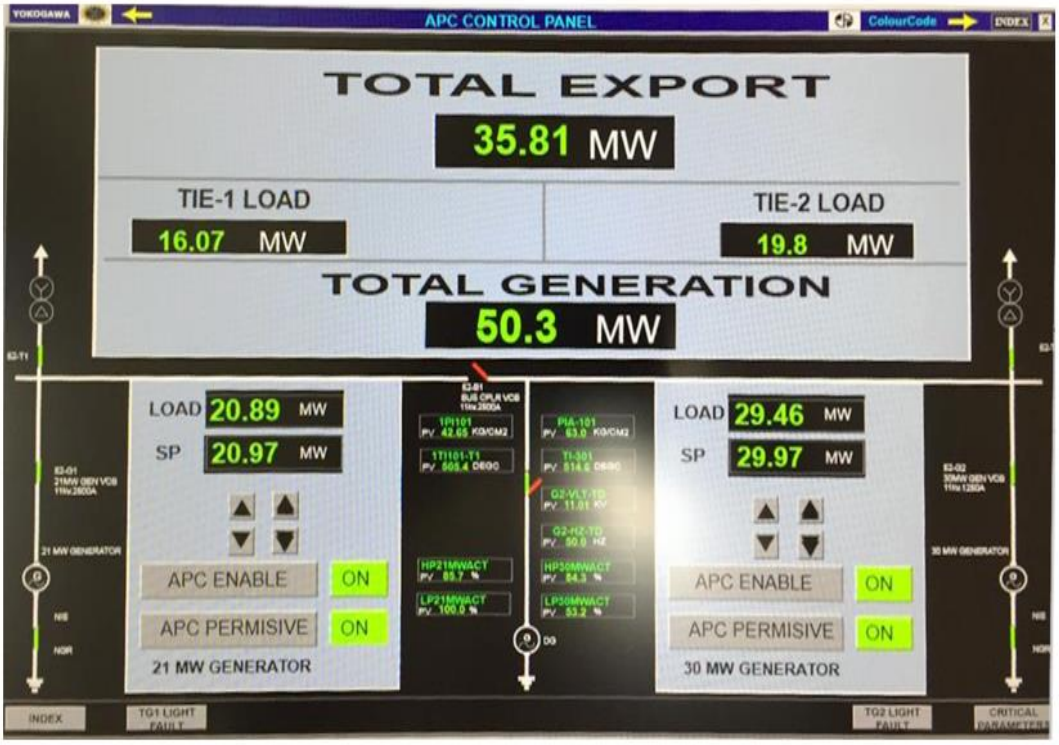
# Terminal Evaluation of UNEP/GEF Project 'Cogen for Africa' GEF ID 2597




Control panel of Cogeneration Plant of Kakira Sugar Works, Uganda, March 2019

**Evaluation Office of UN Environment Programme**

**February 2020**

## Evaluation Office of UNEP

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Front cover: Control panel of Cogeneration Plant of Kakira Sugar Works, Uganda, February 2019.

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This Terminal Evaluation was prepared for the Evaluation Office of UNEP by Lee Lynd as the Lead Consultant in full collaboration with Luiz Horta Nogueira with significant contributions from Andrew Allee, all of whom have expertise in bioenergy and development as elaborated below. The report benefits from a peer review conducted within Evaluation Office of UNEP.

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# ABOUT THE EVALUATION[1]

**Joint Evaluation:** No

**Report Language(s):** English

**Evaluation Type:** Terminal Project Evaluation

**Brief Description:** This report is a terminal evaluation of a UNEP/GEF project: Cogen for Africa (GEF ID 2597) implemented between 2007 and 2018.The project's overall development goal was to transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote the widespread implementation of highly efficient cogeneration systems by removing barriers to their application. The project was implemented in 7 countries - Ethiopia, Kenya, Malawi, Uganda, Sudan, Swaziland and Tanzania – over a period of 11 years starting in 2007. The Executing Agent was Energy, Environment and Development Network for Africa (AFREPREN/FWD)

**Key words:** energy efficiency; cogeneration; biomass; bagasse; energy finance

[1] *These data are used to aid the internet search of this report on the Evaluation Office of UNEP Website*

# TABLE OF CONTENTS


Abbreviations viii
Acknowledgments iii
Short bios of team members iii
Project Identification Table ix

Executive Summary 1

I. Introduction 4

II. Evaluation Methods 5
- II.A. Theory of Change 5
- II.B. Project design 5
- II.C. Stakeholder analysis 5
- II.D. Data collection 5
- II.E. Ethics and human rights 6

III. The Project 7
- III.A. Context 7
- III.B. Objectives and components 7
- III.C. Stakeholders 8
- III.D. Project implementation structure and partners 11
- III.E. Changes in design during implementation 12
- III.F. Project financing 12

IV. Reconstructed Theory of Change 15

V. Review findings 23
- V.A. Strategic relevance 23
- V.B. Quality of project design 24
- V.C. Nature of external context 25
- V.D. Effectiveness 27
  - i. Achievement of outputs 27
  - ii. Achievement of direct outcomes 29
  - iii. Likelihood of impact 33
- V.E. Financial management 34
- V.F. Efficiency 35
- V.G. Monitoring and reporting 36
  - i. Monitoring design and budgeting 36
  - ii. Monitoring of project implementation 36
  - iii. Project reporting 37
- V.H. Sustainability (socio-political, financial, institutional) 38
- V.I. Factors Affecting Performance 38
  - i. Preparation and Readiness 39
  - ii. Quality of Project Implementation and Execution 39
  - iii. Stakeholder Participation and Cooperation 39

iv. Responsiveness to Human Rights and Gender Equity 39
v. Country ownership and Driven-ness 39
V.J. Technology Transfer 40
VI. Conclusions and Recommendations 42
VI.A. Conclusions 42
VI.B. Lessons learned 50
VI.C. Recommendations 52
VI.D. Overall Evaluation Ratings 53

**Tables**

Table 1: Project Summary ix
Table 2. Stakeholder groups: influence, roles and responsibilities in the Project 8
Table 3 Stakeholder's influence and interest over the project outcomes 10
Table 4 Summary of implemented cogeneration projects assisted by Cogen for Africa 12
Table 5 Budget expenditures estimated/planned and actual by outcome and activities, considering GEF fund 13
Table 6 Co-financing received by Cogen for Africa 14
Table 7 Outputs and Outcomes as Presented in the ProDoc and as Reconstructed 16
Table 8 Drivers and Assumptions impacting Cogen for Africa 22
Table 9 Comparison of targeted and actual results 27
Table 10 Activities in Ethiopia, Tanzania, Sudan, and Swaziland compared to overall project activities 28
Table 11 Output and Outcome achievement summary 32
Table 12 Evaluation Ratings Table 46
Table 13 Recommendations 52

**Figures**

Figure 1. Management and implementation structures as envisioned in the ProDoc 11
Figure 2. Project Expenditures of UNEP/GEF funds, based on annual financial reports 14
Figure 3. Reconstructed Theory of Change 20
Figure 4. Installed electrical generating capacity in relation to peak demand for Kenya and Uganda 26
Figure 5 Deployment of renewable electricity generation in Kenya and Uganda from 2008 to 2018 31

**Annexes**

Annex A: Key Achievements of Cogen for Africa Project (from Project Manager, 12 April 2019)
Annex B. Persons contacted/interviewed
Annex C: Documents consulted
Annex D. Financial Management Evaluation
Annex E. Evaluation Terms of Reference
Annex F. Assessment of the Quality of the Evaluation Report

# ABBREVIATIONS

| | |
|---|---|
| AfDB | African Development Bank |
| AFREPREN/FWD | Energy, Environment and Development Network for Africa |
| CC | Climate Change |
| CDM | Clean Development Mechanism |
| Cogen | Cogeneration |
| EU | European Union |
| FiT | Feed-in Tariff |
| FS | Feasibility Study |
| FSDPs | Full Scale Demonstration Projects |
| FSPP | Full Scale Promotion Project |
| FWD | Foundation for Woodstove Dissemination |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GHG | Green House Gas |
| IBRD | International Bank of Reconstruction and Development |
| IEA | International Energy Agency |
| IPP | Independent Power Producer |
| IRR | Internal Rate of Return |
| NCO | National Cogen Office |
| NEPAD | New Partnership for Africa's Development |
| PMC | Project Management Council |
| PPA | Power Purchase Agreement |
| ProDoc | Project Document |
| PSC | Project Steering Committee |
| SADC | Southern African Development Community |
| TOC | Theory of Change |
| TOR | Terms of Reference |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| US$ | US Dollar |

## Project Identification Table

**Table 1:** Project Identification

| | | | |
|---|---|---|---|
| **GEF Project ID:** | 2597 | | |
| **Implementing Agency:** | UNEP and African Development Bank | **Executing Agency:** | Energy, Environment and Development Network for Africa (AFREPREN/FWD) |
| **Sub-programme:** | Economy | **Expected Accomplishment(s):** | Advancing cogeneration in Eastern and Southern Africa with realization of climate and development benefits. |
| **UNEP approval date:** | 24 May 2007 | **Programme of Work Output(s):** | Final report |
| **GEF approval date:** | GEF approval date is 2 May 2007 (Date of GEF CEO signature) | **Project type:** | Full Size Project |
| **GEF Operational Programme #:** | OP 6: Renewable Energy and cuts across<br><br>OP 5: "Removal of Barriers to Energy Efficiency and Energy Conservation". | **Focal Area(s):** | Climate Change |
| | | **GEF Strategic Priority:** | CC-2: Power sector policy frameworks supportive of renewable energy and energy efficiency.<br>SP-2: Increased Access to Local Resources of Financing for Renewable Energy and Energy Efficiency.<br>SP-4: Productive uses of renewable energy.<br><br>GEF-4 SP-2 – Promoting Industrial Energy Efficiency. The project will assist in |

| | | | |
|---|---|---|---|
| | | | promoting energy efficiency in agro/forest industries as well as other industries and institutions developing cogeneration investments. GEF 4 SP-3 – Promoting On-grid Renewables. The project will promote policies that are supportive of On-grid renewables. |
| ***Expected* start date:** | March 2007 | **Actual start date:** | 4 July 2007 |
| ***Planned* completion date:** | Feb 2013 | **Actual completion date:** | 31 July 2018 |
| ***Planned* project budget at approval:** | | **Actual total expenditures reported as of 30 June 2018:** | US$ 5,098,777.14 |
| **GEF grant allocation:** | US$ 5,248,165 | **GEF grant expenditures reported as of 31 July 2018*:** | US$ 5,185,652 |
| **Project Preparation Grant - GEF financing:** | US$ 367,400 | **Project Preparation Grant - co-financing:** | US$ 50,000 |
| ***Expected* Full-Size Project co-financing:** | US$ 61,586,350 | **Secured Medium-Size Project/Full-Size Project co-financing:** | Total co-financing realized: US$ 81,082,595<br>Leveraged financing: US$ 79,800,000 |
| **First disbursement:** | 4 July 2007 | **Date of planned financial closure:** | June 2020 |
| **No. of revisions:** | 5 | **Date of last revision:** | 25 May 2018 |
| **No. of Steering Committee meetings:** | 21 | **Date of last/next Steering Committee meeting:** | **Last:**<br>7th Dec 2017 |
| **Mid-term Review/ Evaluation *(planned date):*** | 3rd Year, 4th Quarter | **Mid-term Review/ Evaluation (actual date):** | July 2011 |
| **Terminal Evaluation *(planned date):*** | | **Terminal Evaluation (actual date):** | March 2020 |
| **Coverage - Country(ies):** | Ethiopia, Tanzania, Uganda, Kenya, Swaziland, Malawi and Sudan | **Coverage - Region(s):** | Regional |
| **Dates of previous project phases:** | | **Status of future project phases:** | |

## Executive Summary

[1] This is the report on the Terminal Evaluation of the project entitled 'Cogen for Africa'. The executing agency was the Energy, Environment and Development Network for Africa (AFREPREN/FWD). The United Nations Environmental Programme (UNEP, Economy Division) and the African Development Bank (AfDB) were the lead implementing agencies at the start of the project. UNEP was the sole lead implementing agency at the end of the project. The project was originally scheduled to be carried out between March 2007 and February 2013 and ended up being carried out between July 2007 and July 2018. The overall goal of the project was to help to transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote the widespread implementation of highly efficient cogeneration systems by removing barriers to their application. Initiatives were carried out and contributions anticipated in capacity building, financing, deployment and benefit realization, and policy and institutional arrangements. Initially, the project aimed to promote cogeneration and establish offices in 7 countries: Ethiopia, Kenya, Malawi, Sudan, Swaziland, Tanzania and Uganda. Project documents were generated for all seven countries as summarized in Annex 1. Following year 1 of the project, in consultation with the Project Steering Committee, the project focused on technology deployment in 3 countries - Kenya, Malawi and Uganda - while maintaining some capacity building and policy activity in all of the 7 originally-targeted countries.

