



Viability Gap Funding and Transmission Charges for Small Hydro Projects

Presentation of Principles and Tentative Plans

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November 9th, 2018

KFW



Multiconsult

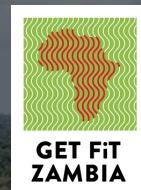


Disclaimer



- The small hydro component of GET FiT Zambia is still being designed.
- This presentation summarizes the current plans, intentions and principles of the GET FiT team as to the design of the eventual procurement and support.
- One of the aims of the presentation is to solicit feedback and views from stakeholders to inform the final design.
- All content is subject to change until launch of the RFP, tentatively set for Q3 2019.

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2 Context – REFiTs and GET FiT Toolbox

3 Viability Gap Funding (generation)

4 Connection costs and remuneration

5 Q&A

The Implementation Consultancy: Our consortium



The PIC consortium consists of *Multiconsult Norge AS* as the consortium lead, a London-based legal consulting firm *Trinity International LLP*, the Zambian engineering consultancy *Rankin Engineering consultants* and the Zambian legal counsel *Chibesakunda & Co.*



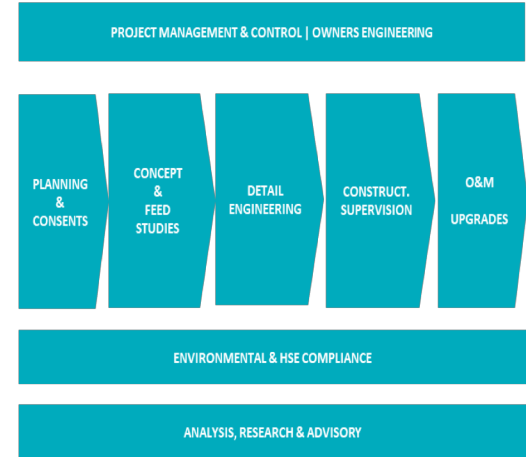
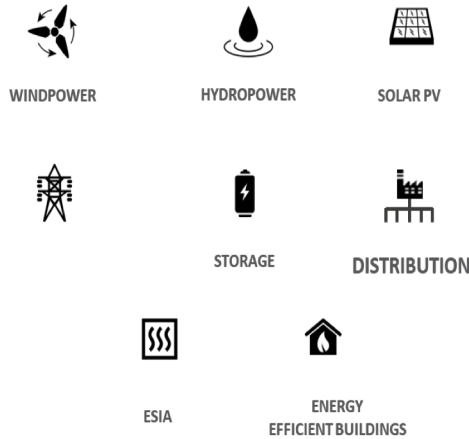
Introducing Multiconsult



