs.		Unbiased support for the adjustment and finalisation of the FiT mechanism including the moderator role for the GoM/EDM communication as well as the option for some level of burden sharing would be a game changer for Mozambique. However, significant risks related to weaknesses in the institutional framework outside of the program's control exist (such as the absence of an independent regulator).
Impact: A GET FiT intervention would; i) create additional development or climate change mitigation benefits; ii) take a lead development role within S/M grid-connected RE IPP scale-up; and iii) complement on-going support.		A GET FiT intervention would target fundamental elements in the enabling framework for private investments in small-scale renewable energy, and would, presumably, be a key and leading initiative in this space, well aligned with SEFA programme.
Scale of effort and timeline: The scale of effort required is realistic for a GET FiT intervention, and target outcomes should be achievable within a 3-4 year timeframe.		The immaturity of REFIT system and EDM's limited and only recent interest in RE, combined with a very thin pipeline with no projects approaching maturity, implies that a generous timeframe would be needed to achieve significant results.
GET FiT Champion: There is a candidate GET FiT lead agency which has sector clout to implement required reforms and champion RE IPP scale-up.		The most likely host institution candidate is the recently restructured Ministry. The Ministry's capacities to implement a new program and ensure the necessary focus as well as the difficult relationship with EDM are risk factors.
Deal-breakers: No insurmountable barriers for GET FiT have been identified		While the challenges are significant, and the level of time and effort required for a successful intervention is high, the challenges would not be insurmountable in a longer perspective.

Assessment of expected effectiveness and impact. GET FiT could be a very useful tool for Mozambique in the process of operationalizing the REFIT policy established last year, streamlining targets and concentrating efforts. Successful establishment of the framework for private investment in small-scale renewables would represent a significant, transformational change.

The impact of a GET FIT programme in Mozambique would mainly be related to i) Unlock the important resource potential, particularly within small hydropower and biomass and – possibly – solar with the potential to crowd out coal and emergency power generation; and ii) contribute to security of supply in critical load centres, due to the large distances and overloaded transmission infrastructure.

Achievement of results would depend on EDM's perception of the value of additional RE capacity. Particularly, the perspectives of large generation capacities with moderate (gas – medium term perspective) to low (large hydropower – long term perspective) cost of energy, and the large efforts that are concentrated towards the development of these projects, reduce the attention to small-scale renewables. Support to EDM to map the potential and assess the benefits from strategically targeting small- and medium-scale RE IPPs to

secure and stabilize supply in critical load centres, could be an important element. A carefully designed burden sharing mechanism could be necessary to effectively implement the REFIT system.

Some important limitations nevertheless exist:

- The immature stage of the REFIT system and weaknesses in the regulatory framework imply that significant ground-work would be required before results could be foreseen.
- In view of the recent changes in the ministry in charge of the sector, there is a risk that the power to convene attention and joint efforts around RE targets, could be limited at least for a period
- The absence of a credible pipeline of mature projects, as well as a very limited pool of competent developers indicates that results will at best take significant time to develop, and only projects with short development lead-times.
- Given EDM's critically weak financial situation, the off-taker risk could be prohibitive for most investors without extensive risk mitigation mechanisms.

Potential additionality and role of a GET FiT program. A large group of bilateral donors and multilateral institutions are working in various areas of the energy sector. However, several point to the fact that so far few efforts from the donor community have been directly targeting promotion of RE IPPs or the REFIT process. The intervention with the most direct relevance for IPP promotion and implementation of the REFIT, is likely the new programme by the Sustainable Energy Fund for Africa (SEFA). The programme includes a USD 740,000 technical assistance grant to the Government of Mozambique to enhance the enabling environment for private investments in the renewable energy sector. Specifically, the SEFA grant will support the implementation of the feed-in tariff regime for small/medium renewable energy projects, through the provision of standardized power purchase agreements, guidelines for grid connectivity and investor guidelines for prospective developers. As such, the successful implementation of the SEFA programme could create a stronger fundament for a GET FiT implementation. Complementarity with the SEFA programme should be carefully assessed during a possible GET FIT feasibility assessment in Mozambique.

Other donor interventions with relevance for a GET FiT intervention include:

- AFD and SIDA support to improving EDM's financial situation and position EDM better for large investments. SIDA supports among other areas, improved financial management in EDM. AFD also financed the update of the Transmission and Distribution Master Plan in 2012. The possibility of establishing an SPV for investments in Renewable energy is also considered.
- The Norwegian Government is supporting EDM with transactional advice and capacity building in commercial and financial structuring of investment projects. Norway is also supporting the implementation of the STIP.
- EIB, KFW are leading the efforts of financial mobilization for the STIP.

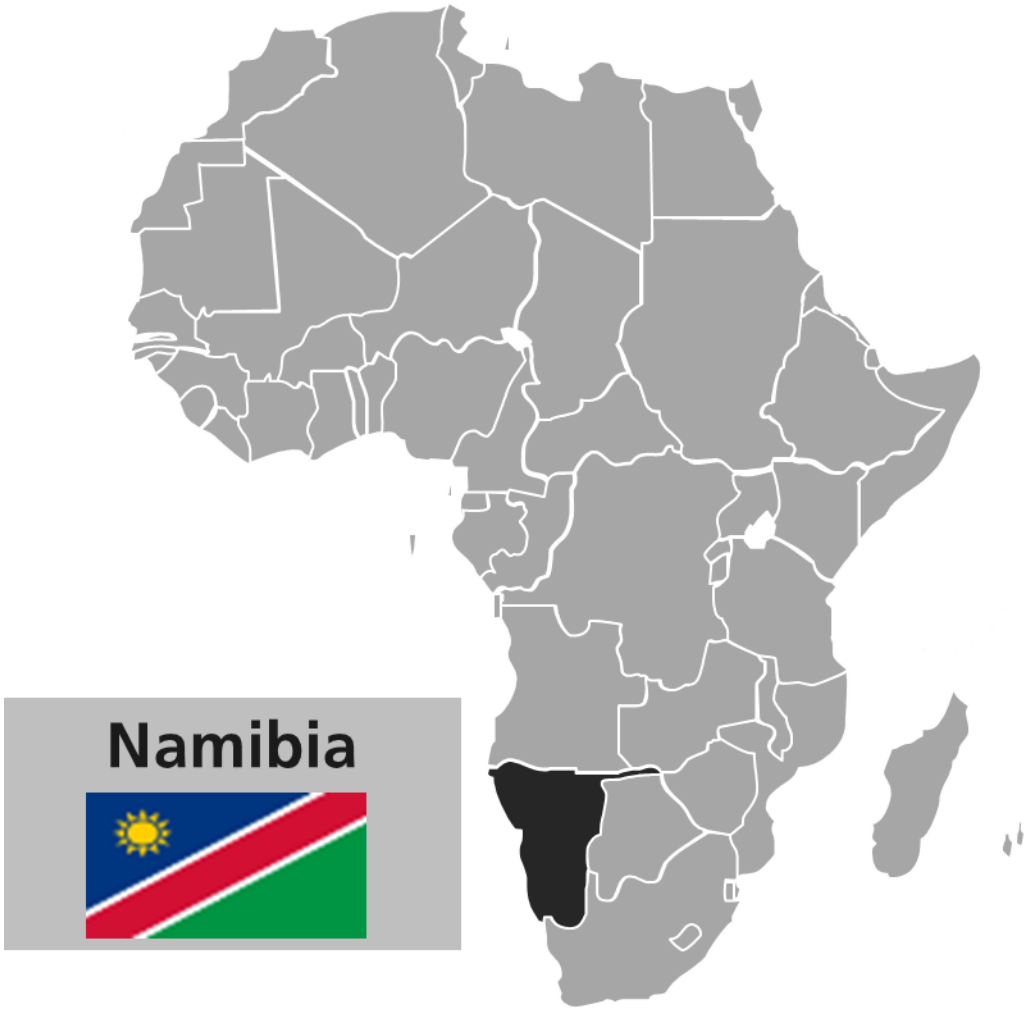
Other active partners working in various fields include WB, EU, JICA, Belgium, Sweden, Germany, UNIDO, and the Dutch Embassy. These are coordinated in a sector working group currently led by Belgium. In view of the areas of intervention of these actors, there appears to exist a space for a GET FiT program, which should build on and contribute to ongoing interventions.

Scale of effort and timeline. Given the lack of maturity of the REFIT system in Mozambique, together with the uncertain level of attention that RE could realistically gain, as well as the lack of a credible pipeline of mature or semi-mature projects, indicates that significant efforts would be needed to develop a sound framework and achieve bankability for RE projects, Further, significant results in terms of power generation capacity would require a relatively generous time-frame. This could be particularly true for hydropower, for which Mozambique certainly has a potential and which could produce significant benefits.