[2] This document contains the evaluation findings with respect to the project's level of performance in pursuit of its objectives, as well as the extent to which the objectives were achieved. In pursuit of this aim, the evaluation team:

- Prepared an inception report;
- Developed a reconstructed theory of change;
- Conducted a two-week field mission to Kenya, Malawi, and Uganda;
- Interviewed representatives of the executing agency, implementing agency, and stakeholders;
- Reviewed documents (e.g. mid-term evaluation, records of project activity, finance records) and changes in project design during implementation;
- Gathered and analysed data;
- Offered perspectives on technology transfer.

[3] The evaluation team finds the project performance to be 'Satisfactory'[2] overall. The full evaluation ratings table may be found in the Conclusion section of this report. Highly rated evaluation criteria include Strategic Relevance, the Quality of Project Design, Financial Management, and Monitoring Design and Budgeting.

Key project strengths include:

- Familiarity with technology, best practices, and policies relevant to cogeneration built among relevant target groups;
- Access and impact with respect to regulatory agencies overseeing cogeneration;
- Dynamic management of the project such that it was responsive to changing needs;
- Effective leveraging and coordination of consultants familiar with local circumstances;
- A multi-pronged, multi-level, and ultimately impactful approach to capacity building;

[2] UNEP Independent Evaluation Office applies a six-point ratings scale from Highly Unsatisfactory through Unsatisfactory, Moderately Unsatisfactory, Moderately Satisfactory, Satisfactory to Highly Satisfactory.

• Comprehensive documentation of project activities.

Key weaknesses include:
• Lack of integral, rather than retrospective, analysis of benefits arising from cogeneration beyond energy production and greenhouse gas emissions;
• Web-based communication;
• Limited attention to the issues raised in the mid-term review.

[4] Cogen for Africa in general did what it said it would do, delivering on a set of outputs which were largely unchanged from the original proposal as well as a set of outcomes developed in the reconstructed Theory of Change. The project achieved the most in the policy and capacity-building domains, and somewhat less in the deployment and benefit realization domain. Assistance in arranging financing for cogen projects was anticipated but did not prove to be needed. With respect to policy, the project substantially enhanced familiarity and understanding regarding mechanisms, notably feed-in tariffs and power purchase agreements, that fostered assimilation of independent power producers into the electricity grid. In so doing, Cogen for Africa substantively fostered deployment of not only cogen, but also other renewable electricity technologies, with the magnitude of the latter being substantially larger in terms of avoided carbon emissions. Capacity-building was fostered for multiple audiences, including:

• The capacity of current and future project developers with respect to understanding challenges and opportunities related to cogeneration;
• The capacity of government agencies to understand and implement Feed-in Tariff (FITs) and Power Purchase Agreements (PPAs), likely leading to increased deployment of renewable electricity in the region from sources in addition to cogeneration;
• The capacity of educational institutions with respect to understanding, course offerings, and instructional materials related to cogeneration and renewable energy more broadly. This in turn has led to expanded capacity of students which is expected to continue beyond the project;
• The capacity of AFREPREN/FWD as an organization, as well as the employees thereof, with respect to integrated analysis of renewable energy and development in East Africa, encompassing technical, business, social, and environmental aspects.

[5] Based on the state of affairs with respect to cogeneration in eastern and southern Africa as the Cogen for Africa project concludes, the evaluation team has difficulty extrapolating to the full realization of the project's stated goal, i.e. to transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote widespread implementation of highly efficient cogeneration systems by removing barriers to their application. Several headwinds contributed to this result, including:

• Although an electricity supply deficit was anticipated in the proposal, electricity generating capacity exceeded demand throughout the project period in both Kenya and Uganda;
• Greater-than-anticipated development of low-carbon electrical generating capacity from sources other than cogeneration;
• A scarcity of sites with reliable, around the clock, demand for both steam and electricity;
• A scarcity of sites with grid connections having adequate capacity and reliability;
• Decline of the sugar industry over the project period (specific to Kenya);
• Political and economic factors which favoured large-centralized projects (e.g. hydroelectricity) over small, distributed sources characteristic of cogeneration.

With examples of cogeneration deployed in the region and with familiarity now in place with respect to FiTs and PPAs, to which the project Africa meaningfully contributed, the evidence suggests that the likely future trajectory is for cogeneration capacity to gradually increase – but to generally follow rather than lead industrial development in the region.

[6] Recommendations were developed by the evaluation team as follows (see also Conclusions section):

***To extend and maximize the value of Cogen for Africa going forward:***

1) Measures should be taken, by AFREPREN/FWD and perhaps others, to ensure (and perhaps transfer responsibility for) access to project documents and/or learning materials.

2) UNEP and GEF should consider a follow-up project aimed at expanding the production of biomass-derived liquid fuels.

***To maximize the value of future UNEP projects, those responsible for proposing, reviewing and monitoring should:***

3) Include evaluation of social benefits as an integral element in project design and execution, both to avoid undesirable outcomes and to maximize desirable outcomes**.**

4) Extend project reports beyond reporting on deliverables and milestones to include learnings and outcomes, including from less successful as well as more successful project elements.

5) Manage dynamically in response to changing circumstances and be open to realizing value in unanticipated ways. This approach needs to be embodied, embraced and encouraged by both project teams as well as those overseeing the activities of such teams.

6) Carefully align success metrics with objectives.

7) Define capacity building broadly to be conceived to include institutions as well as individuals, and to include high as well as low levels of competence.

# I. Introduction

[7] The Cogen for Africa Project was initiated in 2007 by the Energy, Environment and Development Network for Africa (AFREPREN/FWD). The overall goal of the project was to help to transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote widespread implementation of highly efficient cogeneration systems by removing barriers to their application. Initiatives were carried out and contributions anticipated in capacity building, financing, deployment and benefit realization, and policy and institutional arrangements. The United Nations Environmental Programme (UNEP, Economy Division) and the African Development Bank (AfDB) were the lead implementing agencies at the start of the project. UNEP was the sole lead implementing agency at the end of the project.

[8] The original completion date of February 2013 was extended to 2018 with approval by the Steering Committee and inclusion of added and more ambitious targets. A mid-term review was carried out in 2011, rated the project as highly satisfactory, and made several recommendations. The total GEF grant allocation for the project was US$ 5,248,165 with total co-financing of US$ 81,082,595.

[9] Initially, the project aimed to promote cogeneration and establish offices in 7 countries: Ethiopia, Kenya, Malawi, Sudan, Swaziland, Tanzania and Uganda. Project documents were generated for all seven countries as summarized in Annex 1. Following year 1 of the project, in consultation with the Project Steering Committee, the project focused on technology deployment in 3 countries - Kenya, Malawi and Uganda - while maintaining capacity building and policy activity in all of the 7 originally-targeted countries.

[10] Project partners and stakeholders included owners of facilities where cogeneration could be deployed, project developers, regulatory agencies, electrical utilities, technology providers, providers of financing, local communities, and regional, national, and international governmental agencies concerned with economic development and/or reduction of greenhouse gas emissions. Other related initiatives include the Cogen Programme in Asia, completed prior to the start of the Cogen for Africa project, as well as coincident projects such as Agro-Industries and Clean Energy in Africa (AGRICEN)", and "Greening the Tea industry in East Africa - Small Hydro Development".

[11] UNEP and GEF are the primary audiences for this evaluation. Additional audiences being the project team as well as persons and institutions interested in the development/energy/climate nexus in Africa, with particular reference to bioenergy.

# II. Evaluation Methods

## II.A. Theory of Change.

[12] At the time Cogen for Africa was proposed and approved, the Theory of Change (TOC) framework was not established or in use within the UN. The TOC has, however, since become a foundational component of UNEP project planning and assessment. Accordingly, a "Reconstructed Theory of Change" was developed by the evaluation team based on UNEP guidance and applying concepts and definitions similar to the TOC prepared for other projects (such as drivers, inputs, outputs, outcomes and impacts), as presented in *Section IV. Revised Theory of Change*. This TOC was discussed with the project team and endorsed during field visits and provided a relevant framework for this evaluation.

## II. B. Project design.

[13] The project design was reviewed using the UNEP template, as presented in *Section V. Review Findings*. During the inception phase of the evaluation and based on project documentation, the strength of the project design was assessed and the nature of external context considered. The project preparation topics (such as clarity and adequacy of problem analysis, situation analysis and stakeholder analysis), as well as the procedure adopted to consult stakeholders, what coverage was achieved and how human rights were considered, were all assessed. Thus, the project design was assessed focusing mainly ex-ante on how the project established its aims and defined the context and conditions required to accomplish them.

## II.C. Stakeholder analysis.

[14] The contribution and interests of different socioeconomic actors were preliminarily assessed based on the ProDoc initial design when the relevant stakeholders were identified and integrated in project implementation, as presented in *Section III. The project*. The evaluation team evaluated this initial stakeholder analysis, considering the actual project context (see also Table 2, below).

## II.D. Data collection.

[15] Supported by the initial data and information on the project, collected when preparing the Inception Report and aiming to establish sound evidence, and identify clear documentation when necessary, this Terminal Evaluation was based on a combination of additional information obtained from two sources: (a) a desk review of available project and context-related documentation, complementing information gathered for the Inception Report, and (b) a field mission to Kenya, Malawi and Uganda where the achievements of Cogen for Africa project are more tangible, when several stakeholders were interviewed and cogeneration plants deployed in the framework of the project were visited. The field mission agenda and stakeholders to be contacted were preliminarily set by the evaluation team, reflected the evaluation aims and were adjusted with the UNEP project management team.

[16] This field mission, even done with a tight agenda and few days in each country, was very important to this final evaluation. Face to face talks and interviews with stakeholders directly involved in the project, such as the national government executives, project developers and

operators, workers and people living in the neighbourhood of cogeneration plants implemented in the framework of Cogen for Africa project, were an essential source of information, allowing identification and evaluation of different perspectives and interests.

[17] The consistency of energy data (nominal capacity, energy generation, energy consumption, useful heat production, etc.) was assumed satisfactory since practically all data came essentially from equipment suppliers or official national references. Nevertheless, a specific remark was made by the evaluation team on the *Note on representing cogeneration capacity*, recommending a more usual norm to express installed capacity of cogeneration plants.

[18] With regard to budgetary, financing and co- financing aspects and data, as presented in *III.F. Project Financing*, all figures presented were taken from AFREPREN/FWD (Project Executing Agency) Reports and Financial Statements (up to December 2017, including the project extensions/amendments) submitted to and approved by UNEP. It should be stressed that on the *Financing Management* the evaluation team focused on, and assessed, the completeness of financial information and the communication between financial and project management staff and UNEP Accounting Office. The evaluation team did not evaluate the pertinence and correctness of expenses, nor audited the financial information submitted to UNEP.

## II.E. Ethics and human rights.

[19] Ethics and human rights issues were considered in the Project Design and, as informed by project management, also during project implementation, including anonymity and confidentiality protection and strategies to promote project benefits to low income people potentially affected by the project cogeneration plants. These aspects were evaluated by the evaluation team directly in interviews during the field mission, focusing potentially on disadvantaged groups or divergent views and explicitly considered in the Sustainability topic in *Section V. Review Findings*.

# III. The Project

## III.A. Context.

[20] Cogeneration, defined as coproduction of thermal and electrical energy, is an attractive way to manage energy, and in particular to maximize the yield of useful energy per unit primary resource. Furthermore, when biomass (either as a by-product from other processes or planted material) is the primary source of energy employed, as proposed by the Cogen for Africa project, the cogeneration plant becomes a renewable energy system, which, depending on the context, can bring energy security and GHG emission mitigation. Beyond these advantages, in Sub-Saharan Africa, a large share of the population has no access to electricity, deploying cogeneration plants can increase electricity supply, mainly in rural areas, where this situation is most critical.

[21] The primary energy resources potentially available for cogeneration indicated in the initial project document (ProDoc) were impressive. According to the potential for cogeneration from sugarcane in Eastern and Southern Africa presented in Table 1.3 of the ProDoc, based on 2002 figures, in the seven countries initially focused, just considering sugarcane processing units, there was already an installed capacity of 218 MW based on sugarcane bagasse with estimates of an additional 349 MW if more efficient steam cogeneration cycles were adopted (65 bar boilers, 115 kWh per ton of sugarcane processed, assuming 35% bagasse to cane ratio at 50% moisture content). Besides sugarcane agroindustry other industries using biomass from forestry and from by-products could be considered, reinforcing this potential. Thus, the initial project target of 40 MW (thermal + electricity) during project implementation could be considered feasible.

[22] It was widely assumed at the time of project initiation that African countries lacked electrical generating capacity compared to demand. Indeed, this is still assumed as great investment is going into generating capacity with several instances of adjacent countries assuming that they will sell electricity to their neighbours. In making the assumption that electrical generating capacity was limited, Cogen had a lot of company. The world needed to learn that generating capacity is less limiting than thought. It is noted that generating capacity and electricity distribution are entirely different. However, Cogen for Africa only targeted the former.

[23] The rapid penetration of renewables over the period of performance for Cogen for Africa surprised virtually everyone. For example, the Energy Information of the United States underpredicted the capacity of photovoltaics by 100-fold.

[24] Cogen for Africa may well have underestimated the importance of a constant steam demand, and the impact of poorly-developed infrastructure on steam demand. However, given the success of cogen in Mauritius based on sugar cane as well as the success of Cogen for Asia, together with the presence of substantial sugar industries in Kenya, Malawi, and Uganda, it was reasonable to hypothesize that cogen could be implemented with similar success in other African countries.