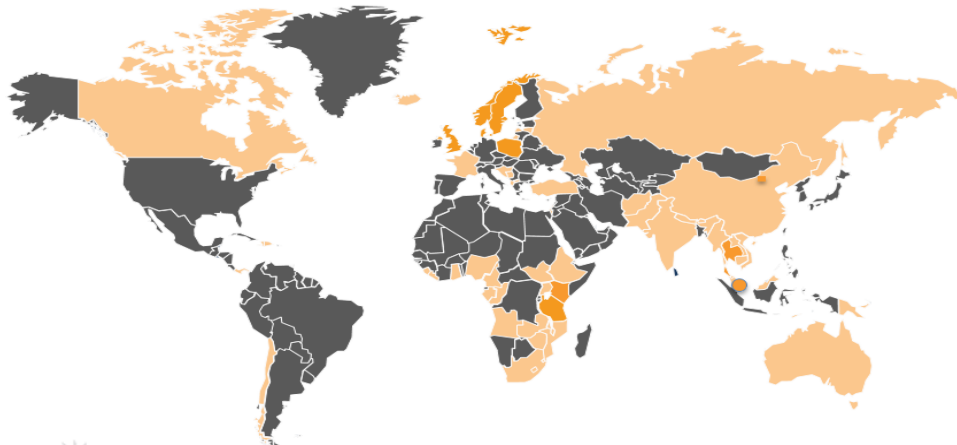
**GET FiT
ZAMBIA**

RENEWABLE ENERGY BUSINESS AREA

FULL VALUE CHAIN AND SUPPORT IN
ALL PROJECT PHASES



GLOBAL KNOWLEDGE – LOCAL EXPERIENCE



1908 Founded

2.800 Employees

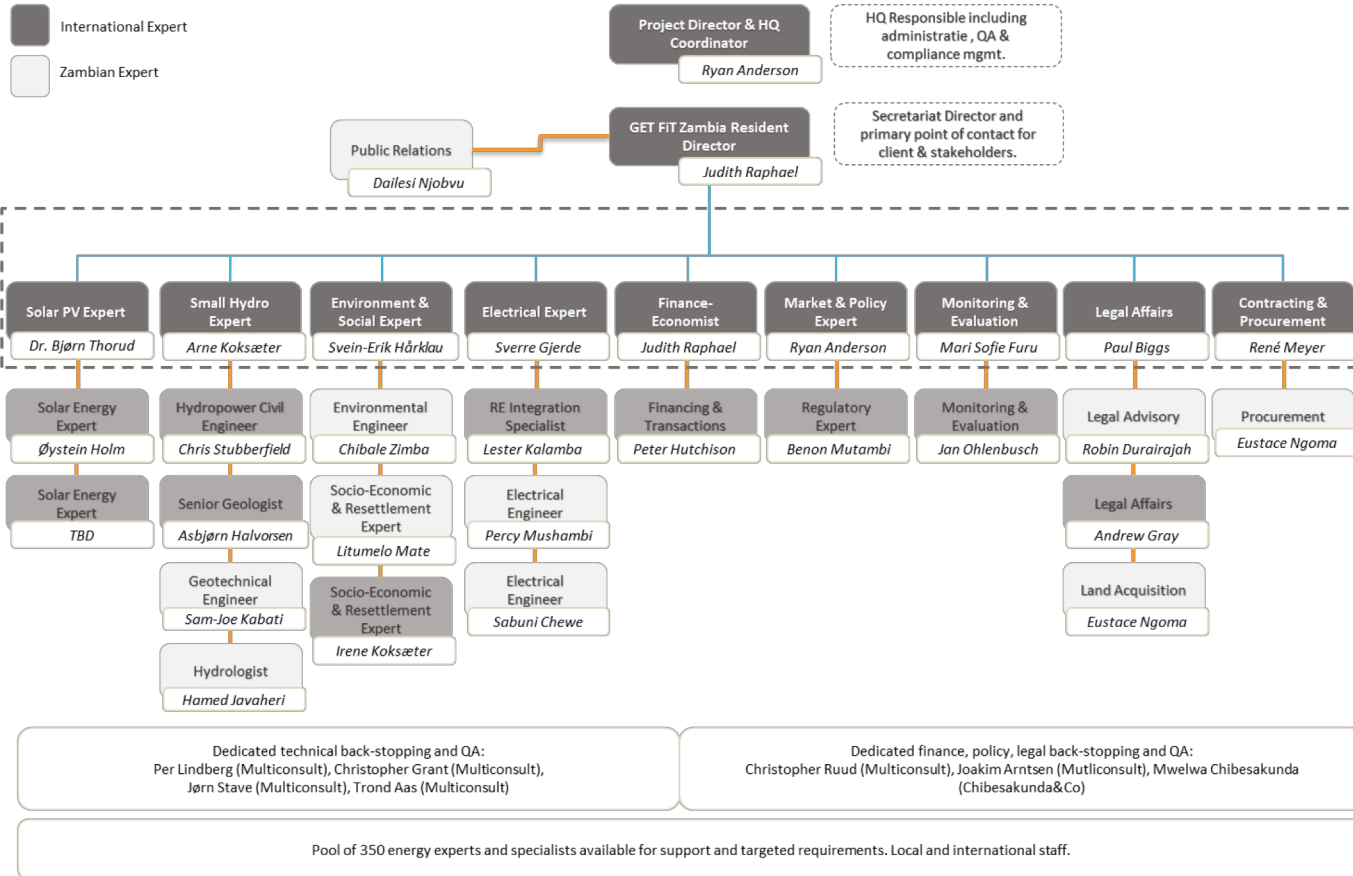
2.968 MNOK
Operating revenue (2016)



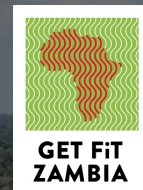
OUR PIC TEAM



**GET FIT
ZAMBIA**



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GET FiT designed to be a path breaker

Realizing a first group renewable IPPs



Ex-ante: Establishing the framework and mitigating risks for IPPs

- Standardized transaction documents
- Taking a portfolio approach to justify added efforts from Governmental counterparts
- Attract and facilitate appropriate project finance and risk mitigating instruments
- Clarifying regulatory frameworks
- Streamlining frameworks where required
- Offering clarity, transparency and capacity as counterparts – to the market