GET FiT champion and host institution. As mentioned above, a prominent and leading role for the regulator in a GET FiT intervention, like in Uganda, is not a realistic option for Mozambique. The most likely institution, which has the formal power to take the lead and the main responsibility for promoting renewables and leading the development, and that has also been championing the REFIT process, is MIREME.

A GET FiT programme would most likely be placed in MIREME, under the Directorate of Energy, and presumably have close working ties to the Department of Planning and Cooperation. The capacity of the new Ministry to take the lead and implement a major new programme should be carefully assessed during a possible feasibility process.

7.3. Namibia



7.3.1. Country context

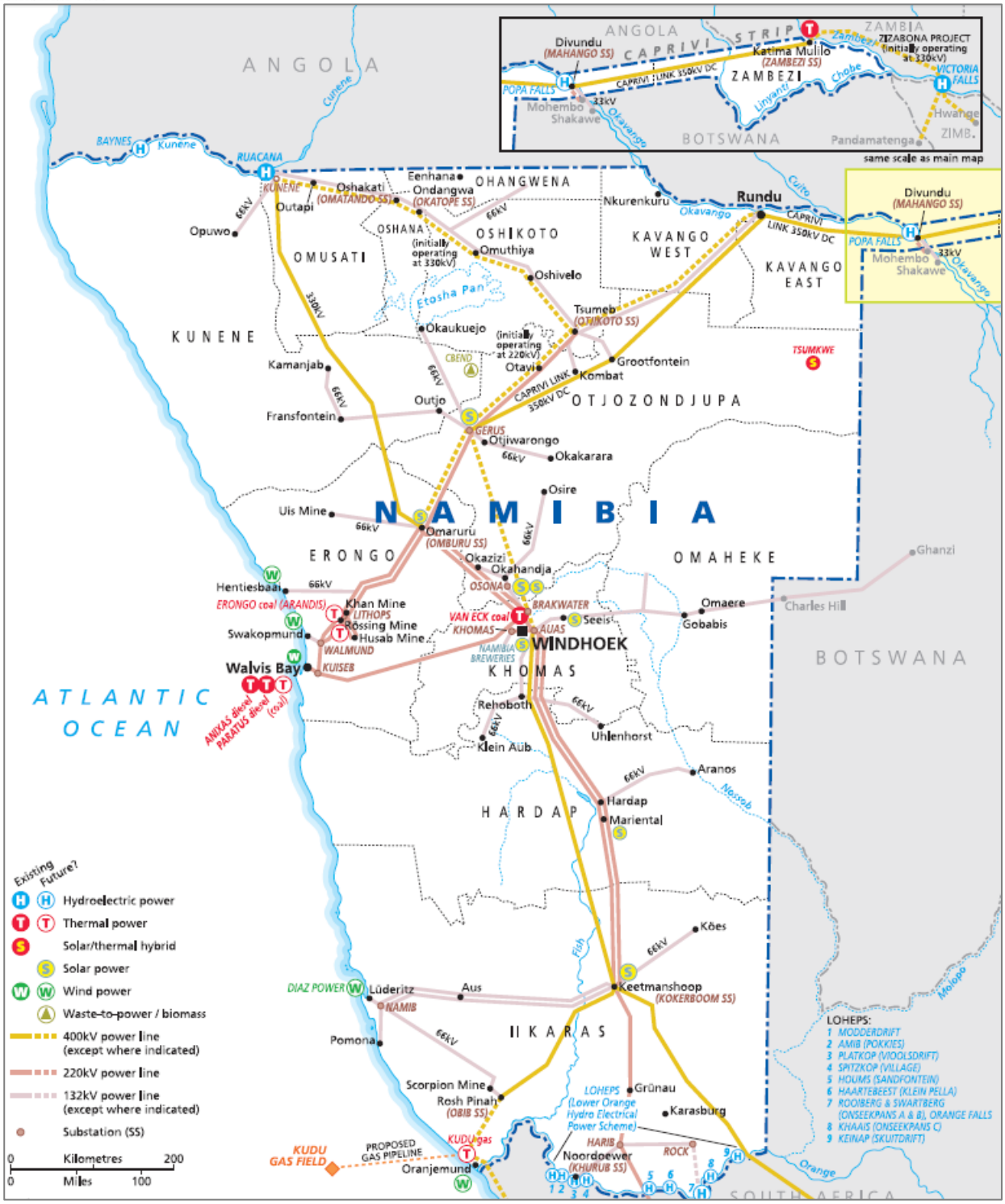
Namibia is a country with a population of 2.4 million and is among the countries with the lowest population density on the African continent. The country's climate is one of the driest in the region and desert covers more than 10% of the country's area. The country became independent in 1990 and income disparities are among the highest in the world. With a GDP per capita of USD 5,719, the GINI index is estimated to be between 0.5 and 0.6 and around 50% of the population lives below the poverty line.

The country has grown at a rate of 4.5% on average in the last five years and is expected to increase to an average of 4.8% in 2015-19, supported by growth in the mining sector, strong activity in the construction sector and an upturn in the manufacturing sector. The country, which has a business sector with strong ties to South Africa, is considered one of the most business friendly jurisdictions in Sub-Saharan Africa. The economy is service-based, with 60% of GDP attributed to the service sector. Agriculture plays a minor role in terms of economic output; it only represented 6% of GDP in 2014. However, in rural areas it is still an important economic activity, employing around 30% of the working population. The country is also rich in natural resources with important uranium, diamonds, zinc, copper and oil reserves.

Namibia's national agenda, Vision 2030, spells out ambitious development goals including the transformation into an industrialized country. Energy security and energy access are increasingly being recognized as key national challenges and are main priorities of the government. The vulnerability resulting from the high dependence on imported electricity has been strongly felt in the last decade, after South Africa cancelled regular export of base-load electricity owing to own power shortages. As import is not seen as a sustainable nor desirable long-term solution, Namibia urgently needs to increase its own generating capacity.

Namibia's eco-system is fragile and heavily impacted by climate change. This is evident by the loss of productive land and biodiversity due to the "invader bush", as well as volatility in rainfall and resulting variability of output from their large hydropower stations. The protection of the environment is not only a concern, but a constitutional issue in Namibia. According to Article 95 (l) of the Constitution the state shall actively promote and maintain the welfare of the people by adopting policies which include the "maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefits of all Namibians…" and is consequently obliged to protect its environment and to promote a sustainable use of its natural resources. The awareness of climate issues is felt to be strong compared to other SSA countries. The Environmental Investment Fund (EIF) of Namibia has been accredited as first national fund in Africa during the 10th meeting of the GCF Board held in July 2015 in Songdo.

Figure 18: Power map of Namibia



Source: *www.africa-energy.com*

7.3.2. Power market situation and RE potential

Overall Readiness		Key Points – Namibia
Technical potential: There is technical feasibility for grid-connected RE IPPs, preferably near grid and load centres.		Exceptional solar potential and highly interesting biomass resources exist. However, grid capacity for intermittent sources and largely unproven technology for invader bush, create some uncertainty.
Economic potential: There is strong economic justification for promoting the scale up of grid-connected RE IPPs.		Reducing the dependence on hydropower and rainfall volatility, high-cost thermal generation, and uncertain import, are main drivers for very positive rating.
Financial sustainability: The power sector is largely financially sustainable; revenues from end-consumers are in line with the cost structure of the sector.		NamPower's credit rating is good, and the regulator as well as the Ministry is motivated to ensuring financial sustainability in the sector. Although some indications from interviewees point to off-taker risk mitigation requirements, this is not seen as a major barrier.
Institutional support: Important institutions are capable and well-staffed to fulfil their missions and to interact with the private sector. A RE champion exists.		The institutions count with well trained staff. There is strong alignment with regards to the sector vision. Some young institutions still need to create a track record.
Near-term outlook: Currently, there are positive policy signals and/or momentum in this DD area.		Economic arguments grow stronger with increasingly challenging import situation and repeated delays of large power project.