## III.B. Objectives and components.

[25] The overall goal of the project as stated in the ProDoc was: **to help transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote widespread implementation of highly efficient cogeneration systems by removing barriers to their application**.

[26] Considering the barriers to be removed, the project addressed actions in four complementary components:

> **Capacity building**: training and preparing project developers, technical services providers and local manufacturers with products related to cogeneration systems.
>
> **Financing**: identifying and assisting financing institutions to support cogeneration projects in favourable conditions for investments.
>
> **Deployment & Benefit Realization**: by preparing Cogeneration Investment Packages, implementing Full Scale Promotion Projects (FSPPs), and providing technical assistance for other potential cogeneration projects.
>
> **Policy and Institutional Arrangements**: supporting government to promote legal and regulatory improvements towards a better and fair environment for cogeneration projects.

[27] A summary of the Project's outputs and outcomes is presented subsequently in Section IV (Table 7).

### III.C. Stakeholders.

[28] Correct stakeholders' identification and participation are essential in this kind of project. As indicated in the ProDoc, stakeholders were identified during the project preparation, with their involvement promoted during the project design and implementation, by meetings conducted in different countries, to assess their needs and ascertain their commitment to the objectives of the project. According to the evaluation team, stakeholders identified as highly interested in the project development are listed and briefly commented on in Table 2.

**Table 2.** Stakeholder groups: influence, roles and responsibilities in the Project

| **Stakeholder category** | **Influence on the Project** | **Roles & responsibilities in Project** | **Examples and comments** (*visited or contacted) |
|---|---|---|---|
| **End-users of cogeneration systems (actual and potential)** | Potential owners and hosts of cogeneration projects. | Development and implementation of Full Scale Promotion Projects (FSPPs); equity participation | **James Finlay Kenya Ltd***: In 2009 this company installed a biomass-based cogeneration plant, to generate electrical energy complementary to the national grid supply.<br>**Kakira Cogeneration Plant***, Uganda: adjacent to Kakira Sugar Works, with a 52 MW power plant fuelled with sugarcane bagasse |

| **Stakeholder category** | **Influence on the Project** | **Roles & responsibilities in Project** | **Examples and comments** (*visited or contacted) |
|---|---|---|---|
| **Project developers** | Expertise and funds in developing and deploying cogeneration projects; provision of equity. | Development and implementation of Full Scale Promotion Projects (FSPPS); equity participation. | Although not previously identified, during the evaluation field mission some professionals trained by courses promoted by the Project introduced themselves as potential project developers. |
| **Financing institutions** | Source of funds (equity, loans, etc.) to the projects. | Funding of projects | **AfDB African Development Bank**: Power generation and supply is considered among their priority areas. |
| **Local equipment manufacturers and suppliers** | Source of cogen systems. | Supply and some cases also financing cogen equipment. | During field mission no contacts were made with these stakeholders, but according to Project Developers there is enough availability of equipment manufacturers and suppliers. |
| **Local consultants and service providers** | Expertise in cogen systems | Technical support to design, operation and maintenance. | During the evaluation field mission some professionals trained by courses promoted by the Project introduced themselves as consultants and service providers. Project developers confirmed that there are local professionals and service companies in cogen. In this category, universities and technical colleges were identified as potentially able to develop and implement specialized training programs, sourcing skilled manpower, as well as develop technical assessment and studies. |

| **Stakeholder category** | **Influence on the Project** | **Roles & responsibilities in Project** | **Examples and comments** (*visited or contacted) |
|---|---|---|---|
| Policy makers/ government agencies | Policy and regulatory support; enabling positive environment to deploy cogeneration projects | PSC member; policy formulation & enhancements; Approval of regulations (PPA, FiT); incentives; subsidies; licensing & permits | ***Kenya***<br>**Ministry of Energy/State Department of Energy** *: Responsible for energy policy and regulation, explicitly in charge of Promotion of Renewable Energy and Rural Electrification Programme. The ministry structure includes the **Energy Regulatory Commission (ERC)*,** an independent regulatory agency for the energy sector.<br>***Uganda***<br>**Electricity Regulatory Authority (ERA)***: independent regulatory agency under guidance of Ministry of Energy and Mineral Development. Cogeneration with sugarcane bagasse is more developed and recognized in the Ugandan energy statistics and regulatory framework provided by ERA.<br>***Malawi***<br>**Department of Energy Affairs (DoE)***: under the Ministry of Energy and Mines, this Department is responsible for **Malawi Energy Regulatory Authority (MERA)***, responsible for the regulation of all aspects of the energy sector. |
| Power utilities | Grid connection; purchase of power from cogeneration plants | Purchase of power from cogeneration plants; dialogue through policy papers, workshops, etc. | |
| Communities surrounding the cogen plant, including women & marginal groups. | Limited influence in the project, but directly influenced by cogen plants impacts, such as jobs generation and electricity availability. | Limited responsibility, although the potential benefits to these communities reinforce project interest. | In both cogen plants* visited by the evaluation team it was possible to verify in loco the positive effect of increasing electricity availability in rural areas near those agroindustries, improving life conditions for workers and their families. Workers were interviewed and confirmed this perception. |

[29] In Table 3, below, project stakeholders were classified according to their influence/power on the project outcomes and their interest in project development, which depends on their awareness of cogeneration impacts and benefits. In this regard there is a group of “key stakeholders”, which

presents high influence/power and deserves attention to assure their interest and commitment to the Project. On the other hand, communities surrounding the cogeneration installation, although presenting a comparatively lower influence on the project development deserve also attention, particularly through consultation and public communication activities, considering the potential benefits that they can achieve and support they can offer to the Project. Arrows in this table indicate the expected action of project increasing awareness and interest in cogeneration.

**Table 3.** Stakeholder's influence and interest over the project outcomes (arrows indicate the expected increase of interest after better awareness of project impacts).

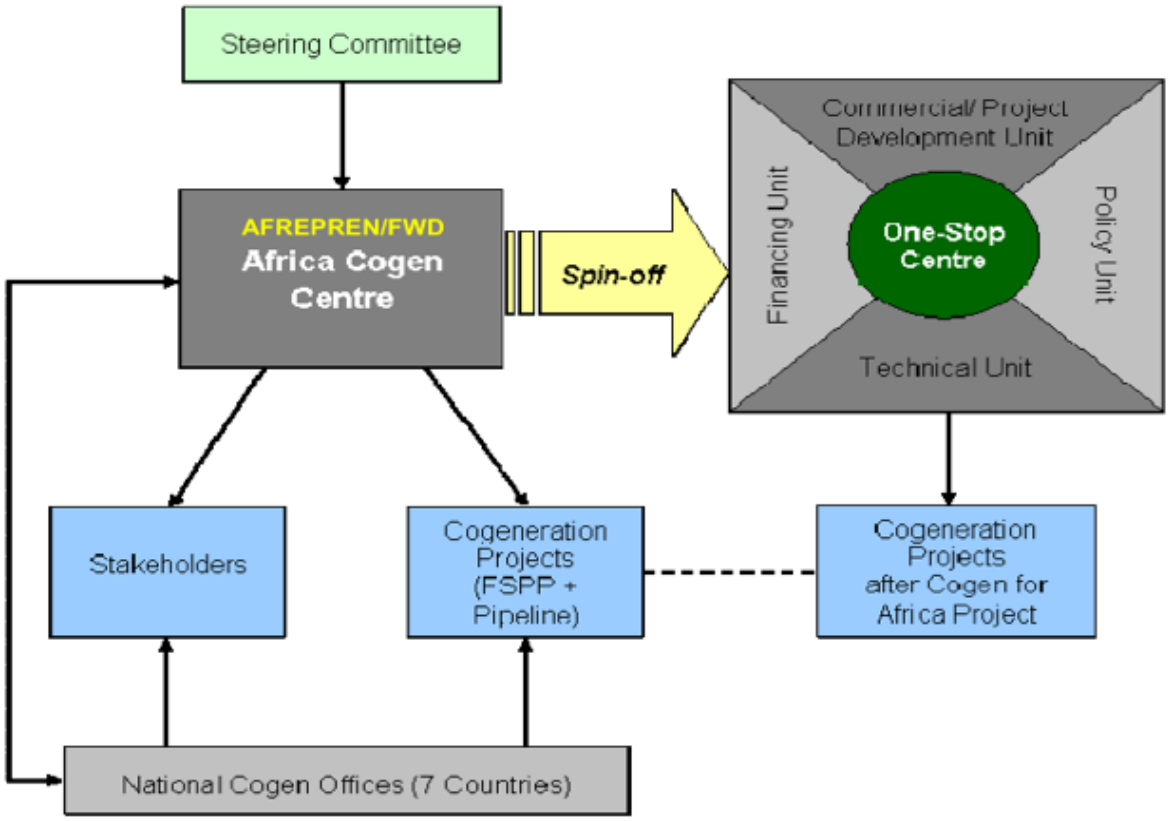
| | | **Interest in the Project** | |
|---|---|---|---|
| | | **low** | **high** |
| **Influence/power over the Project** | **high** | - **Financing institutions**<br>- **Power utilities**<br>- **Policy makers/government agencies** | - **End-users of cogen systems**<br>- **Project developers**<br>- **Financing institutions**<br>- **Fuel suppliers**<br>- **Equipment suppliers** |
| | **low** | - **Communities surrounding the cogeneration installation, including women & marginal groups** | - **Local manufacturers**<br>- **Local consultants and service providers** |

## III.D. Project implementation structure and partners.

[30] UNEP and the African Development Bank (AfDB) were the initial Global Environment Facility (GEF) implementing agencies responsible for overall project supervision, with the UNEP Fund assuming sole responsibility midway through the project. AFREPREN/FWD (Energy, Environment and Development Network for Africa) was the Executing Agency.

[31] As presented in Figure 1, the envisioned project structure featured an AFREPREN/FWD Regional Cogen Centre, which managed the day-to-day operations of the Project, reporting to the Project Steering Committee. In addition, the National Cogen Offices were established in direct contact with the stakeholders in their respective countries and reported to the Regional Cogen Centre. The Regional Cogen Centre monitored and supervised the activities of the National Cogen Offices and supported them through training and technical assistance. It was originally anticipated that projects supported by Cogen for Africa would be potential investments for the AfDB. However, the developers of the main projects with which Cogen for Africa was involved, James Finlay and Kakira, had access to financial resources other than AfDB which they ultimately used. As discussed in more detail in Section V.B., the project developers anticipated in the proposal were smaller and less broadly capable than those that ended up spearheading implemented projects. This is believed to be a contributing factor to financing not being obtained from the AfDB.

**Figure 1.** Management and implementation structures as envisioned in the ProDoc.




## III.E. Changes in design during implementation.

[32] As noted in Section 1, the Project Steering Committee decided during the first 6 months of the project to reduce the focus of activities targeting cogen plant deployment, and hence financing, from seven countries (Ethiopia, Kenya, Malawi, Sudan, Swaziland, Tanzania, Uganda) to three (Kenya, Uganda, and Malawi). Activities targeting capacity-building and policy were advanced in all seven countries. However, the least effort was put into Sudan because of political instabilities and Swaziland because of the availability of inexpensive electricity from South African utilities. It may be noted that Cogen for Africa project objectives were stated in terms of heat and electricity capacity rather than the number of projects, and the budget was structured in terms of activities rather than projects per se. Neither the budget nor co-financing commitments were changed at the time that the geographical scope of the project was reduced.

[33] The original project document allowed for up to six projects. AFREPREN/FWD's final report indicates that projects in two locations were in fact implemented in Table 4:

**Table 4.** Summary of implemented cogeneration projects assisted by Cogen for Africa.

| Location | Cogeneration Capacity (MW) | | Investment (US$ millions) | Date Commissioned |
|---|---|---|---|---|
| | Electricity | Thermal | | |
| James Finlay Tea LTD, Kenya | 0.8 | 11 | 2.8 | 2009 |

| | | | | |
|---|---|---|---|---|
| Kakira Sugar LTD, Uganda | 3 | 6 | 2 | 2011 |
| Kakira Sugar LTD, Uganda | 30 | 60 | 75 | 2013 |

[34] At the time of the evaluation team's site visit in February, 2019, the two projects at the Kakira mill were operating but the James Finlay project was not. The James Finlay Technical Director attributed the low capacity factor for the cogeneration installation to internal management issues and expressed optimism that the plant would be returned to good operation.

[35] Kakira and James Finlay had considerable internal resources with respect to arranging financing, surveying resources, and identifying technologies. Illovo of Malawi, a similarly capable company, was also engaged by Cogen for Africa, although a project had not been launched by the time of the evaluation team's site visit in February, 2019. In light of these internal resources, little or no effort by Cogen for Africa was devoted to securing funding for the Kakira and James Finlay projects that were the focus during the early years. Cogen for Africa also expended considerable effort on developing projects involving smaller, less broadly capable companies, especially during the later years of the project during which such companies were the primary focus. However, projects were only implemented at Kakira and James Finlay due to limiting factors other than financing, as considered subsequently.