Ex-post: Facilitating financial close, implementation and compliance

- Facilitating the realization of a portfolio of projects – rather than individuals
- Representing neutral counterpart with the expertise and capacity to trouble shoot
- Represent interests of Government and ZESCO, while appreciating the views/concerns of developers and investors
- Ensure successful implementation of 200MWs of renewable IPPs

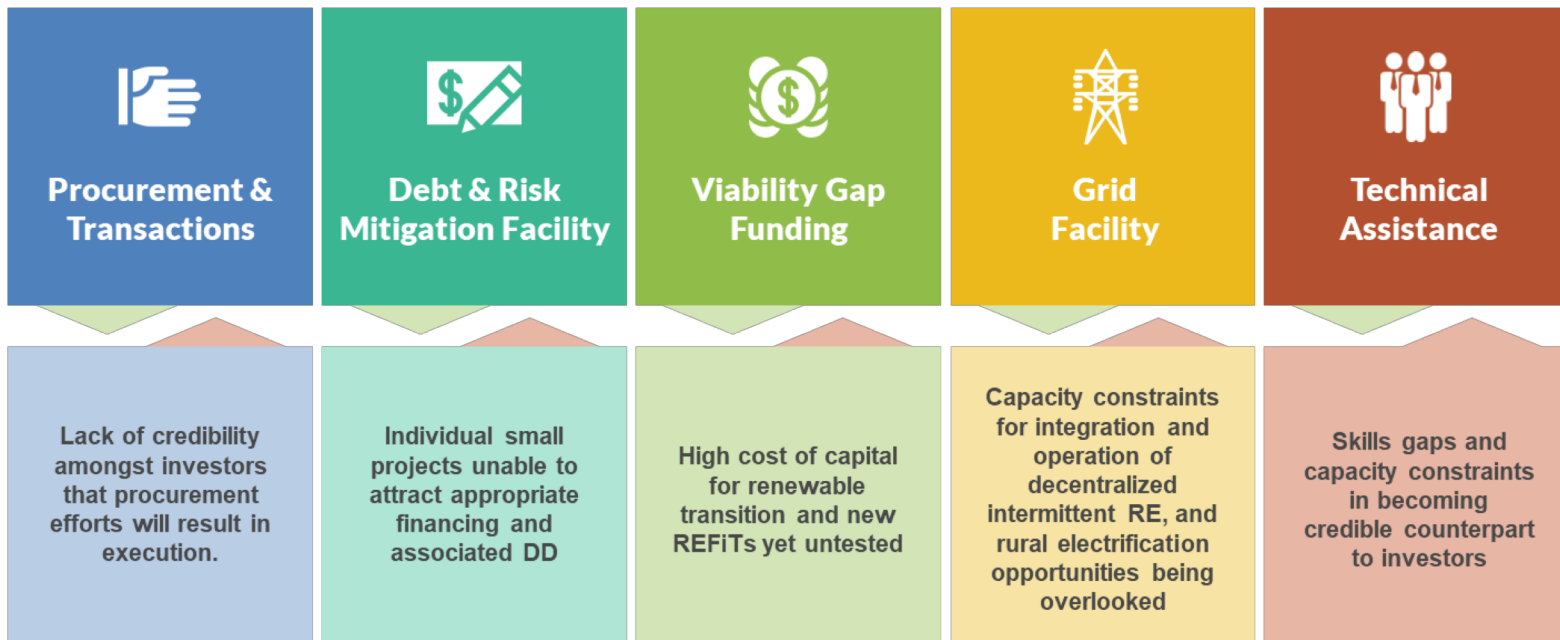
GET FiT Zambia Toolbox

The five components of the GET FiT Toolbox address barriers to realizing small RE IPPs



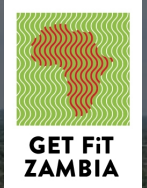
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GET FiT ZAMBIA TOOLBOX



BARRIERS & GAPS

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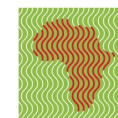
Connection costs and remuneration