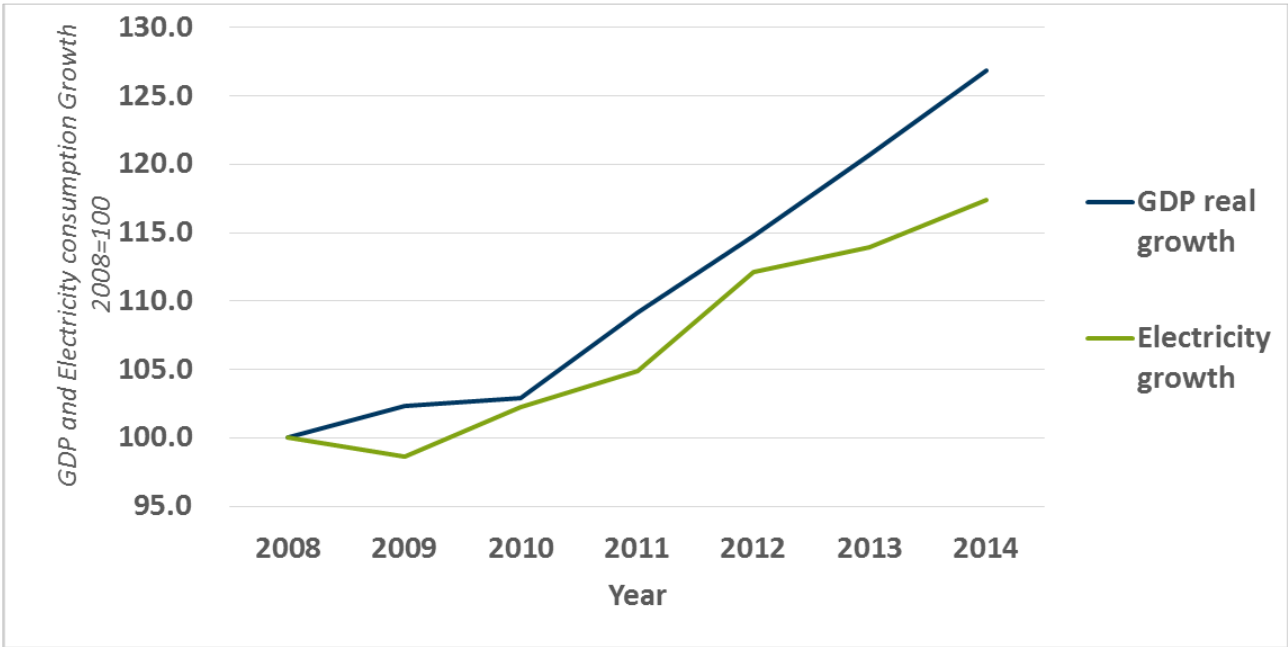
Level of Electrification. 42% of the population has access to electricity, with an urban access rate of 70% and rural remaining low at 15%[31]. Increasing access in rural areas is a national priority, and the Ministry of Energy and Mines' Strategic plan until 2017 targets 65% access to modern energy, which will be achieved through a combination of on-grid and off-grid efforts.

Electricity supply and demand. Electricity consumption per capita increased from 813 kWh in 2008 to 1,800 kWh in 2013, with total supply amounting to 4,384 GWh in 2014. Domestic purposes represented 37.5% of the consumption. The maximum demand is around 600 MW. It has increased by approximately 6% annually in the last 5 years, almost in parallel to GDP, and is expected to continue to grow organically at an annual rate of 4-5% per annum (NP, 2014). The opening of a new uranium mine will likely add 60 MW of demand in the short term with additional 60 MW over the next two years.

Of total supply, more than 60% was covered by import from the Southern African region. The domestic generation capacity is dominated by one source, the Ruacana Hydropower plant. An expansion in 2013 increased the capacity at Ruacana by 92 MW to 332 MW. NamPower aims to further increase the installed capacity at Ruacana to 347 MW by 2018. In FY 2013/2014 Ruacana produced 99% of the domestically generated electricity. However, the production is seasonal and also volatile when comparing yearly rainfall data, and the plant has for long periods had limited available capacity. While 2013/2014 benefitted from strong rainfalls and a high capacity factor (output of approximately 1,500 GWh compared to around 1,300 GWh in the previous year), 2014/2015 hydrology was much weaker.

31 According to Van Oertzen, 2015. According to World Bank Databank data for 2012, 47% of the population had access to electricity, with an urban access rate of 94% and rural remaining low at 17%.

Figure 19: Cumulative growth of GDP and Electricity demand



The **120MW coal-fired Van Eck** plant, built in the early seventies, had reached the end of its life with operations becoming uneconomical due to increased costs of coal and increasing O&M costs/replacement capex. Taking into account the strategic options for the country, NamPower decided to upgrade Van Eck and to invest approximately NADm 300. Following the rehabilitation (expected to be concluded 03/2016 - the power plant is and was also out of operation for the full NamPower FY 2013/2014) Van Eck is expected to be available at full capacity. The new equipment also aims to allow operation with a locally manufactured and more cost efficient 'green coal', integrated with standard imported coal, to fire the four boilers. This green coal is derived through a torrefaction process of harvested invader bush, which is then pelletised and distributed into the furnace along with coal. At this stage the green coal process remains in the pilot stage, to see to what extent it will be feasible to replace coal. Given the high cost of coal (NAD 1,517/ton in FY 2013/14 translating into NAD 0.6-0.7/kWh) Van Eck will most likely be used as spinning reserve. The capacity factor could, however, be increased up to approx. 80% if imports of electricity become more challenging and economic viability of Van Eck would be given. In this case, Van Eck could contribute up to approx. 840 GWh pa (9 0MW base-load mentioned by NamPower). The first IPP experiences in Namibia represent 4.75 MW, including a newly commissioned 4.5 MW solar plant and a small biomass project (see section 7.3.4).

Table 12: Power plants in Namibia

Power Station	Owner	Fuel Type	Capacity (in MW)	Output FY 2013/14 (GWh)
Ruacana	NamPower	Hydropower	337.0	1,498
Van Eck	NamPower	Coal	120.0	0
Paratus	NamPower	Diesel	24.0	n/a
Anixas	NamPower	Diesel	22.0	n/a
Omburu	IPP	Solar	4.5	0
Total			**507.5**	**1,498**

As stated above, more than half of the electricity demand is covered by electricity imports. South African power utility Eskom has been the largest source of energy, distributing off-peak and supplementary power of 300 MW each, but their contract with Namibia ends in 2016. Namibia also has an import contract with the Zimbabwean utility ZESA and Mozambique amounting to 240 MW. These contracts are terminated in 2015. The heavy reliance on imports makes Namibia vulnerable to occurrence of ESKOM inability to supply power.

The expected Namibian demand-supply gap is therefore primarily driven by Namibia's need to compensate for decreasing imports rather than growing demand. NamPower has consistently avoided load-shedding, however at an increasing cost, and with increasing difficulty due to the varying availability of imported power.

Transmission and distribution. NamPower is the sole transmission system operator in Namibia, with a transmission system comprising 11,000 km (6,835 miles) of overhead transmission lines ranging from 11 kV to 400 kV. A substantial distribution network is operated by Namibia's three regional electricity distributors (REDs), as well as NamPower, some local authorities and regional councils. These distribution entities are licensed operators, and responsible for the supply of commercial, industrial, institutional and domestic consumers in their areas of responsibility or jurisdiction.

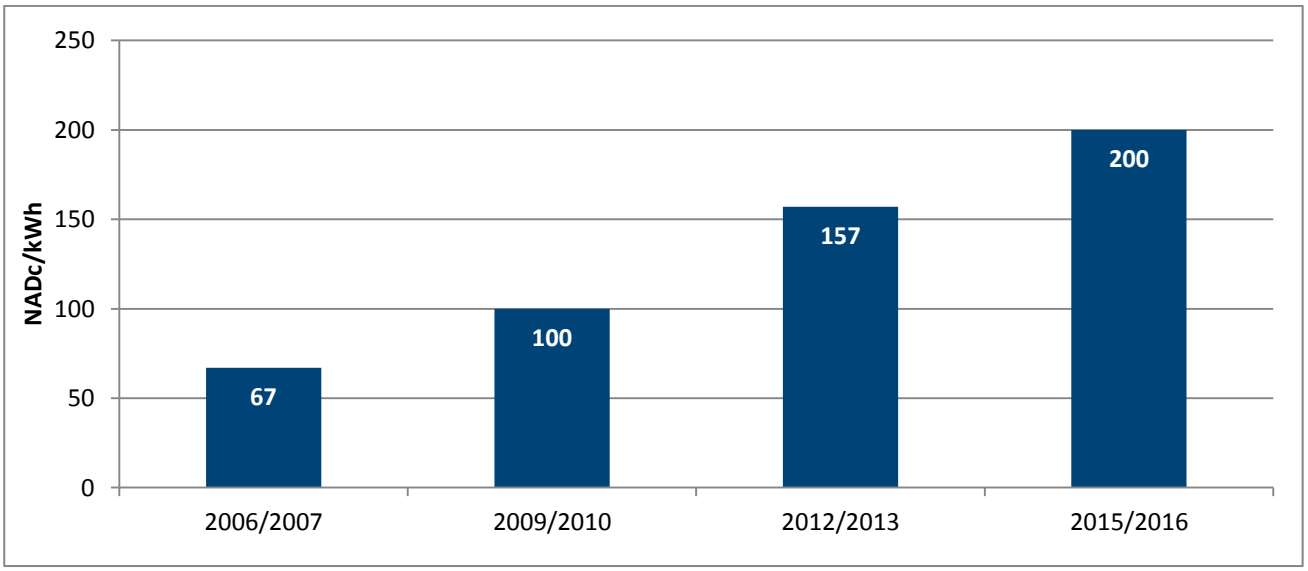
NamPower is systematically monitoring and reporting on system disturbances, and has consistently avoided load shedding. No system black-outs were experienced in 2014. According to NamPower's Annual Report for 2014, losses that year represented 14.4%. Of concern, however, is that losses have increased, from 9.7% in 2013.