### III.F. Project financing

[36] The financing concept of the Cogen for Africa project to foster cogeneration in Africa was essentially to use GEF funds to create an appropriate investment environment for private projects, by promoting adequate regulatory and legal framework, developing basic studies, human resources preparation and providing qualified information to foster cogeneration project deployment. For financing cogeneration projects three different financing models were detailed in the ProDoc:

a) Self-financing (the company uses its own internal funds to finance the investment),
b) On-balance sheet (based on corporate financing, such as loans), and
c) Project finance (providers of capital rely primarily on the cash flow of the project).

[37] As presented in the project budget summary included in the ProDoc approved in 2007, the total cost of the project was US$ 66,834,515, in which US$ 5,248,165 was to be provided from GEF financing, to be applied in the activities and outcomes. In June 2018 AFREPREN/FWD submitted to UNEP the Annual Report and Financial Statements (up to December 2017, including the project extensions/amendments), informing that:

> "The entire cost of the project is estimated at US$ 66,834,515, of which United Nations Environment Programme has committed US$ 5,248,165 to the project. The balance is co-financed by other donor institutions, government of beneficiary countries, private sectors and Executing partner, both in cash and kind".

[38] Table 5 presents the estimated/planned and actual expenditures by outcome and activities using GEF funds, as informed by AFREPREN/FWD, indicating an overall expenditure ratio (Actual/Planned) of 0.99, ranging from 0.84 in Monitoring and Evaluation to 1.02 in Project Management.

**Table 5.** Budget expenditures estimated/planned and actual by outcome and activities, considering GEF funds.

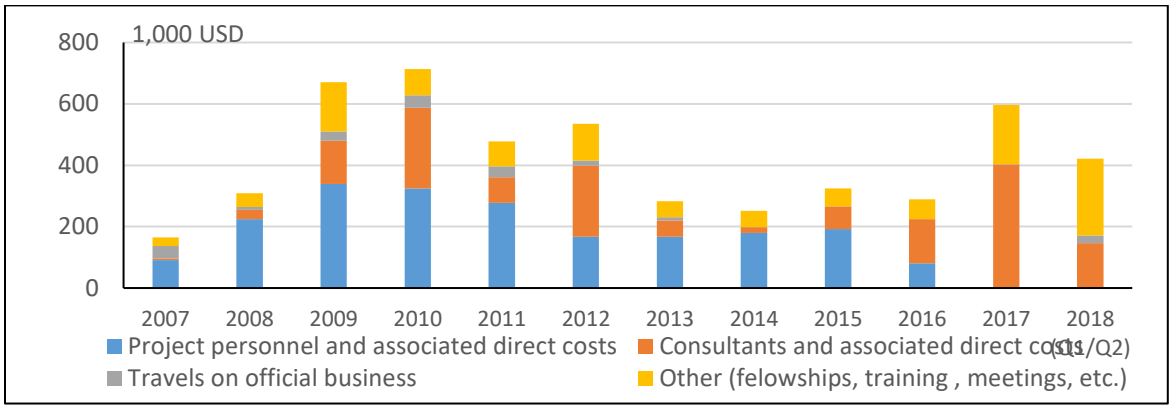
| **Budget items** | **GEF financing (US$)** | |
|---|---|---|
| | **Estimated/planned** | **Actual** |
| **Outcome 1:** Capacity of project developers, technical service providers and local manufacturers of modern and efficient cogeneration systems developed and enhanced | 838,498 | 832,012 |
| **Outcome 2:** Financing for cogeneration projects made available and accessed at terms and conditions that are favourable for investments. | 998,360 | 978,832 |
| **Outcome 3:** Commercial, technical, economic and environmental benefits of modern and efficient cogeneration systems demonstrated in a number of new cogeneration plants and confidence on the certainty of the cogeneration market enhanced. | 1,668,409 | 1,663,268 |
| **Outcome 4:** More favourable policies and institutional arrangements that support cogeneration promoted | 1,149, 106 | 1,126,218 |
| Project Management (including establishment of AFREPREN/FWD Regional Cogen Centre and coordination of National Cogen Offices | 465,976 | 477,529 |
| Monitoring and Evaluation | 127,816 | 107,793 |
| **Total (from GEF financing)** | **5,248,165** | **5,185,652** |

[39] According to the project final report (September 2018), feasibility studies financed by Cogen for Africa leveraged a total investment of US$ 79.8 million in upgrading and installing new cogeneration plants, as informed by AFREPREN/FWD. The most relevant two plants, Kakira Sugar Mill in Uganda and James Finlay Tea Company in Kenya, were visited during the field mission by the evaluation team, verifying in loco installations, power equipment (boilers, steam turbines, turbo-generators, ancillary equipment), systems and facilities worth of this investment.

[40] Although it is not clear if all this investment, significantly high compared with the direct project expenditures, could be fully attributable to Cogen for Africa project, because those companies could implement them by themselves, the interviews and information gathered in the field mission were sufficiently convincing that the feasibility studies and the institutional improvement promoted by the project were relevant drivers, reducing risk perception and reinforcing the attractiveness of cogen plants for investors, including for investment banks. These leveraged funds were spent directly by each respective company.

[41] Based on annual financial reports, summarizing quarterly expenditures from 2007 to 2018 (Q1 and Q2), it was identified expenditures summing up to US$ 5,036,000, 41% on project personnel and 32% on consultants, as presented in Figure 2. These expenditures represent about 6.3% of investment comment in the previous paragraph.

**Figure 2**. Project Expenditures of UNEP/GEF funds, based on annual financial reports




[42] In Table 6 is presented a summary of co-financing sources and amount received by Cogen for Africa project, as prepared by AFREPREN/FWD by request of the evaluation team.

**Table 6.** Co-financing received by Cogen for Africa.

| **Co financing** (Type/Source) | **Government** (US$1,000) | | **Other*** (US$1,000) | | **Total** (US$1,000) | | **Total Disbursed** (US$1,000) |
|---|---|---|---|---|---|---|---|
| | Planned | Actual | Planned | Actual | Planned | Actual | |
| In-kind support | 706 | 0.13 | 337 | 795 | 1,043 | 795 | 795 |
| Other* | | 1.12 | 60,544 | 80,286 | 60,544 | 80,288 | 80,288 |
| Totals | 706 | 1.25 | 60,881 | 81,081 | 61,586 | 81,083 | 81,083 |

* This refers to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries. Includes leveraged financing which refers to funds raised by collaborating agro-industries for planned cogen investments and feasibility studies that the Cogen Project co-financed. The leveraged funds were spent directly by the respective companies.

## IV. Reconstructed Theory of Change

[43] Since the time Cogen for Africa was proposed and approved, the Theory of Change (TOC) framework has become a foundational component of UNEP project planning and assessment. A "Reconstructed Theory of Change" was thus developed by the evaluation consultants in conjunction with members of the UNEP Evaluation Office and AFREPREN/FWD, based on their guiding documents and examples of other TOCs. The TOC was discussed with the project team and others during the February, 2019 site visit. The project team reviewed and approved the TOC during a meeting at AFREPREN/FWD during the site visit.

[44] A key function of the reconstructed TOC is to more fully develop the causal network linking project outputs to broader outcomes and impacts – and in so doing to provide a framework for understanding the factors that determined what the project was able to achieve. The reconstructed TOC is based on a conceptual framework in which project activities give rise to outputs, which in turn give rise to outcomes associated with stakeholders closest to the project observable during the project and soon thereafter, intermediate states associated with stakeholders at intermediate distance from the project observable over the medium term (e.g. 5 to 10 years), and finally impacts associated with a broad range of stakeholders and observable over the long term. Each successive

layer of broadened agency is impacted by drivers (factors largely external to the project over which the project has some influence but not complete control), and assumptions (factors largely external to the project over which the project has little or no influence). Outputs, outcomes, intermediate states and impacts are taken to include both those that are targeted by the project, as well as those not targeted or anticipated by the project.

[45] The reconstructed TOC developed by the evaluation team includes all of the project outputs presented in the ProDoc, with no wording changes. Two outputs have also been added, to better reflect what the project did in the area of training and stakeholder engagement. Assuming that the domain of capacity-building is people and institutions, some of the outputs (e.g. review of fuel resources and assessment of their potential for cogeneration) seem to be more appropriately grouped under Technology Deployment and Benefit Realization. Outcomes are organized as immediate (mostly involving stakeholder engagement), and direct (either key or medium-term). Several of the outcomes presented in the ProDoc were targeted toward ultimate project impacts rather than early steps in a causal web and have been revised accordingly. Changes in outputs and outcomes were reviewed and approved by the project team and are detailed in Table 7.

**Table 7.** Outputs and Outcomes as Presented in the ProDoc and as Reconstructed

| | As stated in the ProDoc | Reconstructed | Rationale |
|---|---|---|---|
| **Component 1. Capacity-Building** | | | |
| Outputs (new in blue, moved in green) | 1.1. Review of fuel resources and assessments of their potential for cogeneration (moved to 3.1 below)<br>1.2. Relevant technologies for cogeneration and their suppliers identified and their information inputted in the Database (moved to 3.2 below)<br>1.3. A framework for partnerships between foreign equipment suppliers and local manufacturers developed and established (moved to 3.3 below)<br>1.4. Local technical personnel trained and assisted on technical and project development aspects of cogeneration<br>1.5. Visits organized for relevant stakeholders to successfully operated cogeneration references | 1.1. Training activities (e.g. courses) and products (e.g. instructional materials, project development guide) developed, disseminated and evaluated.<br>1.2. One-stop Information and Service Centre established and service provided to stakeholders (output 4.4 in the ProDoc).<br>1.3. Meet with project developers and policy makers to inform them about cogeneration technology, best practices, and policies/institutional arrangements (FITs, and PPAs).<br>1.4. Local technical personnel trained and assisted on technical and project development aspects of cogeneration<br>1.5. Visits organized for relevant stakeholders to successfully operated cogeneration facilities. | The capacity-building outputs have been revised to focus on the capability of people and institutions.<br>Original outputs 1.1, 1.2, and 1.3 listed in the ProDoc and TOR under Capacity-Building have been moved to Deployment & Benefit Realization<br>Reconstructed output 1.1 is intended to focus on training activities and products, independent of their adoption - consistent with making outputs "upstream" and under the control of the project in the chain of causation<br>1.2 is relevant to all stakeholders, not only policy makers and is thus included here<br>Based on interviews, reconstructed output 1.3 appears to be a key aspect of capacity building as interpreted by the evaluation team |
| Outcome | Capacity of project developers, technical service providers and local manufacturers of modern and efficient cogeneration systems developed and enhanced. | *Immediate outcome:* Stakeholders engaged pursuant to increasing understanding of cogeneration technology, best practices, and policies.<br>*Direct*[3] *outcome:* Understanding and capability of stakeholders enhanced in multiple sectors and at multiple levels. | Policy makers included in capacity building, best practices and policies added based on interviews. |
| **Component 2. Finance** | | | |

[3] *Since this evaluation report was drafted UNEP has revised its terminology with respect to different Outcomes. 'Direct' Outcomes as used here are the same as the more recently termed 'Project' Outcomes. Both terms refer to those outcomes that were expected to be achieved by the end of the project's life and within the secured funding envelope.*

| | As stated in the ProDoc | Reconstructed | Rationale |
|---|---|---|---|
| Outputs | 2.1. A portfolio of relevant financing sources identified and creation/opening up of innovative financing schemes applicable to cogeneration facilitated<br>2.2. Project developers trained and assisted in financial structuring, financial packaging and accessing of funds<br>2.3. Financing institutions trained and assisted in evaluation and assessment of cogeneration technologies | No change | |
| Outcomes | Outcome: Financing for cogeneration projects made available and accessed at terms and conditions that are favourable for investments | *Immediate outcome:* Financing sources enter into detailed project evaluation.<br><br>*Direct outcome:* FSPP financing secured | A more step-wise approach is taken in the reconstructed TOC |
| **Component 3. Technology deployment and benefit realization** | | | |
| Outputs (moved in green) | 3.1 Project Development Guide completed<br>3.2 Cogeneration Investment Packages developed and promoted<br>3.3 Full Scale Promotion Projects (FSPPs) implemented and promoted for replication<br>3.4 Technical assistance provided to pipeline of projects (i.e. non-FSPP projects) | 3.1. Review of fuel resources and assessments of their potential for cogeneration (1.1. in the ProDoc).<br><br>3.2. Relevant technologies for cogeneration and their suppliers identified and their information inputted in the Database (1.2 in the ProDoc).<br><br>3.3. A framework for partnerships between foreign equipment suppliers and local manufacturers developed and established (1.3 in the ProDoc).<br><br>3.4 Project Development Guide completed<br>3.5 Cogeneration Investment Packages developed and promoted<br>3.6. Full Scale Promotion Projects (FSPPs) implemented and promoted for replication<br>3.7. Technical assistance provided to pipeline of projects (i.e. non-FSPP projects) | Outputs 1.1, 1.2, and 1.3 from the ProDoc have been removed from Component 1 and added here<br><br>Other outputs unchanged |
| Outcomes | *Outcome:* Commercial, technical, economic and environmental benefits of modern and efficient cogeneration systems demonstrated in a number of new cogeneration plants and confidence on the certainty of the cogeneration market enhanced | *Immediate outcome:* Project definition (technology, participants, tariffs, anticipated benefits) culminating in CIPs<br><br>*Direct outcome:* Technically and economically-successful FSPP operation | A more step-wise approach is taken in the reconstructed TOC |
| **Component 4. Policy and Institutional Arrangements** | | | |
| Outputs | 4.1 Policies and regulations in the different participating countries reviewed and analysed<br>4.2 Appropriate regulations, incentives and other measures supporting cogeneration | No change | |

| | As stated in the ProDoc | Reconstructed | Rationale |
|---|---|---|---|
| | formulated, and submitted to the relevant authorities and decision makers<br>4.3 Key decision-makers made aware of policy and institutional options for promoting cogeneration investments and encouraging cogeneration-based rural electrification<br>4.4 One-stop information and service center established and service provided to stakeholders<br>4.5 Promotion strategy and information dissemination program developed and implemented<br>4.6 Standard Power Purchase Agreements (PPAs) with reasonable tariffs and conditions in the participating countries drafted and the stage set for approval | | |
| Outcomes | *Outcomes:* More favourable policies and institutional arrangements that support cogeneration promoted | *Immediate outcome:* Stakeholders engage in policy formulation.<br><br>*Direct outcome:* PPAs and permits granted | A more step-wise approach is taken in the reconstructed TOC |