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Q&A

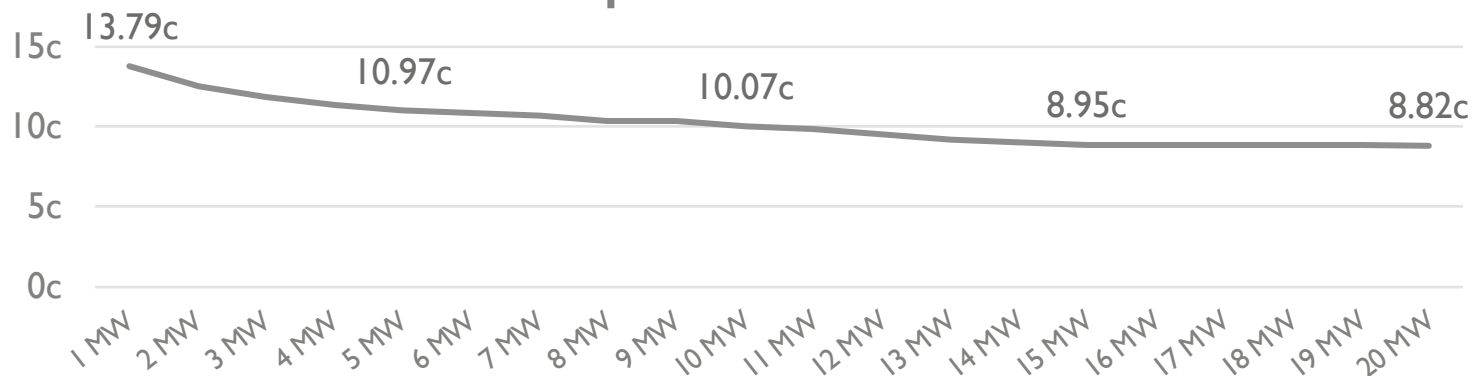
Context: REFITs

Targeting the long-term sustainable tariff levels



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USc Tariff per kWh for each size



| Plant Size (MW) | 1 MW | 2 MW | 3 MW | 4 MW | 5 MW | 6 MW | 7 MW | 8 MW | 9 MW | 10 MW |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Tariffs (USc/kWh) | 13.79c | 12.46c | 11.82c | 11.36c | 10.97c | 10.92c | 10.62c | 10.44c | 10.36c | 10.07c |

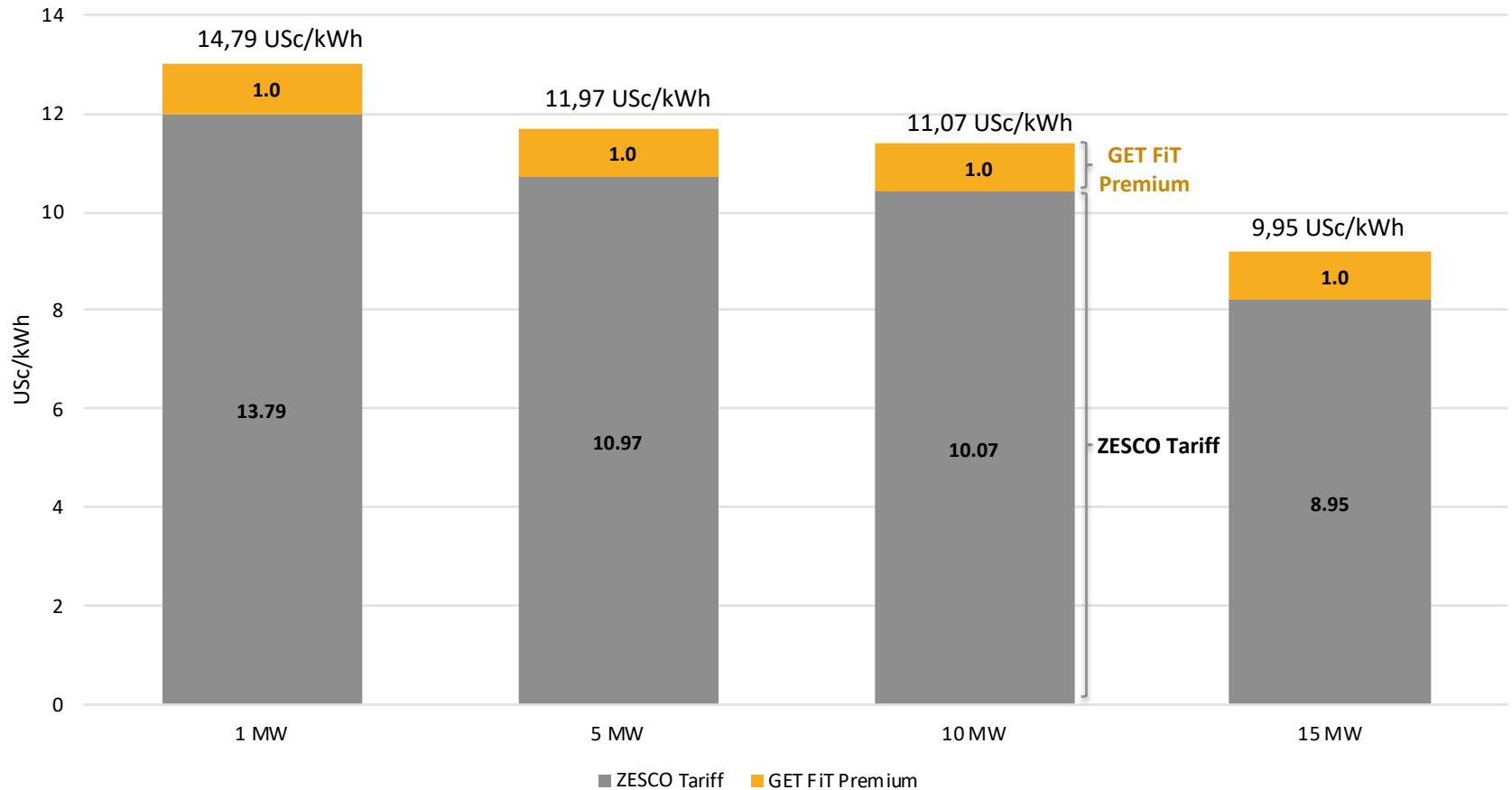
| Plant Size (MW) | 11 MW | 12 MW | 13 MW | 14 MW | 15 MW | 16 MW | 17 MW | 18 MW | 19 MW | 20 MW |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Tariffs (USc/kWh) | 9.83c | 9.54c | 9.25c | 8.97c | 8.95c | 8.92c | 8.89c | 8.86c | 8.84c | 8.82c |