No detailed study on the robustness of the transmission grid and its capability to absorb intermittent RE exists. In particular the lengths of the transmission grid in combination with low population and demand density remains a challenge for NamPower. An intermittent RE limit of 20% of domestic generation capacity has been mentioned by some stakeholders in the context of our mission. This limit would be reached soon if the PV tender as well as the small scale FiT program would be concluded.

Tariffs, cost-reflectiveness and sector financial viability. In accordance with the Government's White Paper on Energy Policy of 1998, which states that tariffs should reflect the long run marginal cost of supply, NamPower's tariffs have been increasing at a rate exceeding inflation, i.e. at around 20% per year, and the tariff level is currently considered cost-reflective.

For the 2015/2016 period, the average retail customer tariff was NAD 2.00/kWh (around USDc 15/kWh), with NAD 0.98 attributed to the generation and import of power, NAD 0.30 to transmission, NAD 0.55 to distribution, and the remaining NAD 0.17 to levies and surcharges. Consumer tariffs vary across different distributors.

Figure 20: Average retail consumer tariffs in Namibia



Source: ECB, 2013&2015

NamPower is considered a professional and independent organization and the consultant team had constructive and frank discussions with the NamPower team during the mission.

NamPower publishes detailed financial statements (their financial year ends June); the latest available report is the one for the FY 2013/2014. It has a solid technical and financial track record and good international credit rating. It is rated Investment Grade by Fitch with a national AA- long-term rating and BBB- foreign

currency long-term rating[32]. The IG rating remains intact despite lower than expected tariff increases, mostly due to the transparent government support that NamPower enjoys. Its credit is effectively directly linked to the credit rating of the sovereign. Fitch rating reports are available for download on the NamPower website.

The following table summarizes the NamPower financials of the last three FYs:

Figure 21: Main performance indicators NamPower

		2011/12	2012/13	2013/14		2011/12	2012/13	2013/14
					FX FYavg (USD/NAD)	*0.130*	*0.114*	*0.097*
Sales of electricity	N$m	2,449	3,139	3,580	USDm	318.6	358.1	347.1
GWh sold	GWh	3,726	3,861	3,831				
thereof own thermal	GWh	33	59	13				
Revenues/kWh sold	N$/kWh	0.66	0.81	0.93	USDc/kWh	8.6	9.3	9.1
Cost of electricity	N$m	1,117	1,659	2,161	USDm	145.3	189.3	209.5
Cost of electricity/ kWh sold	N$/kWh	0.30	0.43	0.56	USDc/kWh	3.9	4.9	5.5
Government grants	N$m	32	72	36	USDm	4.2	8.2	3.5
as % of sales of electricity		1.3%	2.3%	1.0%				
Government grants/ kWh sold	N$/kWh	0.01	0.02	0.01	USDc/kWh	0.1	0.2	0.1
Government grants/ own thermal kWh sold	N$/kWh	0.97	1.22	2.77	USDc/kWh	12.7	13.9	26.9
Total net income	N$m	205	566	586	USDm	26.7	64.6	56.8

Note: The exchange rate is based on the average of weekly reported exchange rate as reported by OANDA

Various measures have been taken by GoN to ensure financial sustainability of NamPower:

- End customer tariff increases as mentioned above
- Energy subsidies: GoN has allocated a NADm 360 multi-year energy subsidy for thermal power generation in 2008 and another NADm 250 for the construction of the Anixas power station in 2010. These subsidies have already been transferred to NamPower and are recognized as income over a pre-defined lifetime. As of FY end 2014, a remainder of NADm 281 is available to be recognized over the next years. The fact that the subsidies have already been transferred to NamPower increases predictability of future financial sustainability of the utility.
- In 2013, the MoME has introduced a Long Run Marginal Cost levy (LRMC levy) which helps NamPower to build a (ring-fenced) buffer to be used, in agreement with the regulator, in case of price shocks that cannot be forwarded to electricity consumers immediately. The levy is included in the average generation costs of NAD 0.98/kWh for 2015/16 stated above.
- Holistic view on the energy sector: We also observe that a very holistic approach including load management and energy efficiency initiatives has been taken to develop a financially sustainable energy sector.

Overall, the cooperation between government and NamPower appears to be constructive and provident, especially as recent changes to the NamPower management seem to have improved the relationship. Various stakeholders have told the consultant team that for example definitions of yearly grant allocations are smooth and flexible with interests being very much aligned. While end customer tariffs are not yet cost-reflective, we see significant activity and willingness at the end of NamPower and the government to establish the utility as a credible counterparty of IPPs. Against the background of these initiatives, the need for further government guarantees has to be critically discussed.

Sector strategies, plans and targets. The Ministry of Energy and Mines' Strategic Plan 2012 – 2017 provides the Ministry's strategic direction and sets the objectives and targets for the medium term. Targets include, among others, a revision of the Energy Regulatory Framework, development of a Regional Electricity Distributors' Act, 10% increase in license applications, 37% reduction in electricity imports, and increase access to energy to 65%.

32 http://www.nampower.com.na/public/docs/investor-relations/Fitch%20NamPower%202015%20Report.pdf

Achieving these ambitious goals has showed challenging. In response to an acute power deficit that was in early 2012 estimated to reach 80 MW in 2012 and 150 MW by the end of 2013, mainly due to the growing needs of the mining sector[33], NamPower initiated the Short-Term Critical Supply Project (STCSP). The STCSP includes a listing of priorities to address the country's immediate power supply shortage, and the plan was approved by Cabinet in 2013.

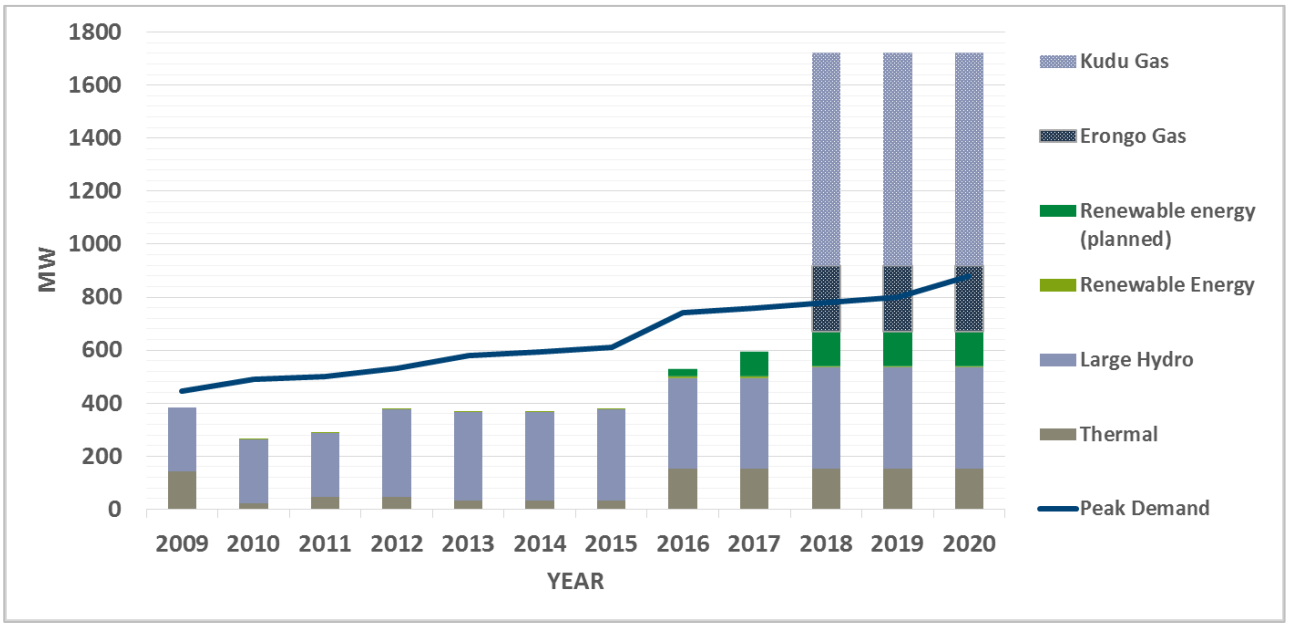
Nampower's Five-year Strategy and Business Plan 2014-2018 targets the completion of an additional almost 800MW during the plan period, as well as 730 km of transmission lines, and as such reflects the overriding goal of the 1998 White Paper to supply 100% of the nation's peak demand and at least 75% of the total demand from internal sources by 2018. With regard to Renewable Energy, NamPower has announced a target of 10% from renewables other than hydro. NamPower describes this plan as a "dynamic, evolving document" and presents updates in its annual reports.