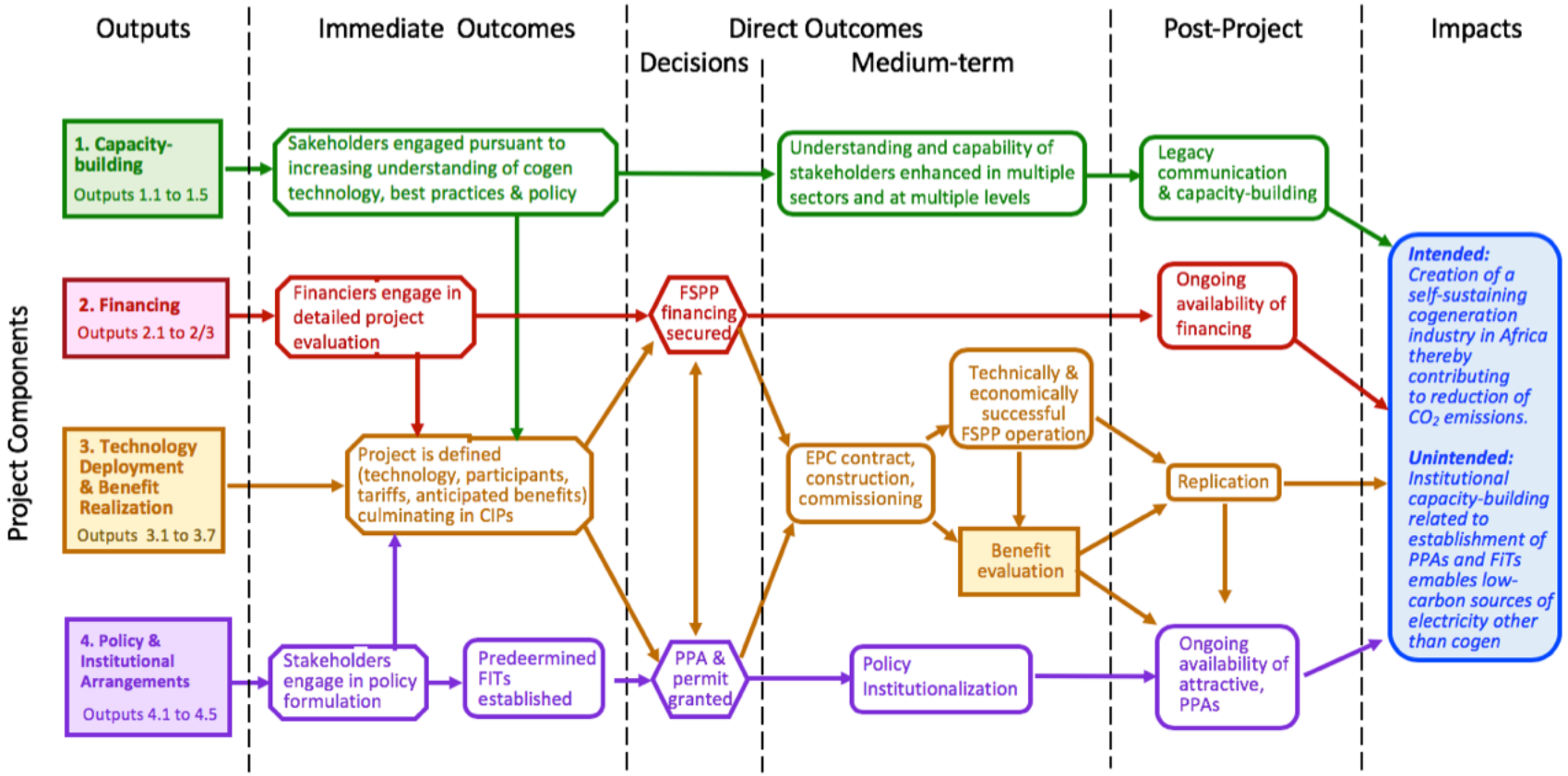
[46] The evaluation team finds that it would have been desirable to include benefit realization in the original project design. Cogeneration projects implemented in Africa will surely be evaluated by multiple parties (e.g. governments, impacted communities, NGOs) based on the extent to which social well-being is enhanced, particularly with respect to economic development and rural electrification. If the project achieved reduction of $CO_2$ emissions but negatively impacted economic development, it is unlikely that it would be considered a success. The existence and importance of impacts beyond GHG emission reduction is well recognized in the Project Document, as indicated by the following excerpts:

> *[47] Even though the environmental objective (i.e. GHG emission reduction) might be clear, the development aspect of cogeneration projects is not negligible. Industries will be better situated to meet their own power needs through captive power waste, while excess power can be sold to the grid giving additional revenue stream to the factories. The benefits derived by the industry could cascade to the farmers who could get higher prices for the sugar cane and to the individuals through more employment opportunities or better employment conditions. Cogen facilities will generally create employment opportunities both directly (in Cogen Plants) and indirectly (both the availability of power and heat may create new industries, new products and new jobs), while avoiding the (improper) discarding of biomass waste. By increasing the profitability of the sugar industry, cogeneration investments could indirectly lead to expanded sugar cane plantations which would generate a large number of jobs. As big percentages of the populace in the sugar-producing countries directly or indirectly rely on the sugar industry, this positive effect could ripple through to millions of individuals. For example, in Kenya, it is estimated that over 6 million people are directly or indirectly dependent on the sugar sector (ProDoc, p 31).*
>
> *[48] In many biomass-producing industries, a cluster of households develops due to the presence of workers in the industry and the secondary economy that emerges as a result of this settlement. The added capacity from cogeneration could be used to electrify the villages and rural community surrounding the industry hosting the cogeneration system. Mumias Sugar factory, for instance has electrified the houses of its workers from the cogeneration system in the factory. The marginal efforts and investments in doing this is not significantly high compared to the social and economic benefits it provides to the community (ProDoc, p. 10).*

[49] Evaluation of benefit realization ensures that the project does not give rise to undesirable social outcomes, and also provides a basis for taking credit for positive social outcomes. This is particularly important for cogeneration, which can arguably offer more diverse and potentially larger social benefits than other sources of renewable electricity.

[50] Given the importance of social outcomes, benefit realization (including GHG emission reduction in addition to social benefits) is represented as a separate item under Direct Outcomes in the reconstructed TOC. A visual representation of the reconstructed TOC is presented in Figure 5.2, overleaf.

**Figure 3**. Reconstructed Theory of Change




CIPs: Cogeneration investment packages
FSPP: Full-scale promotion projects
FiTs: Feed in tariffs
PPA: Power purchase agreement
EPC: Engineering, procurement and construction
Stakeholders: Project developers, financiers, regulatory agencies, power purchasers, technology providers, university students & instructors, AFREPREN employees, affected communities

**Drivers and Assumptions.**

[51] Although the evaluation team considered the possibility that drivers and assumptions would be specific to particular steps in the reconstructed TOC, it was found that a common set of drivers impact most steps. Key drivers and assumptions are presented in Table 8.

**Table 8.** Drivers and assumptions impacting Cogen for Africa.

**Drivers.**

*The extent to which the host facility has steady internal demand for steam.* Cogen appears to benefit greatly from, and arguably need, a host facility with a continuously-operating industrial process that has reliable, round-the-clock heat demand. These are not common in Africa, where industrial development is in general limited and operational stability is often hindered by a variety of factors, including but not limited to, power supply by the grid.

*The economic health of the host facility.* Stable, host facilities with a strong balance sheet are in a much better position to make forward-looking investments in cogeneration than host facilities with a precarious economic position or other extenuating circumstances.

Although host facility features were at one level outside the control of the Cogen for Africa project, they are listed as drivers rather than assumptions because the project had a significant measure of control over the selection of host facilities.

**Assumptions.**

*Electricity demand relative to supply.* Other things being equal, it is easier to implement cogeneration when the demand for electric power exceeds supply.

*Physical infrastructure to accept cogenerated electricity***.** To sell power to the grid, a grid connection is needed. Moreover, the quality of the grid connection impacts the feasibility and appropriate level of technology for cogeneration facilities.

*Development and relative attractiveness of other low-carbon source of electricity.* Although it has some distinctive features, cogeneration is often viewed as competing with other distributed sources of low-carbon electricity. The more attractive these other sources are, the more difficult it will be to deploy cogeneration.

*Political and economic factors***.** Many influential parties have interests in electricity generation projects large and small, and the extent of political support for various options impacts the technologies that are, and are not, deployed.

## V. Evaluation Findings

[52] This section presents the findings and ratings attributed by the evaluation team to the main aspects of Cogen for Africa project in accordance with the UNEP guidance for project evaluation.

Evaluative ratings are summarized, and a composite weighted assessment calculated, at the end of this section.

## V.A. Strategic Relevance.

[53] The Strategic Relevance of Cogen for Africa Project was assessed based on its alignment to UNEP and Global Environment Fund/World Bank[4] priorities and strategies, as expressed in their programmatic documents:

1. UNEP thematic priorities (Medium Term Strategy and Program of Work):

Medium-Term Strategy 2010–2013: environment for development
a) Climate change
f) Resource efficiency – sustainable consumption and production

2. Global Environment Facility policies:

Operational Programs in the GEF Focal Area of Climate Change:
OP 6: Promoting the adoption of Renewable Energy by removing barriers and reducing implementation costs
OP 5: Removal of Barriers to Energy Efficiency and Energy Conservation.
GEF Strategic Priorities:
CC-2: Power sector policy frameworks supportive of renewable energy and energy efficiency
GEF Additional strategic objectives:
SP-2: Increased Access to Local Resources of Financing for Renewable Energy and Energy Efficiency
SP-3: Promoting On-grid Renewables
SP-4: Productive uses of renewable energy

3. Regional/national priorities

[54] The project is in line with local and national concerns pertaining to application of proper environmental management, using properly local renewable energy resources, improving electricity supply and promoting socioeconomic development.

4. Complementarity with other actions

[55] There are similar projects oriented to foster renewable energy and energy efficiency in agroindustry in this region, such as projects implementing Small Hydro Plants in tea agroindustry in this region (GEF project "Greening the Tea Industry"), with good synergy in terms of energy utilization aspects and legal/regulatory provisions.

[4] *The World Bank has a close partnership with the Global Environment Facility and plays three major roles in the GEF: (a) as the Trustee of the GEF and related trust funds; (b) as one of the three original Implementing Agencies of GEF-funded projects, together with UNDP and UNEP; and (c) providing administrative services as the host of the functionally independent GEF Secretariat. Thus, the project's Strategic Relevance was evaluated as regards to GEF/WB strategic priorities.*

[56] The project also displays good awareness of cogeneration projects around the world, particularly based in biomass, which constituted the fuel utilized successfully in the expansion of power generation in Mauritius and 14 industrial cogeneration plants proposed and supported by the EC-ASEAN COGEN Programme in Southeast Asia. These initiatives present some complementarity with Cogen for Africa and were useful references for the project, offering information on technology, management and the regional approach adopted. For instance, the AFREPREN/FWD Regional Cogen Centre was modelled based on the Asean Cogen Centre.

[57] In conclusion, the project is well aligned with these programs and initiatives of UNEP and GEF/World Bank, bringing positive impacts beyond the initial concept, particularly in terms of capacity building and institutional/regulatory framework. Each of the components of strategic relevance - alignment with donor priorities; relevance to regional, sub-regional, and national issues and needs; and complementarity with existing interventions – is rated ***Highly Satisfactory.***

## V.B. Quality of project design.

[58] The project design was reviewed using the UNEP ratings matrix, see Conclusions section. Overall, the evaluation team rates the project design as ***Highly Satisfactory*** with many significant and important strengths. In particular, it presents a strong and well-documented strategic rationale, and exhibits deep knowledge of the status of cogeneration-related projects in the region and the world. Following the section on rationale and the current situation, there is a well-thought out analysis of the factors that limit the expansion of cogeneration.