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VGF Feature I: A top-up to the REFiT

VGF added on top of REFiT (illustrative example of Usc 1/kWh below)



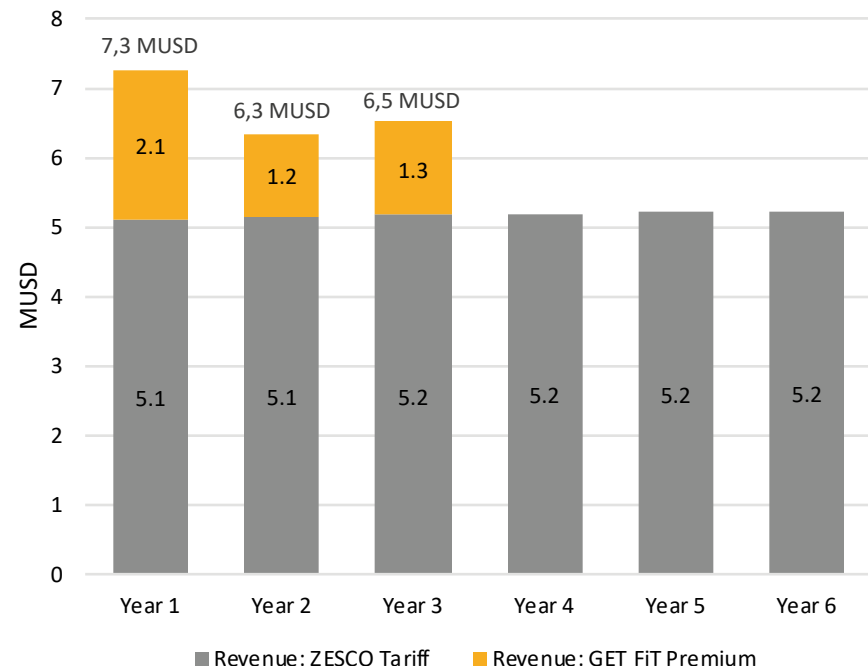
VGF Feature II: Front-loaded

Providing early cash flows and facilitating financing (example)



- GET FiT Premium is a 25yr support paid at COD and the first two years of operation to ensure sufficient and secure cash-flows to the IPP in early years.
- For a 10MW project, total nominal support is about MUSD 4.7 the first three years of operation.
- 50% of the premium's NPV is disbursed at COD and the remaining at the end of years 1 and 2 of operation.
- RBF: Total amount paid is adjusted according to actual production/energy sales.