Again, plans are proving difficult to implement. The foreseen 250 MW gas-to-power plant at Erongo, planned to be commissioned in 2016, was put on hold earlier this year. The flagship project Kudu (gas) has been highly prioritized, but the increased cost estimates and other controversies are creating doubts about the realism of the project. Both gas projects were expected to turn Namibia into a net exporter of electricity. The preparation of the Baynes hydropower project has shown little progress for many years, due to difficult negotiations between the two involved countries, Angola and Namibia. The project is no longer mentioned by NamPower as in the context of key deliverables for 2018.

On the other hand, the Renewable Energy Procurement Programme seems to have gained some positive momentum. After several delays, NamPower now expects to pursue the tendering of 30MW solar IPP capacity (3 projects of 10MW each) this year. Through the 'Interim REFIT Process', described in section 7.3.3, below, it is further expected that around 14 small IPPs will be awarded PPAs.

Peak demand is expected to increase by 50% between 2015 and 2020. Capacity is said to increase by 1,050MW of gas-fired capacity in 2018 and RE IPPs (800MW Kudu gas-to-power and 250MW LNG Erongo) are planned to come online between 2016 and 2020, adding an additional 100MW of capacity. Both large projects, however, have faced significant delays and challenges and delays have to be expected.

Figure 22: Historic and future demand & supply



Sources: NAMPOWER, Annual report 2014, media briefing 2015, and interviews

33 The Skorpion Mine currently is a large user of electricity, however, due to the geographic location does not source its electricity from NamPower but directly from Eskom. Therefore, most actual demand forecasts exclude it.

RE resource potential. Namibia's potential for renewable energy is significant and mainly unexploited. As mentioned above, a small number of renewable energy generation installations feed to the grid, and self-generation, mainly based on solar PV, is increasing**.**

Namibia's excellent sunshine regime is among the world's best for solar power generation, allowing annual energy yields of between 1,600 kWh/kWp in coastal areas, and up to about 2,100 kWh/kWp in selected locations in southern Namibia. 25 of 27 conditional licenses in the Interim REFIT programme are solar PV projects, one 20MW project has been licensed, and three 10 MW projects have been tendered by NamPower. Namibia's solar resource is also suitable for CSP, and feasibility studies for such installations are ongoing, led by the National Energy Institute. The solar resource is by far the RE technology that so far has received the highest level of attention in Namibia – from the key stakeholders in the energy sector as well as developers. Namibia's first RE IPP, commissioned in May 2015, was indeed a solar PV plant: the 4.5 MW Innosun power plant in Umburu. The Production experience so far has been good, and the developer is exploring expanded activities in Namibia.

Wind conditions are stable and with strong winds, creating a good potential for wind power. However, in spite of the many windy spots, especially along the coast, only few of them offer good opportunities for connection to the national electricity network. Licenses for two projects of 44 and 30 MW, respectively, are awarded, while the REFIT programme, likely due to the 5 MW size limit, only includes one wind project.

The main biomass resource is the so-called invader bush, which to date has been considered a major environmental problem, reducing farm output by two-thirds, depleted soil, increasing water scarcity and threatening biodiversity. An ongoing research project, initiated by GIZ, has assessed the potential of this resource as fuel for electricity generation, but claims high generation costs if environmental and social co-benefits are not considered. Such costs are among others driven by logistics costs. A test project for replacement of fuel supply for the Van Eck power plant has been launched, and could, if successful, replace 20% of the coal supply in the remainder of the power plant's lifetime. The efficiency of a centralized use of invader bush compared to a decentralized set-up needs to be carefully analysed. NamPower therefore does not exclude any implementation structure. In addition, technical and logistical challenges related to harvesting need to be overcome and social considerations with regard to labour standards need to be reflected before this resource can be considered a scalable and bankable (in particular for equator principle banks and DFIs) energy resource. While these challenges exist, the economic viability of invader bush based electricity generation cannot be ignored. We believe that a public support programme, which takes a wider approach and compensates project developers for the social and environmental public goods they produce, would be very welcome by Namibian stakeholders.

Waste-to-energy has potential of producing 10-20 MW in Windhoek alone, and potential exists also in some other cities. This option has not been explored in detail in previous studies. In the context of GET FiT we hardly see an option to support a technology which should ideally be implemented in PPPs taking into account the complex waste collection process and the resulting fuel risk.

In addition to the 337 MW Ruacana plant, additional hydro potential exists in both the Kunene and Lower Orange Rivers. NamPower is exploring a number of sites in the Lower Orange River, but faces challenges mainly related to hydrology and lack of control of non-domestic upstream flows. According to the REFIT report, there is no evidence of any significant and feasible potential for small scale, independently-owned grid-connected hydroelectric power in Namibia that could be developed in response to a REFIT, and the Interim REFIT process does not include indicated tariffs for Hydropower.

The existing technical RE potential needs to be carefully interpreted against the background of grid integration challenges and resulting economic viability. Smart RE approaches need to be developed to ensure sustainability and scalability of RE in Namibia. Any GET FiT intervention should in our view be structured in a way that it does not harvest low hanging RE fruits which might even leave NamPower behind with negative externalities like weakened grid stability. Therefore, we do not believe that a sole focus on PV is feasible although the resource potential is huge. We rather believe that GET FiT could support Namibia in facilitating smart and scalable solutions, like small scale decentral invader bush power plants combined with a matching PV component. Also, storage solutions which can reduce the intermittency of PV could become a game changer and experiences from Ghana should be considered.

7.3.3. Legal/regulatory/policy framework for RE and IPP

Overall		Key Points – Namibia
Fundamentals: There are limited and surmountable fundamental legal, regulatory and/or policy gaps for enabling RE IPPs.		While generally, there are positive signals for RE IPPS, project size under the REFiT programme is currently capped at 5 MW, which inhibits potential cost reductions due to economies of scale.
Coordination: Policy-making, target-setting and decision making pertaining to renewable energy promotion as well as donor interventions are well coordinated.		Approaches are in general are largely consistent.
Institutional empowerment: Relevant institutions are empowered to make required changes to the framework and have convening power for cross-institutional arrangements/processes		Most institutions are competent and empowered within their mandates, but track record in RE policy and sector intervention is still limited.
Rules & procedures: The bureaucratic and licensing frameworks are well coordinated, transparent and expedient.		No serious concerns have been raised by developers
PPA: A standardized bankable PPA, which should allow for project finance solutions in S/M RE IPPs, should be attainable with limited efforts.		Standardized PPAs are available, but doubts remain regarding the bankability of provisions related to guarantees and transmission agreements.
Off-taker risk: Off-taker risk is limited or possible to mitigate		Creditworthiness and track record of NamPower is good, remaining offtaker risk could be addressed with minor structural changes in the REFiT
Outlook: Currently, there are positive policy signals and/or momentum in this DD area.		Despite previous unaligned and not fully though-through intervention in the RE sector, we believe that institutions are willing to capable to improve the situation.

Institutional framework. The most important stakeholders in the Namibian electricity sector are the Ministry of Mines and Energy (MME), Electricity Control Board (ECB), NamPower, and other Government entities such as the National Planning Commission (NPC), and the National Energy Institute (NEI).

- **The Ministry of Mines and Energy** is the custodian of Namibia's energy sector and its mission is to ensure the reliable, affordable and sustainable energy supply for the country by taking advantage of the domestic natural resources while supporting the nation's socio-economic development. While planning, prioritising and implementing rural electrification, administration of Solar Revolving Fund, and incentives to stimulate renewable energy use in rural areas, fall under the diverse list of responsibilities of the Ministry they have so far not been at the core of the management's attention.
- **The Electricity Control Board** is the statutory regulatory authority established in 2000, with mandate and core responsibilities expanded in 2007. The core mandate of the ECB is to exercise control over the electricity supply industry with the main responsibility of regulating electricity generation, transmission, distribution, supply, import and export in Namibia through setting tariffs and issuance of licenses (licenses need ministerial approval as a matter of formality). Currently, legislation is being reviewed and updated with the perspective of transforming the ECB into the country's energy regulator.
- **NamPower**, the national electricity utility and system operator, is a state-owned company with a mandate to generate, trade, transmit, import, export and distribute electricity. The utility is responsible for the expansion of the generation capacity of the national power grid. Distribution responsibilities are shared with a number of Regional Electricity Distributors (REDs) operating in different concession areas, as well as local authorities and other entities. Namibia is now applying a 'modified single buyer system', which allows IPPs to sell directly to REDs or large customers in addition to Nampower, and the first agreement under this system was signed earlier this year. The three main operational REDs are NORED, CENORED and Erongo RED.