[59] The project was conceived as ways to alleviate these limitations, which are appropriately categorized in terms of technical barriers, financing barriers, commercial and market barriers, and regulatory/policy/institutional barriers. Outputs, outcomes, and activities are detailed in four areas: capacity building, finance, deployment and benefit realization, and policy/institutional arrangements. Appropriate attention is paid to budget and governance.

[60] Some elements are less developed than others. Examples of less-developed elements include: learning/communication/outreach beyond one-stop information centres, and social safeguards. The TOC framework was not developed at the time the project proposal was submitted and was not a required part of the project design template at that time. However, most of the value of articulating causal pathways, which was not explicitly addressed in the project proposal, is captured in the identification of barriers to deployment, which was the basis for the project rationale in the proposal. The difference between these two conceptual constructs does not appear to be particularly significant in this instance, although articulation of causal pathways may be preferable going forward. In particular, the intended results of the project would not have been substantially different had the project plans been based on causal pathways rather than barriers to deployment.

[61] The proposal recognized that technology for cogeneration systems is well-established, with many suppliers. It also showed good awareness of the network that must be created in order to support the emergence of a cogeneration market - including local services (plant design and projects, specialized repairs and maintenance, performance monitoring, etc), parts, systems and equipment fabrication – and that this network would need to be developed stepwise, in line with market evolution. The proposal anticipated the need to reach meaningful production levels and

access sufficient financial support, as well as to have trained professionals in the diverse elements, and possibly have agreements and technical assistance from partners abroad.

[62] Based on the project design documents it is clear that the project developers anticipated in the proposal were smaller and less broadly capable than those that ended up spearheading implemented projects, and that opportunities for the project to add value changed as a result. Whereas the proposal anticipated the project developers would need extensive help arranging financing, surveying resources, and identifying technologies, these functions were readily available internally for both Kakira and James Finlay. In addition to supporting broadly capable project developers with strong internal capabilities, Cogen for Africa also expended considerable effort on supporting potential projects involving less sophisticated and broadly capable sites and developers. The fact that no projects involving this latter category of developers were in fact launched is consistent with project drivers and assumptions generally being less favourable than anticipated, as considered below.

## V.C. Nature of external context and factors impacting performance.

[63] The project did not in general face notable challenges involving conflict, natural disaster, or political upheaval. Given the evaluation team's understanding that assessment of the external context is to be based on these categories of challenges, the evaluation team finds the external context to be ***Moderately Favourable***.

[64] The project did, however, face "headwinds" due to drivers and assumptions being for the most part less favourable than anticipated, and if this had not been the case would likely have led to greater deployment of cogeneration technology than was in fact achieved. Revisiting the drivers and assumptions presented in Section IV:

**Drivers.**

*[65] The extent to which the host facility has steady internal demand for steam.* The absence of such demand appears to be a key reason for the less-than-anticipated capacity factor for the Finlay cogen project, and made cogen deployment at smaller-scale facilities (e.g. cut flowers) more difficult to justify.

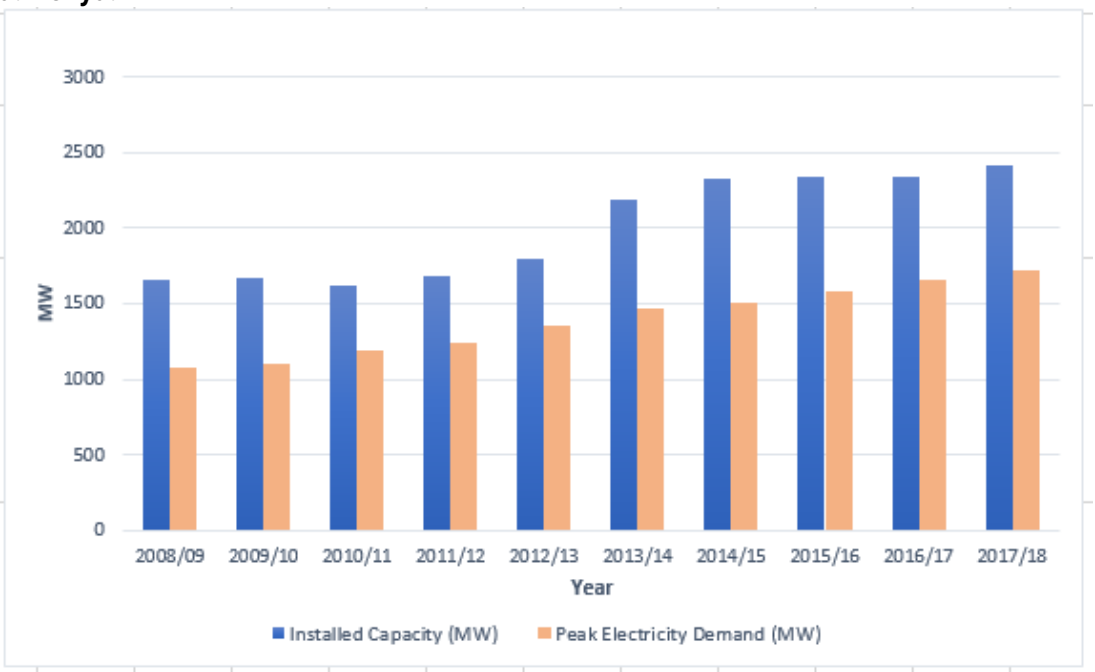
*[66] The economic health of the host facility.* In Kenya, the sugar industry faced difficulties during the project period. By contrast, the sugar industry in Uganda grew by roughly 8-fold during the same period.

**Assumptions.**

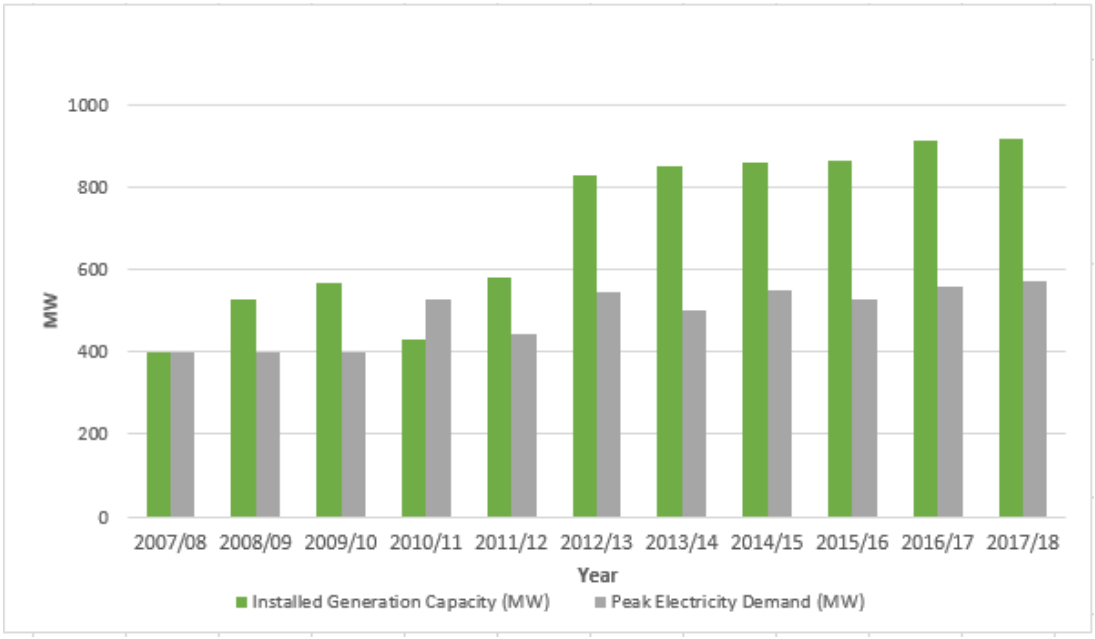
*[67] Electricity demand relative to supply.* An electricity supply deficit was anticipated in the proposal. However, in both Kenya and Uganda, Energy Ministry representatives reported that electricity supply exceeds demand. This is not currently the case in Malawi, but could be soon since the capacity of projects that are under consideration exceeds demand by several fold. The excess capacity of the Kenyan and Ugandan electricity sectors is illustrated in the diagrams below, provided by AFREPREN/FWD at the evaluation team's request. It should be realized that generating capacity, distribution, reliability and price are independent variables – and that the region generally faces challenges with respect to all but the first.

**Figure 4.** Installed electrical generating capacity in relation to peak demand for Kenya (a), and Uganda (b). The data shows that capacity exceeded demand throughout the project performance period for all years in Kenya and for all but two years in Uganda. Data are provided by AFREPREN/FWD upon request by the evaluation team.

**a. Kenya.**




**b. Uganda.**



*[68] Physical infrastructure to accept cogenerated electricity***.** The importance of the quality and capacity of grid connection were clearly evident in Uganda, the only grid-connected project associated with Cogen for Africa. Grid connections with adequate capacity and reliability are not available at many locations in the countries targeted by Cogen for Africa.

*[69] Development and relative attractiveness of other low-carbon source of electricity*. PV, wind, and geothermal electrical generating capacity all expanded by more than cogen in the region during the period of performance. As presented elsewhere in this report, testimony of energy ministers and regulatory agencies indicated that this was substantially assisted by Cogen for Africa.

*[70] Political and economic factors***.** In Malawi, multiple respondents asserted that potential cogeneration investors may be waiting to see how the next election goes. Particularly in Kenya, multiple respondents noted that various interest groups influenced policy formulation, and that personalities in some instances were important. Because cogeneration projects tend to be smaller than some other renewable energy projects, notably hydro, their supporters may have had less political influence. The evaluation team's communication with stakeholders suggests the following dynamic in more than one country: Governmental agencies initially saw cogen as a small part of a solution to a big problem, but after projects leading to large increases in generating capacity were initiated (or in Malawi's case contemplated), the perceived need for cogen was diminished.

## V.D. Effectiveness**.**

### *i. Achievement of outputs.*

[71] The expected outputs in the reconstructed TOC have been reached, as indicated in Table 9.

**Table 9.** Comparison of targeted and actual results.

| **Domain/Metric** | **Targeted Project Result** | **Actual Project Result** |
|---|---|---|
| Project Steering Committee Meetings | 12 | 21 |
| **Capacity-Building** | | |
| Number of Training Participants | 100 | 314 |
| Number of Study Tours | 7 | 47 |
| **Financing** | | |
| Realized/leveraged financing (US$ millions) | 60 | 79.8 |
| Number of financing institutions/schemes for cogeneration in place | 1 | 2 |
| Compilation and promotion of 12 cogeneration investment packages | 12 | 20 |
| Policy & Institutional Arrangements | | |
| | Support provided to policy-makers and relevant agencies in formulating policies and regulations supporting cogeneration | Facilitated establishment of favourable feed-in-tariffs (FiTs) in Kenya and Uganda |
| Number of countries to whom pro-cogen | 3 | 3 (Kenya, Uganda, |

| Domain/Metric | Targeted Project Result | Actual Project Result |
|---|---|---|
| Policies submitted | | Malawi) |
| **Technology Deployment & Benefit Realization** | | |
| Feedstock Assessments | 5 | 10 |
| Installed Cogen Capacity (MW electric & thermal) | 40 | 110.8 |
| Pipeline Investment (MW electric and thermal) | 20 | 93.4 |

*Source:* Draft Final Report, Sept. 2018.

[72] Delivery was verified both by reviewing project documentation, which is in general extensive and thorough, and by stakeholder interviews. Informational and instructional materials – e.g. the Project Development Guide, and on-line course materials – were reviewed and found to be substantial and of high quality.

[73] The evaluation team noted that the 47 study tours actually conducted greatly exceeded the 7 targeted in the original proposal. In response to an inquiry from the evaluation team, AFREPREN/FWD provided the following reasons for this:

- Extension of the project and the desire to broaden the scope beyond the sugar sector;
- Study tours were initially expected to include a substantial fraction of tours outside the study region. In fact, all but two tours were within the study region, incurring lower cost;
- At the start of the project, it was expected that study tours would be separate from training courses/workshops. However, organizing study tours in conjunction with training courses was found to be effective and allowed more tours to be carried out at lower cost;
- Initially it was expected that there would be a few tours with many participants. However, carrying out study tours with small groups was found to be more effective and was affordable given the factors listed above;
- Co-financing for study tours was provided by CABURASEA and AGRICEN.

The evaluation team found these explanations to be satisfactory.

[74] At the evaluation team's request, the project team provided the data in Table 10 relevant to assessing the extent of activities in the four countries excluded from deployment-focused efforts after month 6 of the project.