Example: Revenue profile of a 10MW hydro plant



Assumptions:

- Starting tariff: 10.07 USc/kWh
- GFPP: 1.0 USc/kWh
- GET FiT premium discount rate: 12%

VGF Feature III: Development Finance Agreement

Revenues from a separate credit worthy source



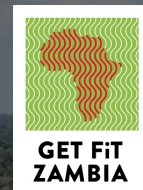
- The VGF will be a separate agreement between the developer and the donor – KFW
- Cash flow and payment certainty as the contract is with a credit worthy entity
- The developer will need to meet some minimum stated criteria/obligations, e.g. achievement of COD

VGF Feature IV: Element of price discovery

Project-specific VGF levels will have an element of competition

- VGF will not be a flat pre-determined level (as in Uganda)
- Instead, bidders will be required to bid in the level of VGF (Usc/kWh)
- Subject to meeting the minimum technical criteria, the awards are expected to be made according to one of the following regimes:
 - **Option 1** - a combined technical and financial scoring with subsequent ranking used to allocate funding until the funding window is utilized
 - **Option 2** - a two-step award based on (i) projects must achieve a minimum technical score, and (ii) once projects achieve the minimum they are ranked according to the bid VGF and awarded in that order until the funding window is utilized.
- It is expected that this competitive aspect will be complemented by a cap on the VGF level in the range of 1-1.5 Usc/kWh (the likely range of the cap)
- That is, Bidders will be invited to bid in a VGF level of up to a maximum of between 1-1.5 Usc (TBD)
- The exact nature of the competition and final level of the cap will be further elaborated as the launch of the RFP approaches

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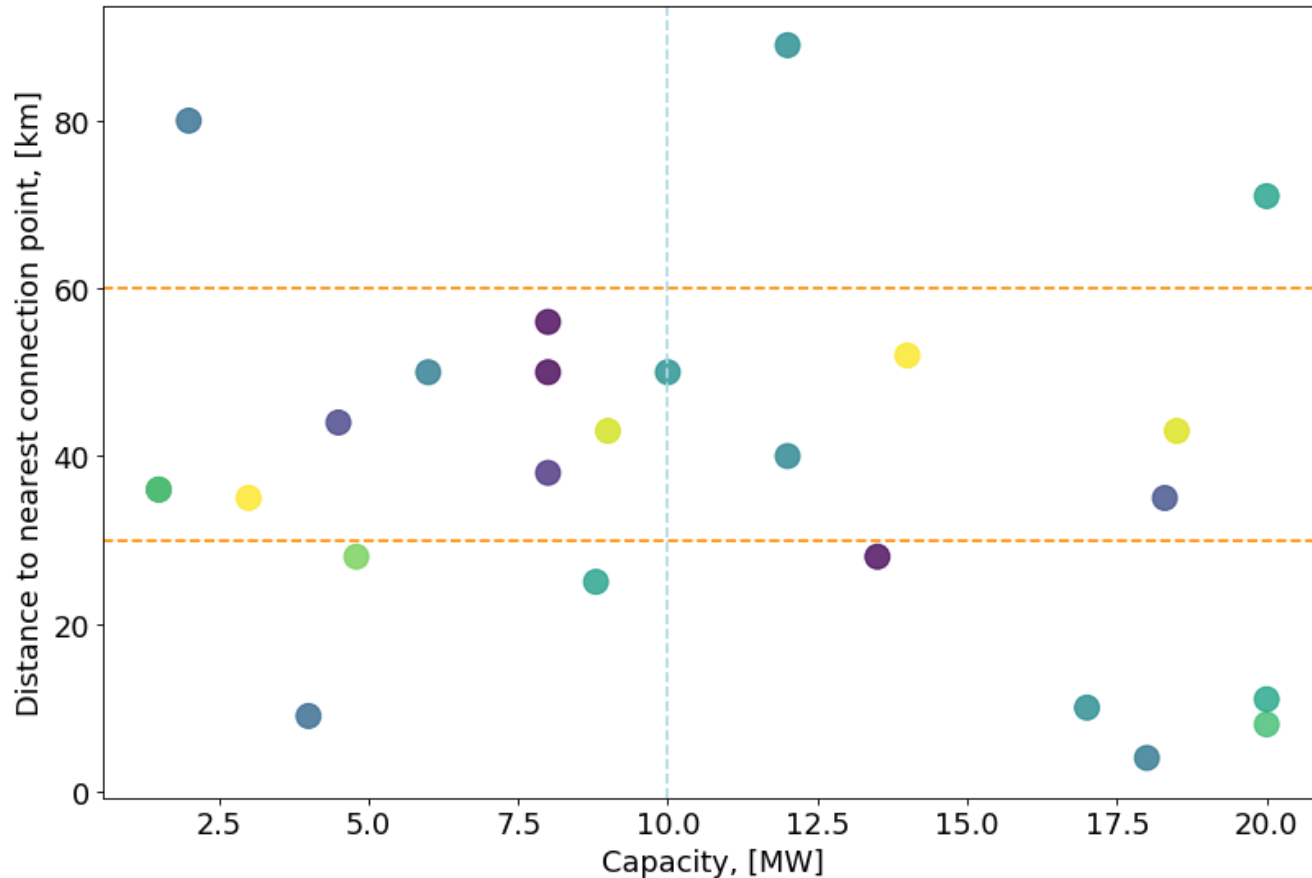
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GET FiT considering the realities in Zambia