- The **Namibia Energy Institute (NEI)** is a national institute established by the Ministry of Mines and Energy, and hosted by the Polytechnic of Namibia. Its mandate is to promote renewable energy and energy efficiency through research and development, the collection and dissemination of information on renewable energy and energy efficiency technologies and practices, as well as providing respective advisory services. The NEI emerged from a restructuring of its predecessor. As part of the restructuring, it was agreed to expand its mandate to also cover nuclear, electricity and petroleum (oil & gas) sectors. NEI is involved in the implementation of programmes such as Soltrain and the establishment of the foreseen Southern African Centre for Renewable Energy and Energy Efficiency (SACREEE), and is charged by the MME to lead the studies for CSP.

Other entities with relevance for the electricity sector include the National Planning Commission, charged with responsibility of planning national priorities and directing Namibia in the path of development, including the production of National Development Plans, and the Environment Investment Fund[34].

All meetings with representatives in the above mentioned institutions took place in very constructive atmosphere. We were in particular impressed by the strong interest in GET FiT and the broad participation from across the different institutions in the meetings. While the ministry team was still somehow new to the topic, they demonstrated a strong commitment and turned out to be reliable partners during the follow ups after the missions.

Key legal and policy documents. The White Paper on Energy Policy is the sector's steering policy document. Adopted in 1998, it states ambitious goals, with a clear focus on the challenges related to the strong dependence on imports of the Namibian power sector: "Duly considering associated risks, it is the aim of government that 100% of the peak demand and at least 75% of the electric energy demand will be supplied from internal sources by 2010. Risk mitigation measures will be pursued, including the possibility of regional equity participation in, and guarantees for, Namibian generation projects." This target was not at all reached in 2010 but has been repeated by NamPower for 2018. Other key documents include:

Document	Key point	Status
Namibia Vision 2030	Overall strategy of the country's development towards its vision of an industrialized and prosperous nation. Includes cross-cutting issues relevant for the development of the energy sector.	
National Development Plans	Five-year plans guiding the process towards achieving Vision 2030, including the targets for the energy sector	
Electricity Act 2 of 2000 and Electricity Act 4 of 2007	The first Act establishes ECB and provides for its powers and functions, establishing NamPower as Single Buyer, and Regional Electricity Distributors (REDs) as distributors. The latter Act expands ECB's mandate and opens for private participation.	
The Strategic Action Plan for the Implementation of Renewable Energy Policies	Established in 2006, as part of the United Nations Development Programme (UNDP)/Global Environment Facility (GEF) and the MME, as part of the programme called Barrier Removal to Namibian Renewable Energy Programme.	Not considered a relevant document anymore.
Ministry of Mines and Energy Strategic Plan 2012 – 2017	Sets the objectives and targets for the Ministry's main responsibility areas for the medium term.	
National Integrated Resource Plan for electric power system	Identifies resources providing for the energy needs of Namibia in short and long term for the lowest reasonable cost.	Currently under review
Nampower's Master Plan	Not a public document. Guides Nampower's actions.	

The White Paper on Energy Policy addresses challenges of, particularly, rural women, and emphasizes the importance that energy policies reflect "a clear understanding of the energy needs of different rural women, the problems and constraints they face and the impact that energy policies and interventions may have on them." The National Gender Policy (2010-2020) also includes gender implications in the energy sector. Besides this, energy and women does not appear as a topic which is given high attention. Neither ECB nor

34 Source: SREP Investment Plan 2011

NamPower's reports include gender related considerations or reported activities, although NamPower provides certain gender-disaggregated data.

RE and IPP policy and regulatory framework. The promotion of private investments in energy is embedded in the government's strategy, and promotion of private investments is one of ECB's responsibilities.

The Electricity Act 2007 describes requirements, conditions and obligations for obtaining licences to generate, trade in, transmit, distribute, export and import electricity. An IPP and Investment Market Framework was drafted in 2008 which allows private power producers to apply for a licence and ECB will determine what tariff may be charged by each producer separately. As mentioned above, a 'modified single buyer' model, which also allows for signing PPAs with the REDs, is currently being practiced, and the legislation to formalize the change from a single buyer model is expected.

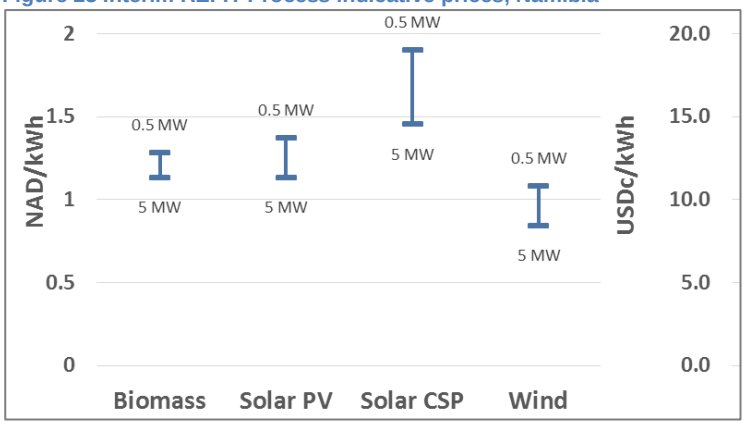
The slow on-take of IPPs to the system – one very small biomass plant and a 4.5 MW solar PV plant – demonstrates the need for the government and regulatory authority to improve the framework through introduction of a standardised tariff methodology and standardised power purchase agreements. Partly through support from USAID, the framework has seen a number of advancements over the last years.

A special steering committee chaired by the Permanent Secretary of the Ministry of Mines and Energy, and with representatives from ECB, NamPower and NEI was formed to oversee all renewable energy projects. The Renewable Power Purchasing Mechanism, lays the basis for purchase of renewable energy larger than 5 MW through competitive tender, while REFITs will be established for smaller scale projects. Net metering regulation has been developed, and when promulgated will regulate systems below 500 kW, allowing customers to install net metered facilities for production of electricity from renewable energy technologies.

With regard to competitive tenders, NamPower in 2013 launched a tender for the development of 3 x 10MW Solar PV Plants on a Build-Own-Operate (BOO) basis. The process has been delayed several times, but has recently showed positive progress. Five tenderers were still in the process during the field mission, and the tender was planned to be closed in October 2015. Some results of the process should be available towards the end of 2015.

The REFIT report from 2014 establishes proposed levels for feed-in tariffs, proposes PPA guidelines and outlines procedures for a REFIT system. The REFIT system has, however, not been implemented so far. It was decided to instead go through a process in an 'Interim REFIT process. It is envisaged that NamPower will enter into PPAs with approximately 14 projects, all below 5 MW, to provide up to 70 MW of power. The 14 projects will be selected from the 27 current provisional license- holders. The procedure will use a standardised PPA and Transmission Connection Agreement (TCA), which the licensees are required to pre-approve. Government guarantees will not be given for the projects. Upon successful completion of the Interim REFIT process, a revised REFIT process will be announced. The indicative tariffs for the interim process have been reviewed and proposed[35] as follows in the table below. It should be noted that the draft standardized PPAs are not size-specific, and refer the upper ceiling price.