**Table 10.** Activities in Ethiopia, Tanzania, Sudan, and Swaziland compared to overall project activities.

| Country | Country Studies | CIPs | Power Sector Studies | Scoping Studies | Sector Assessment Studies | Local Manufacture Studies |
|---|---|---|---|---|---|---|
| Ethiopia | 2- Attachment 117B, 304 | 1- Attachment 333 | 1- Attachment 46 | 2- Attachment 192, 193 | 8- Attachments 86,87,90,91,322,355,358 & 533 | 2- Attachments 121A, 121B |
| Tanzania | 1- Attachment 306 | 2- Attachments 124I, 124K | 2- Attachment 46 and 74 | 1 Attachment 197 | 5- Attachments 93,97,99,353 & 485 | 1- Attachment121G |
| Sudan | 1- Attachment 303 | | 1- Attachment 46 | | | 1- Attachment121I |

| | | | | | | |
|---|---|---|---|---|---|---|
| Swaziland | 1- Attachment 305 | | 1- Attachment 46 | | | |
| Total | 5 out of 10 | 3 out of 20 | 5 out of 11 | 3 out of 9 | 13 out of 32 | 4 out of 7 |

[75] **Note on representing cogeneration capacity.** Cogeneration capacity is represented in several places in the proposal and the final report, including project outputs therein, as the sum of electrical and thermal energy capacity in units of MW. This definition is highly non-standard in the field and can lead to conceptual difficulties. For example, it implies that there is cogeneration capacity even if no electricity is generated and it gives no indication of the efficiency of electrical power generation. In terms of both economics and thermodynamics, cogeneration of electricity and heat is usually evaluated in comparison to generation of heat only, and often in terms of added electrical generating capacity in relation to an existing heat demand. Given this, the most common metrics used to represent cogeneration are electrical generating capacity (e.g. MW), the ratio of electrical capacity to thermal capacity ($MW_{electricity}$ / $MW_{heat}$), and the economic return based on the additional electricity revenue weighed against additional investment for electricity generation. Given UNEP's standing as a source of technical expertise this deviation from a measurement norm should be addressed in future work of this nature.

[76] The performance with respect to outputs is rated as ***Satisfactory.***

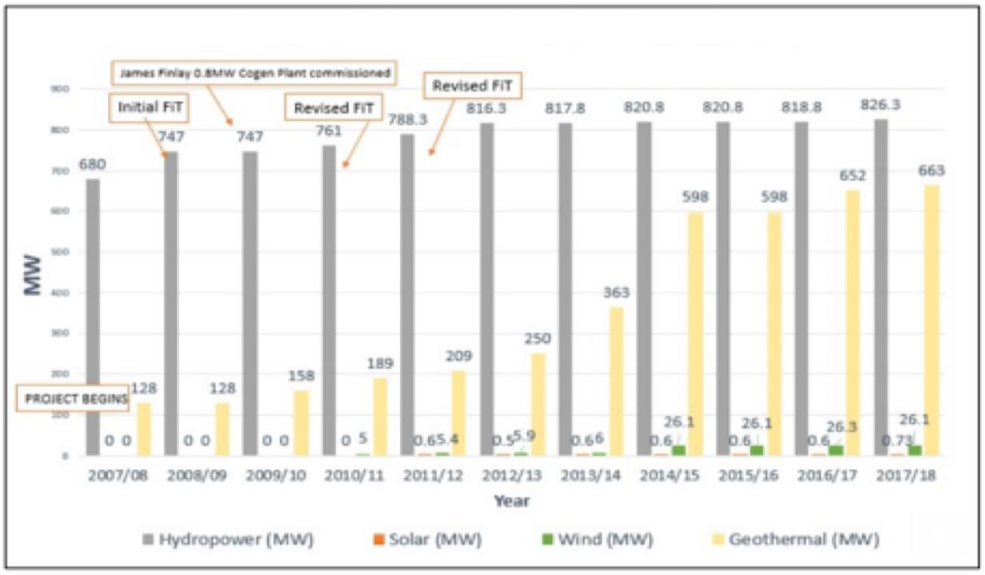
### *ii. Achievement of direct outcomes.*

[77] In terms of deployment and financing, the project ended up being directly associated with one highly successful cogeneration installation, implemented in two phases at the Kakira mill, and one yet-to-be fully successful smaller project at James Finlay. A number of project developers reported that Cogen for Africa provided catalytic funding at the feasibility study stage as well as technical and policy support for these projects, and that these were instrumental (and perhaps essential) for enabling projects to be launched during a window of opportunity. Support by Cogen for Africa was not, however, needed in order to establish financing. Based on interviewee responses, the faster turnaround time was a key factor in determining the choice to secure funding from sources other than the African Development Bank.

[78] At the start of the Cogen for Africa project, it could not have been anticipated with certainty that the project would have access and impact in the policy domain. And yet access and impact clearly occurred with respect to policy and the individuals and organizations responsible for its formulation. This is considered to be a strong indication of stakeholder participation and cooperation as well as country ownership and driven-ness. Contributions in the policy domain were substantial and might be seen as the project's greatest achievements. Particularly in Kenya and Malawi, Energy Ministers reported that Cogen for Africa played a central role in familiarizing regulators and utilities with the concepts of feed-in tariffs and power purchase agreements, which are essential for electricity produced by cogen, and indeed any other independent power producer, to be sold to the grid. For example, a former senior governmental official responsible for energy affairs in one of the three countries targeted for deployment by Cogen for Africa told the evaluation team "I had never heard of feed-in tariffs or power purchase agreements before Cogen for Africa", and further that he prepared the first draft of the feed-in tariff with heavy input from AFREPREN/FWD. In Uganda as well as Kenya and Malawi, it was clear that government regulatory agencies and ministries engaged extensively with the Cogen for Africa team and viewed their input as valuable.

[79] The evaluation team was told by multiple parties in Kenya, Uganda, and Malawi – as well as interviews with Cogen for Africa points of contact in Tanzania, Ethiopia, Swaziland, and Sudan – that Cogen for Africa was instrumental in enabling low-carbon electricity sources other than cogeneration as a result of institutional capacity building related to the establishment of feed-in tariffs and power purchase agreements. Data presented in the revised final project report prepared by AFREPREN/FWD shows strong capacity growth for these low-carbon sources in the years following policy input from Cogen for Africa (Figure 5). A strict cause-and-effect relationship is not possible to establish between actions taken by Cogen for Africa and growth of low-carbon electrical generating capacity. With this acknowledged, we note that in the 5 years following development of revised FiTs, substantially informed by Cogen for Africa, renewable electrical generating capacity grew by 389 MW in Kenya and 262 MW in Uganda. These values may be compared to the < 40 MW installed exported cogeneration capacity from the implemented projects assisted by Cogen for Africa (Table 4).

**a. Kenya.**



**b. Uganda.**

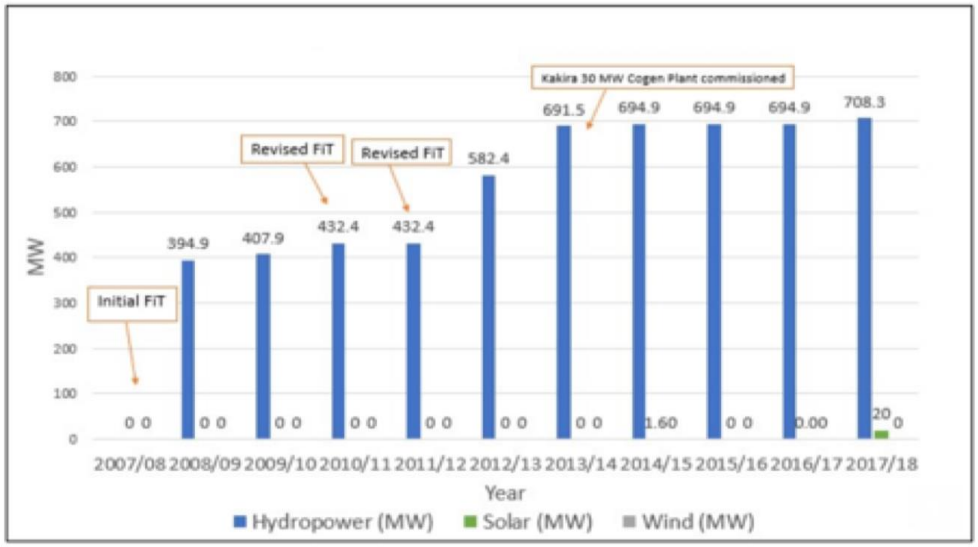



**Figure 5.** Deployment of renewable electricity generation in Kenya (a) and Uganda (b) from 2008 to 2018, with Cogen for Africa activities also noted. The data are consistent with these activities positively impacting deployment**.** It should be realized in this context that even large installations (e.g. hydro) require PPAs in unbundled utility sectors.

[80] Substantial capacity-building was achieved with respect to multiple audiences, including project developers, policy makers and regulators, the AFREPREN/FWD organization, and development of instructional materials and curricula. With respect to the last of these, activities at Mzuzu University in Malawi are particularly notable. At the suggestion of a member of the academic staff, AFREPREN/FWD supported a multi-faceted curriculum development effort including evaluation of the existing curriculum at Mzuzu University and identifying areas for improvement, assessing curriculum in the area of renewable energy generation and cogen in particular at other African Universities, developing a curriculum in cogeneration, on-line course development, and participation in on-line and short course delivery. The university is reported to now have 100 students involved in renewable energy, and that of 21 students doing year four final projects, most are in bioenergy. When the evaluation team met with representatives of the Malawi Energy Regulatory authority, several of the persons present had studied renewable energy at Mzuzu university. Informational and instructional materials – e.g. the Project Development Guide, and on-line course materials – were reviewed and found to be substantial and of high quality. The quality of these materials was, however, found by the review team to be higher than the process for accessing them. Physical "One Stop Shopping" facilities and information banks were anticipated in the proposal but not implemented to a significant extent. While this might be justified in light of the ready access of information from the internet, this rationale highlights the importance of the project's digital communication, which both the terminal review team and the mid-term review team found to be less strong than most other aspects.

[81] As discussed in Section IV, benefit realization was included in the title of one of the four project components in the original ProDoc, and is included in the reconstructed TOC. Benefit evaluation did not appear to have been an integral part of the project – e.g. was addressed to a very limited extent in the draft final report received by the evaluation team. We see this omission as a missed opportunity in light of the broader benefits offered by cogen as compared to other low-carbon energy sources, e.g. with respect to critically needed employment and economic development, and

that highlighting this might have strengthened the case for policy support. Had these benefits been highlighted, and a framework for valuing them articulated, a stronger case for cogeneration might have been made. Substantive commentary on benefits was, however, added to the revised report received in May, 2019, in part in response to input from the evaluation team.

[82] Achievement of outputs and outcomes is summarized in Table 11.

**Table 11.** Output and outcome achievement summary.

| Project Results | Achieved? | Comment |
|---|---|---|
| **CAPACITY BUILDING** | | |
| ***Outputs*** | | |
| 1.1. Training activities | Yes | Training materials are of high quality. |
| 1.2. One-stop information centre established | Yes | Information is posted on the web, but accessibility is not as strong as it might be. |
| 1.3. Meet with project developers and policy makers | Yes | Effectiveness with policy makers a noted strength. |
| 1.4. Local technical personnel trained and assisted on technical and project development aspects of cogeneration | Yes | Less important than anticipated because of broadly capable project developers. |
| 1.5. Visits organized | Yes | Many more than anticipated. |
| ***Immediate Outcomes*** | | |
| Capacity enhanced | Yes | Achieved with respect at many levels, notably including regulators; many participants in training programs & tours. |
| ***Direct Outcomes*** | | |
| Understanding and capability of stakeholders enhanced in multiple sectors and levels | Yes | |
| | | |
| **FINANCE** | | |
| ***Outputs*** | | |
| 2.1. Portfolio of relevant financing sources | Yes, to the extent needed | These outputs were not needed for the broadly capable companies including Kakira and James Finley. Financing resources, training, and assistance was conveyed to developers of smaller projects in the later years, although these projects did not reach implementation. As the project developed, there was little need for training and assisting financing institutions. |
| 2.2. Project developer trained and assisted | | |
| 2.3. Financing institutions trained and assisted | | |
| ***Immediate Outcomes*** | | |
| Financing available and accessed | Yes | Evidently |
| ***Direct Outcomes*** | | |
| Financing secured | Yes | Evidently |
| | | |
| **DEPLOYMENT & BENEFIT REALIZATION** | | |
| ***Outputs*** | | |
| 3.1. Resource review and assessment | Yes | See Table 6. |
| 3.2. Technologies and suppliers identified | Yes | This was not particularly needed for the implemented projects; more relevant for some projects that were not implemented. |
| 3.3. Partnership framework developed | Yes | |

| Project Results | Achieved? | Comment |
|---|---|---|
| 3.4. Project development guide completed | Yes | This guide has been reviewed. |
| 3.5. Investment packages developed, promoted | Yes | |
| 3.6. Full Scale Promotion Projects (FSPPs) implemented and promoted for replication | Yes | Three projects at two locations were implemented. |
| 3.7. Technical assistance provided to pipeline of projects (i.e. non-FSPP projects) | Yes | Many pipeline projects were engaged beyond those implemented. |
| ***Immediate Outcomes*** | | |
| Commercial, technical, economic and environmental benefits of modern and efficient cogeneration demonstrated; market confidence enhanced | Yes | While market confidence was enhanced, market limitations also became evident. |
| ***Direct Outcomes*** | | |
| PPAs and permits granted | Yes | Evidently |
| Policies institutionalized | Yes | Verified in multiple interviews with regulators. |
| | | |
| **POLICY AND INSTITUTIONAL ARRANGEMENTS** | | |
| ***Outputs*** | | |
| 4.1. Policy review and analysis | Yes | In addition to documentation by the project, further evidence that these outputs were achieved is provided by the policy outcomes |
| 4.2. Regulations and incentives formulated and submitted | Yes | |
| 4.3. Key decision makers made aware of policy and institutional options | Yes | |
| 4.4. One-stop information and service center established | Yes. | |
| 4.5. Promotion strategy & information program developed and implemented | Yes | |
| 4.6. PPAs drafted | Yes | |
| ***Immediate Outcomes*** | | |
| More favourable policies and institutional arrangements that support cogeneration promoted | Yes | Evidently. |
| ***Direct Outcomes*** | | |
| EPC contract, construction, commissioning | Yes | |
| Technically and economically successful operation | Yes | In the case of Kakira |
| Benefit evaluation | Partially | Quantified in terms of GHG saved, to a lesser extent in terms of social benefits |

[83] Overall, we find the achievement of direct outcomes to be ***Satisfactory***, with the greatest strength in the policy domain, and the most limited achievements in the area leading to the establishment of a cogeneration market.