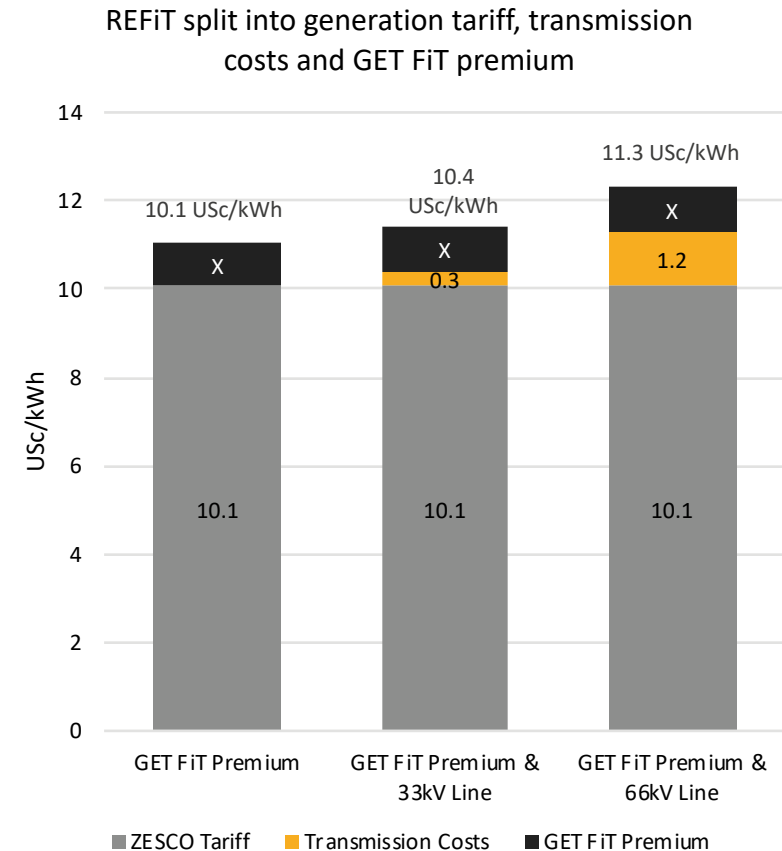
Selection of projects currently being investigated



Grid Compensation Mechanism

How much would the connection capex add to the REFiT?

- For a 30km connector, two options have been modelled:
 - 33kv: 0.9 MUSD
 - 66kv: 3.5 MUSD
- To recover the capex + 12% return, would require additional premium of 0.3 and 1.2 respectively
 - 3% and 12% increase on the REFiT for a 10MW plant



Assumptions:

- Installed capacity: 10MW
- GET FiT premium discount rate: 12%

Connection costs and compensation

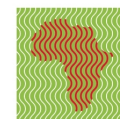
Context and balancing of objectives



- Recognized: costs of connection not currently remunerated by REFiT
- GET FiT Principle: connections preferably managed and financed by IPP
- Recognized: IPP must be remunerated either in form of an «asset purchase» or increased REFiT
- Need to balance objectives:
 - Not exclude attractive projects from eligibility
 - Limit costs of connection – ultimately paid by end-users, ZESCO or partners
 - Limit technical losses of connection
 - Avoid over/underpaying specific IPPs for connection costs
 - Ensure that IPPs are incentivized appropriately as to both selection of sites and capex v. losses

Tentative GFZ Approach to remunerating connection costs

Finding the right balance and incentives



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1. A cap of 5% on shallow connection losses

This will require any project that is too far from the grid of a certain size to consider investments to reduce losses.