Figure 23 Interim REFIT Process indicative prices, Namibia[36]



35 ECB, 2014 (ppt)
36 Currency rates as indicated in REFIT final report, 2014

It is expected that the Interim process will provide useful guidelines for the finalization of REFIT, and it is foreseen that the full REFIT system shall be established upon completion of the Interim process. The following Table lists the companies that have received a license under the REFiT regime:

Table 13: Development companies with generation licenses

Licensee	Location	Technology	Capacity (in MW)
1 Ark Industries	Rehoboth	Biomass/Biogas	16
2 InnoSun (Pty) Ltd	Osona	Solar PV	4.5
3 Uprise Investment (Pty) Ltd (Green continent)	Keetmanshoop	Solar PV	5.0
4 Momentous Energy (Pty) Ltd	Keetmanshoop	Solar PV	5.0
5 Phatsimo Solar Power	Otjiwarongo	Solar PV	5.0
6 NamEnergy Solar	Arandis	Solar PV	5.0
7 Namibia Solar World		Solar PV	5.0
8 Africa Renewable Energy Solutions (Pty) Ltd	Okakarara	Solar PV	0.7
9 Sertum Energy (Pty) Ltd	Trekkopje	Solar PV	27.0
10 Camelthorn Business Venture (Pty) Ltd	Outapi	Solar PV	4.9
11 Paramount Infrastructure Development (Pty) Ltd	Khorixas	CSP	22.0
12 Erongo Diagram Investment (Pty) Ltd	Arandis	Solar PV	5.0
13 OKA Investment (Pty) Ltd	Ondangwa	Solar PV	20.0
14 Africa Energy Corporation (Pty) Ltd	Walvis Bay	Solar PV	4.9
15 Sunchem Alpha Investment	Otjiwarongo	Biomass	5.0
16 Alten Holdings Namibia	Tsumeb	Solar PV	5.0
17 Alten Holdings Namibia	Gerus	Solar PV	5.0
18 Benzel and Partners Investment	Tsumeb	Solar PV	5.0
19 Ombepo Energy	Luderitz	Wind	5.0
20 Aloe Investment No. 27	Rosh Pinah	Solar PV	4.9
21 ALCON	Aussenkehr	Solar PV	4.9
22 Tandii Investment	Okatope	Solar PV	5.0
23 Metdecci Energy Investment	Karibib	Solar PV	4.8
24 UNISUN ENERGY	Okatope	Solar PV	5.0
25 HOPSOL	Grootfontein	Solar PV	5.0
26 FTN Investments	Naruchas	Solar PV	5.0
27 Namib Carbon Fertilizer	Omantanda	Solar PV	5.0

Source: ECB, 2015

In comparison, the indicative price ceiling that is targeted for the ongoing 3x10MW solar tender process is NAD 1.37/kWh, equal to the upper ceiling price for solar for the interim REFIT process.

NamPower is not seen as an easy partner by developers, however, is also not described as an opponent against RE and IPPs. In principle, the developers do not see any hidden agenda by the government or NamPower to keep their exposure to IPPs low. The delay in the REFIT process is regularly criticized, but we have also met developers coming to the government's defence, arguing that time will be needed but the willingness is there. The existing IPP in Umburu also refers to mainly positive experiences with NamPower as commercial partner and buyer.

A key question mark is put behind the maximum power plant size in the context of the REFIT scheme. With 5 MW being defined as cap, scale effects particularly in EPC cannot be realized and project finance will hardly be available.

Generators are required to obtain a generation license before being able to make available power capacity and/or generate electricity in Namibia, i.e. before signature of a PPA. The Minister of Mines and Energy has

the power to grant or refuse applications for generation licenses which, once approved, are issued by the ECB, and must be published in public hearing. Construction and operation of power plants require environmental clearance under Environmental Management Act, 2007, after completion of an environmental impact assessment. Investments are protected under the Foreign Investment Act, 1990

The IPPs developed so far are negotiating PPAs directly with NamPower. Draft standardized PPA has been developed and will be used in the interim REFIT process. The framework also foresees a standardised TCA and a direct agreement between Nampower, the project company and the lenders to the project company. A preliminary review of the document is in the box below.

Overview of PPA and contractual structure

The PPA is described as being for the "Namibia Renewable Energy Feed-in Tariff (REFIT) Programme. It is intended to be entered into between a Namibian incorporated special purpose project company as Seller and NamPower. The PPA does not stand alone, but is intended to form part of a suite of project documents, including in particular (a) a Transmission Connection Agreement ("TCA") with the Offtaker in its capacity as grid operator; and (b) a direct agreement between the Offtaker, the project company and the lenders to the project company. We have reviewed the TCA but have not seen the direct agreement. We have been provided with separate PPAs for the following technologies: solar PV, CSP, wind and biomass. The risk allocation provisions are identical, with the key difference for each technology being the base tariff.

Extent to which the PPA satisfies typical bankability and investor requirements

The PPA is clearly drafted and conceived with typical emerging market IPP investor and bankability concerns in mind. The document provided clearly evolved from a previous version, which was more generous to investors (there are some references to clauses that no longer exist). The risk allocation is broadly satisfactory in respect of the following key issues:

- Term: 25 years.
- Delay protection: delay to construction and extensions of time for force majeure with deemed payments for grid unavailability (though deemed energy provisions require drafting clarification).
- Force Majeure: extension of the term for natural FM and relief from obligations (though the carve-out of events that should have been mitigated is inappropriate as it is difficult to determine).
- Permits: offtaker to assist with permitting process (though no relief if permits not granted).
- Commissioning: includes an objective (though basic) commissioning and testing procedure.
- Tariff: transparent tariff regime with an indexation (though consider if CPI is adequate).
- Lender rights: addressed appropriately, with a lenders' direct agreement contemplated.
- Termination payment on offtaker default: amount payable on termination for offtaker default is in accordance with market standards, though the details should be reviewed by financial advisers.

Key bankability and investment risks

We would strongly recommend that all aspects of the document are reviewed and redrafted in detail to clarify the drafting. We would highlight the following key issues of concern to potential lenders and investors:

- Credit support: no credit support or payment guarantee of the offtaker's obligations, either with respect to energy payments or compensation on termination, meaning a reliance on Offtaker's ability to pay.
- Site risk: no protection for site risk. Though this will not be an issue if it is the developer's site.

- Deemed energy: Payments are based on the availability declarations made by the Project Company. Given that no availability declarations would be made prior to COD, it is not clear how this system would work for delays prior to COD when Deemed Energy Payments are payable.
- Political force majeure: no payment protection/deemed availability for political force majeure.
- Expropriation: no protection against expropriation and other political risk events.
- Change in law: though the PPA purports to provide cost protection for changes in law, this is through an adjustment to the tariff that requires regulator approval. There is no protection other than termination without compensation is such approval is not forthcoming. The existing provisions also require substantial clarification and redrafting.
- Termination triggers: though the default termination events are broadly acceptable, the cure periods are short and the offtaker termination right for "environmental failure" by the project company is too uncertain.
- Limited termination compensation: no compensation on termination following force majeure or payment by the offtaker of any part of the debt following termination for project company default.
- Arbitration: arbitration is onshore in Namibia.
- Drafting clarity: the document needs to be reviewed and revised in a number of areas.

The outcome of the interim REFIT process will give some evidence of the extent to which the proposed PPA and other documents are acceptable for developers and considered bankable by financiers. The first signals to this effect are expected before the end of this year. The PPA does not stand alone, but is intended to form part of a suite of project documents, including in particular the TCA with NamPower in its capacity as grid operator; and the direct agreement between NamPower, the project company and the lenders to the project company. We have been provided with neither the TCA nor the direct agreement and would recommend that these documents be reviewed at a later stage.

7.3.4. IPP pipeline

Overall		Key Points – Namibia
Track record: The country has a track record with S/M RE IPPs.		Apart from a very small biomass project, only one IPP is online. Hence, experience with S/M RE IPPs is limited. This is expected to change significantly in the short-term, with more solar projects connected to the grid.
Pipeline: There is a pipeline of well-developed S/M RE IPPs.		The pipeline is quite strong, but with almost all projects being solar PV projects, lacks diversification in terms of technology.
Human capital: The market offers a number of competent local developers and is attractive for regional/international developers.		Good mix of serious local and international developers.
Institutional support: There is a genuine interest amongst policy makers to support RE IPPs and to see the best projects realized.		Clear view and strategy on where IPPs add value.
Outlook: There are positive policy signals and/or momentum in this DD area.	?	Uncertain and depending on experiences with the tender and REFiT process, that has only recently started.

As mentioned above, the first IPP experiences are already producing power in Namibia: the small biomass project selling power to EnoRED, and the Innosun plan in Umburu selling power through a PPA with Nampower. NamPower and Copperbelt Energy Corporation have agreed to build the Kudu gas-to-power plant worth approximately USDbn 1.2, with a capacity in the range of 800-1,050 MW. Kudu was expected to become operational in 2018 and to become one of the main pillars of domestic power generation. While the project would provide much needed capacity, its financial viability has been questioned with the Ministry of Energy&Mines and the Finance Ministry disagreeing on whether or not to move forward with the project[37].

Before that, it is expected that the 250 MW Walvis Bay gas power plant starts operation in 2016. The bid to design, construct and operate was won by Xaris Energy and also includes the construction of a storage and regasification unit, and overland gas and water pipelines. The project SPV will be owned by NamPower, which will have a 30% equity stake, together with Xaris, Ariya Capital, General Electric and FGK Investments as additional equity partners. Production costs are estimated at USDc 0.13-0.14[38] and financial close was expected for June 2015, but has not been reached yet.

There are also plans for a large solar-diesel hybrid power plant in Arandis. The plant will consist of eight 15MW heavy fuel oil engines combined with a solar farm with a capacity of up to 50MW.[39] However, the project has recently seen some delays in moving forward and the Government suspended negotiations in early 2015.[40]

In terms of renewable energy projects, a few concrete initiatives are underway outside the REFIT process described in the previous section:

- In July 2015, Cenored signed a PPA with HopSol Power Generation regarding a new 5MW solar PV plant in Otjiwarongo. This marks a milestone as it is the first PPA between a RED and an IPP. Construction of the plant has already started with commissioning expected for December 2015[41].

- In August 2015, Erongo RED has published a tender for the construction of a 3MW solar PV plant in Arandis, with a target for commissioning in 2016.

- NamPower has issued a request for proposal for the development of three 10MW Solar PV power plants on a Build-Own-Operate basis. The bid closing date was 3 September, 2015[42].

- The 72 MW Luderitz wind project has been discussed for a while and project development seems to have gone beyond the initial phase. However, Quantum Power, the project sponsor, has claimed that the risk-sharing framework with the Government of Namibia is insufficient[43].

Projects that fall under the REFiT regime and have received a generation license are listed in section 7.3.3.

In our meetings with various developers during our mission we have experienced a significant appetite to expand operations. Given the lack of progress made in the REFIT process, many also develop isolated projects for captive consumption. In particular the mining sector is seen as a financially strong and attractive target market for RE applications.

The list of license holders also demonstrates the broad variety of developers being interested in the Namibian PV sector, and the technical capabilities of developers appear appropriate. On the other side, the pipeline shows little technology diversification, with a strong domination of PV projects.

37 http://southernafrican.news/2015/10/05/the-multibillion-kudu-project-not-viable-for-namibia-experts/
38 http://www.financialmail.co.za/fmfox/2015/07/02/gas-power-plant-step-on-the-gas
39 https://www.economist.com.na/markets/28-mining-energy/6720-hybrid-power-plant-to-boost-arandis
40 http://www.thevillager.com.na/articles/8416/Arandis-Power-to-go-ahead-without-government-agreement/
41 http://www.informante.web.na/cenored-goes-solar.16249
42 http://www.namibian.com.na/index.php?id=138936&page=archive-read
43 http://www.thevillager.com.na/articles/7710/Govt-backpedals-on-Luderitz-wind-project/

7.3.5. Financial landscape

Overall		Key Points – Namibia
Investment environment: The country is generally attractive for FDI, with a private sector oriented Government.		There is a strong international business community active in the country. The Government is clearly pro-business. However, the NAD denomination in the energy sector represents a risk factor for international investors.
Maturity of financial sector: The established financial sector is relatively mature, offering potential for commercial finance for RE IPPs (including appropriate tenor and decent financing costs under project finance transactions).		Experienced bankers with required structuring expertise. Project finance loans with up to 10 years tenor available
Outlook: There are positive policy signals and/or momentum in this DD area.		

The country has also been able to attract a significant amount of foreign direct investment, mainly in the mining sector. In 2013, foreign direct investment amounted to 7% of Namibia's GDP. The Namibian Dollar, the national currency, is pegged to the South African Rand and financial market stakeholders do not expect this to change and if, only with an appropriate waiting period of at least one year given the existing link to the JIBOR. Against the USD, the Namibian Dollar depreciated from NAD 0.12/USD in 2011 to around 0.08 NAD/USD in 2015 (see Figure below).

Figure 24: Historic exchange rate of the Namibian Dollar (NAD/USD)

Source: Oanda.com historical exchange rates

Seven licensed banks operate in Namibia among them three subsidiaries of South African/Pan-African Banks. Three banks that are operating in other African countries have recently applied for new licenses to operate subsidiaries in Namibia.

Table 14: Licensed Banks in Namibia

Licensed Commercial Banks:	Provisionally Licensed Banks:
Bank Windhoek Limited	Banco BIC Namibia Limited
EBank Limited	Letshego Bank Limited
First National Bank Namibia Limited	Banco Atlantico

Nedbank Namibia Limited	
Standard Bank Namibia Limited	
SME Bank Limited	
Trustco Bank Limited	

Source: https://www.bon.com.na/Bank/Banking-Supervision/The-Banking-System-in-Namibia/Licensed-Banks-in-Namibia.aspx]

The primary lending rate stands at 10.25% with single client risk being capped at 30% of the subscribed capital. NAD/USD hedges are available for up to 10 years. Given the maturity of the financial sector, financing of a local currency PPA based transaction would in any case happen in NAD and a hedging structure would come in too expensive. For NAD denominated loans, tenors of up to 10 years are acceptable (longer tenors are possible in connection with offshore financing). Banks are in general willing to participate in project finance transactions and have the required structuring expertise. However, minimum ticket sizes and resulting transaction costs remain a barrier, in particular in the context of the REFIT.

Potentially because of the size of the country and the low population level, bankers are familiar with the recent developments in the RE sector and the developer community. Off-taker creditworthiness concerns exist primarily in the context of transactions with some REDs where guarantees would be needed. In case of PPAs with NamPower comfort letters by the government would be a nice-to-have and could reduce financing costs. Deal breakers in the PPA relate to deemed energy and connection risk. Appetite to finance invader bush projects (with project finance) appears limited at this point in time given the complex risk profile.

7.3.6. Implementation considerations

Overall		Key Points – Namibia
Political risk: The risk that RE projects are adversely affected by political changes or instability.		Next national election: November 2019 High political stability for 25 years, with strong financial system, good governance, and a pro-business economic agenda. Some negative trends in governance indicators and fiscal position. AON Political Risk Rating: Low S&P Credit rating: N/A
Effectiveness: The GET FiT approach could be adjusted to effectively target the specific bottlenecks that are preventing scale-up of RE IPPs.		Tipping point will soon be reached in Namibia and support to allow for ongoing ramp-up of RE capacity would increase sustainability of the regulatory system
Impact: A GET FiT intervention would; i) create additional development or climate change mitigation benefits; ii) take a lead development role within S/M grid-connected RE IPP scale-up; and iii) complement on-going support.		Good starting point for sustainable intervention with limited support timeframe. Strong climate play with the option to realise high social co-benefits in invader bush projects
Scale of effort and timeline: The scale of effort required is realistic for a GET FiT intervention, and target outcomes should be achievable within a 3-4 year timeframe.		Timing concerns relate primarily to the need of a fast track approach
GET FiT Champion: There is a candidate GET FiT lead agency which has sector clout to implement required reforms and champion RE IPP scale-up.		There is no clear candidate, but there are several institutions with the necessary capacities and coordination between public institutions is strong.
Deal-breakers: No insurmountable barriers for GET FiT have been identified		Timing concern as major risk factor

Assessment of expected effectiveness and Impact. Namibia seems to be back on track for the implementation of the REFiT system and has demonstrated political will to support RE IPPs. There is a general confidence that the first PPAs under the REFiT scheme will be signed soon and that NamPower will

also award the 3x10MW PV PPAs. However, grid integration concerns as well as the incremental cost considerations represent major risks for a sustainable scale-up of RE IPPs. Therefore, we believe that a GET FiT cooperation, including an appropriate burden sharing – clearly framed as climate cooperation – can increase the sustainability of the current REFIT activities by lowering the incremental cost effect on NamPower. With the relatively capable institutional set-up, and the positive momentum that exists, good leverage effect could be possible.

Potential additionality and role of a GET FiT program. Given that the country has clearly indicated that they want to support RE IPPs and are even committed to sign PPAs at prices above their average generation costs, one could argue that external financial support for Namibia is not needed. Following our assessment above, we are not fully convinced that NamPower is in a situation to exploit the country's RE potential beyond the currently envisaged capacity. GET FiT could come in as creative and unbiased sparring partner for the stakeholders with support instruments that could also unlock activity in other RE technologies. In particular in the context of invader bush we see – in spite of the significant challenge – a massive opportunity to unlock projects with a high social and environmental co-benefit, as well as an opportunity to demonstrate consistency of international cooperation and continued support based on the existing GIZ programme.

Scale of effort and timeline. Namibia is expected to sign initial RE PPAs soon and to be ready for the next step thereafter. The currently envisaged timeline for GET FiT support (detailed feasibility study to start end of Q2 2016) would not be ideal for Namibia and we therefore recommend to consider a fast-track option for this country.

GET FiT champion and host institution. We have not identified one dominating advocate for RE IPPs in Namibia, but the key institutions in the sector appear generally aligned in their positive approaches towards IPPs. NamPower and the MOME are certainly institutions needed to refine the policy framework and to develop a more aggressive target for small and medium scale RE as part of the energy mix. Besides the Electricity Control Board which has managed the REFiT process, two "new kids on the block" could be considered as implementing partners: the Namibia Energy Institute as well as the Environment Investment Fund.