2. A cap of 300'- 500'000 per MW in shallow connection costs

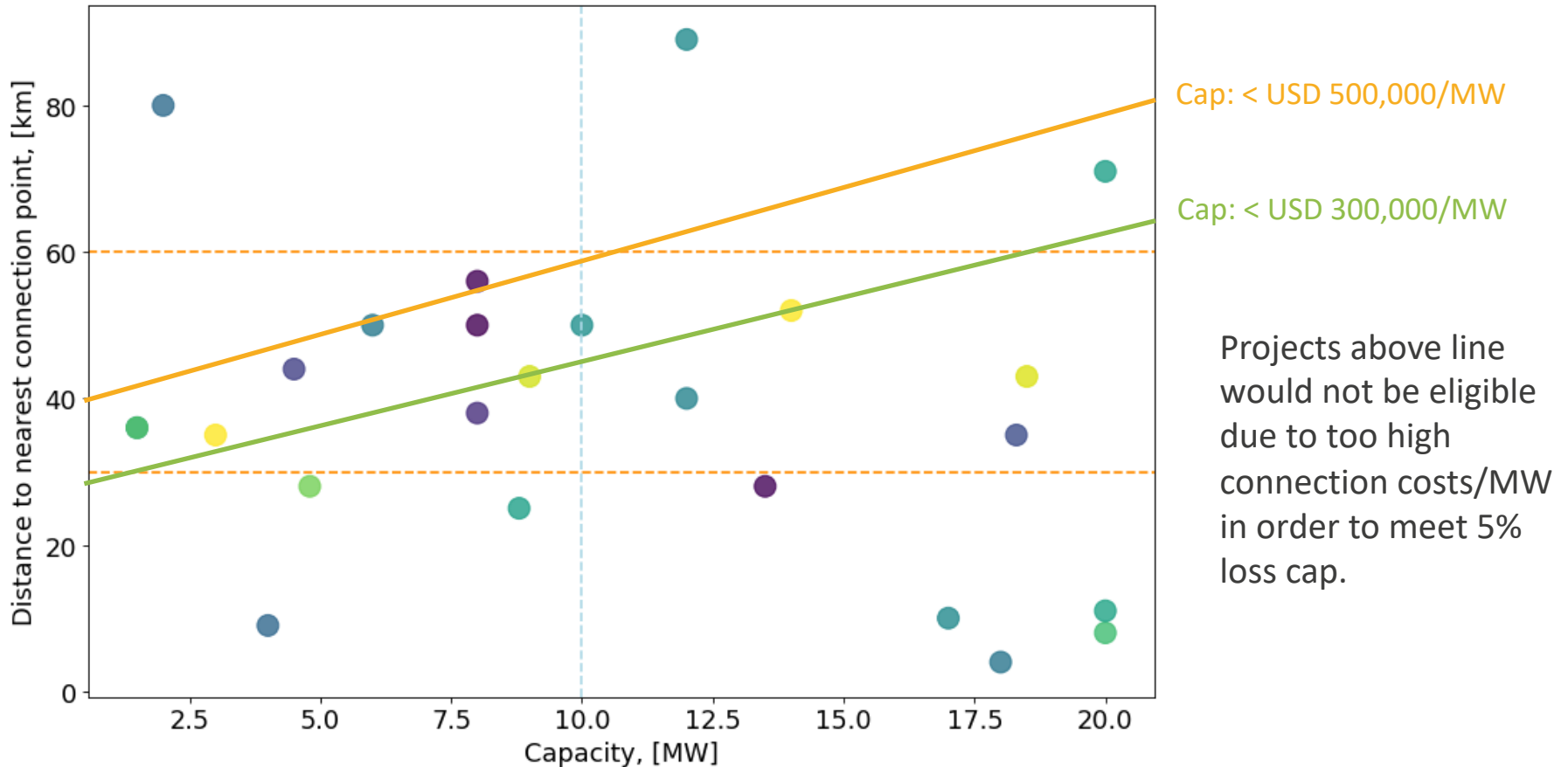
This puts a cap of 10-15% of capex on shallow connection costs. Thus, while the 5% cap introduces a need to invest for some projects, this capex cap puts limits on this – and thus also on the total support. Only larger projects will justify longer or 66kv solutions.

3. A scoring formula in appraisal scoring that measures levelized cost of shallow connection and present value of life-time losses

This is meant to favor, larger projects closer to the grid. Further, this should incentivize developers to «optimize» between losses and capex as they try to maximize this score. The value of the losses in the formula would be set at the REFiT, to properly reflect the trade-off confronted by ZESCO (losses) and funding agencies (increased capex).

Levelized cost would be = (present value of connection costs + present value of shallow connection losses) / present value of total kWh sold to ZESCO.

The caps and scoring create the right limitations (ZESCO and funders) and provides right incentives (IPP)



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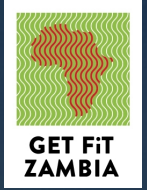
Viability Gap Funding (generation)

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Q&A



Thank you

For your attention

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Funder



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Secretariat