### *iii. Likelihood of impact*

[84] The overall goal of the project was to help to transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote widespread implementation of highly efficient cogeneration systems by removing barriers to their application.

The intended impact of this project is stated in the project design documents as the 'creation of a self-sustaining cogeneration industry in Africa thereby contributing to reduction of $CO_2$ emissions.'

[85] Based on the information gathered during the evaluation there is strong evidence to suggest that the policy activities of the Cogen for Africa project position it well for lasting impact beyond the lifetime of the project and also beyond cogeneration. We find this to generally be true of the capacity-building activities as well. The deployed cogen projects provide exemplary and consultative resources for those considering subsequent projects, although creation of a robust cogeneration market was not achieved during the project. As noted above, the quality and accessibility of materials on the internet are less strong than many other aspects of the project. If these were stronger, the likelihood of realizing benefits going forward would be increased with respect to both capacity-building as we well as deployment.

[86] Based on a) the status of achievement against Direct Outcomes at the end of the project and b) an assessment of the drivers and assumptions relevant to the transition from Direct Outcomes to the intended Impact, the likelihood of impact is rated as *Moderately Likely* with respect to the project's overarching goal of market creation, referred to above, and *Highly Likely* with respect to policy and institutional aspects. The rating for likelihood of impact is therefore ***Likely.***

[87] The overall rating for Effectiveness is ***Satisfactory.***

## V.E. Financial management.

[88] The evaluation of financial management of Cogen for Africa project was based on the quality of communication and reporting of grants application. The analysis of expenses consistency with budget and approval of quarterly financial reports presented by AFREPREN/FWD was the responsibility of the UNEP.

[89] According to UNEP Finance Office, Cogen for Africa project financial reporting was generally well done and timely compared to other similar projects, with good communication between Implementing and Executing Agencies. These reports were supported by adequate documentation and certified by a duly authorized official. Thus, the requirements of completeness and communication can be considered accomplished and the Financial Management rated as ***Highly Satisfactory***.

[90] In *III.F. Project financing* more data and information about Financial Management are presented, including remarks on the Financial Tables indicated by UNEP. An additional and relevant endorsement to quality of financial management of AFREPREN/FWD is the independent auditors (Eshwar Rao Associates, certified public accountants in Kenya) final report, presented in 29 June 2019 to the evaluation team, stating that; "in our opinion, proper records have been kept by the executing organization, GEF funds were covered by the scope of the audit, all project expenditures are supported by vouchers and adequate documentation, expenditures have been incurred in accordance with the project objectives outlined in the Project Document and the Financial Statements, which are in agreement therewith, give a true and fair view of the state of the project's financial status as at 31 July 2018 and of the project performance for the period then ended and comply with project reporting requirements in the project contract". Although the compliance with financial systems was not assessed specifically in this evaluation, so far as the project documents were studied, no gaps were identified in the financial data. A report from AFREPREN/FWD

summarizes in 43 pages all financial operations, the criteria considered and rating adopted for evaluating Financial Management, as suggested by UNEP, are presented in Annex D, Financial Management Evaluation.

### V.F. Efficiency.

[91] Relevant to timeliness and time-saving measures, the project received extensions in 2013, 2015, 2016, and 2017. The reasons underlying these extensions appear to be a combination of factors, including lack of an AfDB representative on the Project Steering Committee for a time, targeting new opportunities (e.g. c), above), and availability of unspent funds. The Cogen for Africa project did not end up adhering to a preconceived timeframe and schedule of deliverables as foreseen in the original proposal. The revised final report included under lessons learnt that the initial 6-year span of the Cogen for Africa project was too short for its successful implementation. At the same time, there is evidence of good cost-effectiveness and increased effectiveness as a result of dynamic management. Moreover, at least some of the causes for the extensions do not appear to reflect negatively on the project. However, as with any 'no-cost' extension to a project, UNEP incurred costs that were not anticipated in the original budget as a result of the project extension, e.g. for oversight and review. The evaluation team regards this as a negative factor in assessing project cost effectiveness. At the same time, we note that UNEP participated in decisions to extend the project, and thus presumably saw value in this and that the benefits outweighed the costs.

[92] Information gathered during this evaluation indicates further that Cogen for Africa performed well in building on pre-existing (and co-existing) institutions – notably including government agencies, project developers, and efforts aimed at advancing cogeneration outside the region. The same is true with respect to synergies with other projects, with prominent examples including AGRICEN (Agroindustries and Clean Energy in Africa), CABURESA (Capacity Building for Renewable Energy in Africa). The project made extensive use of expert consultants located in, and familiar with, countries targeted by the project, and appeared to coordinate with such consultants well. Although counterfactuals are hard to evaluate, the evaluation team expects that efficiency would have been sacrificed had AFREPEN/FWD attempted to draw more on its own employees and less on external consultants. The fact that AFREPREN/FWD and UNEP were both located in Nairobi provided opportunities for communication and coordination and reduced the carbon footprint of the project compared to the situation if AFREPREN/FWD were separated at a larger geographic distance from UNEP.

[93] In addition to cost effectiveness and timeliness, mentioned in UNEP Guidelines, the evaluation team considers dynamic management to deserve consideration in the context of evaluating efficiency. Cogen for Africa shows substantial evidence of dynamic management, notably including:

a) Reducing deployment-focused activities from seven countries to three in the first year of the project;

b) Focusing first on larger, more comprehensively capable project developers than envisioned in the original proposal, - e.g. for whom assistance in securing financing was not required (see Section III.E);

c) Subsequently shifting attention to smaller, less comprehensively capable project developers.

[94] Based on an assessment of the operating context at the time of project implementation and an assessment of the results framework, the evaluation team assesses the rationale underlying each of these changes as defensible. The evaluation also notes that these changes were approved in Project Steering Committee meeting minutes. In particular, a) and b) likely increased the extent of success achieved compared to what would have happened without these changes – particularly in light of the environment for cogen deployment proving more challenging than anticipated in several significant ways (Section V.C.). Having achieved some degree of success with larger project developers, it was logical to see if this success could be replicated with smaller developers, although efforts to launch a project with such developers were ultimately not successful.

[95] Overall, we find the efficiency of the project to be ***Moderately Satisfactory.***

## V.G. Monitoring and reporting

[96] In line with UNEP Evaluation Office requirements, this section presents an evaluation of the three complementary categories in the essential process of monitoring and reporting (M&R) project activities, based on documents and information gathered by the evaluation team. From this assessment a rating was given for each category and the aggregated score calculated in the weighted project Ratings Matrix.

[97] The key documents for M&R are the Project Implementation Reviews (PIRs) and bi-annual progress reports as well as project budget. Supporting documents were considered and when need country studies, energy sector/policy studies, feasibility & pre-feasibilities, scoping studies, mission reports, study tour/site visit reports, workshop reports, training reports, videos, training material, etc were also reviewed. These reports are available at: http://www.afrepren.org/cfa/pir/attachments_list2018.html, and the Project Steering Committee minutes are available in the password-protected website - http://www.afrepren.org/cogen/members/psc_cogen.htm

### *i. Monitoring design and budgeting*

[98] M&E activities were explicitly addressed in the ProDoc (Annex F) and the project budget includes a dedicated sub-budget line for Monitoring and Evaluation, as indicated in *III.F. Project financing*. According to AFREPREN/FWD, funds for mid-term and terminal evaluations/reviews were considered adequate by the UNEP Evaluation Office at the time of project approval.

[99] This M&E Plan defined several and sequenced activities of monitoring and evaluation of project development (such as Inception Report, Quarterly Progress Reports, Annual Progress Reports, Mission reports, NCO progress reports, FSPP monitoring, and other), recorded their frequency, aspects to be evaluated, institution/individual in-charge of the M&R activity and approving entity. The expected deliverables were also presented. This Plan covers the relevant stakeholder groups for the project, including gender and minority/disadvantaged groups.

[100] Thus, the evaluation team considered the Monitoring design and budgeting of Cogen for Africa project ***Highly Satisfactory***.

### *ii. Monitoring of project implementation*

[101] As a general appraisal, the Cogen for Africa monitoring during implementation can be considered well done and following the planned activities and procedures. During the project implementation, outputs in form of studies, technical progress reports (bi-annual and PIR), mission reports, videos, workshop reports, training reports, study tours/site visits, meeting reports were produced and are available on project website and the Project Steering Committee minutes & other key documents are available in the password-protected website - http://www.afrepren.org/cogen/members/psc_cogen.htm. Data on project beneficiaries collected by gender are also produced.

[102] A mid-term review was carried out in 2011, and the findings were highly positive. The project could have been more responsive to some of the recommendations of the mid-term review team for example with respect to social issues and web presentation. As addressed by the mid-term report:

[103] "*With regards to social issues, the MTR recommends that Cogen for Africa project should place more emphasis on two issues namely; i) possibilities of cogeneration plants to supply electricity to households in the vicinity of the plant, especially the low income workers and ii) the need for adequate labour legislation to protect rural farmers from the hazards of for instance, harvesting green sugarcane*".

[104] "*The project site (one stop information centre) in internet could be improved, by better organization, by updating, deleting and archiving files as appropriate. Finally, special attention should be given to the fact that the Cogen Centre (AFREPREN/FWD) should continue to be feasible after the end of the project life and special funding arrangements should be made to allow it to evolve into a permanent centre for information and dissemination of all aspects of this technology*".

[105] Despite the quality and quantity of information provided about the project during its implementation and considering particularly the GEF strategies oriented to climate change, there is an observed lack of systematic follow-up of project impacts in terms of GHG emission mitigation, to be compared with the baseline. Even considering the changes introduced in the project scope and targets, it would have been valuable to present the direct contribution achieved by the cogen plants effectively deployed. Thus, although a large and systematic set of information was provided by the monitoring of project, the evaluation team rated the Monitoring of project implementation as ***Moderately Satisfactory***.

### *iii. Project reporting*

[106] Project reporting was exemplary in some respects but not others. Cogen for Africa project documentation is exhaustive, including reports, articles and papers in journals describing the Project's activities and results, presentations in conferences and a very large library of documents. As a result, it is possible to reconstruct project activities and products in detail. Over 1200 attachments are included with the final report. While this provides detailed documentation, the evaluation team also at times found it difficult to extract understanding from this extensive catalogue. We note also that reporting on avoided GHG emissions, a key objective of the project, was sparse, as was reporting on social impacts (although this was not an original objective of the project – see Section IV). Highlighting of key points – e.g. lessons learned, social impacts, and

impacts on sectors outside of cogen – was considerably improved in the revised final report. In this regard, the evaluation team rated the project reporting as ***Satisfactory***.

[107] The evaluation team would like to record the unanticipated M&R benefits that accrued from the constructive participation by AFREPREN/FWD members in the evaluation process and their general responsiveness to requests for information. Through the process of answering questions and reviewing information that had been compiled for the final report the AFREPREN/FWD team was able to make positive revisions to their Project Final Report. Discussions relating to the recommendations being formulated for this evaluation were reflected in the Project Final Report, increasing its value for determining future actions. The dynamic nature of the interaction between the evaluation team and the Executing Agency brought, therefore, unexpected benefits in terms of project reporting and lessons development.

[108] Taking aspects into consideration, the overall rating for Monitoring and Reporting is ***Satisfactory.***

### V.H. Sustainability (socio-political, financial, institutional).

[109] **Socio-political.** The project is aligned with priorities and initiatives aimed at enhancing sustainability. Economic development, poverty alleviation, and enhancing energy access continue to be urgent priorities in the countries targeted by this study. As well, the attention governments are giving to reduced GHG emissions has increased, both globally and in East Africa, culminating with the voluntary commitments associated with the Paris agreement. In these contexts, advancing cogeneration from biomass resources is clearly positive, and the unintended advancement of other renewables should not be overlooked. Although only indirectly related to the Cogeneration for Africa project, the outgrower program at Kakira is seen by the evaluation team as a shining example of bioenergy giving rise to economic development benefits to the local population. The sustainability of this sub-category is rated as ***Likely***.

[110] **Financial.** The Kakira project demonstrates the financial viability of cogeneration, as well as overcoming implementation obstacles within the regional context. The sustainability of this sub-category is rated as ***Moderately Likely***.

[111] **Institutional.** It was clear from our interviews that understanding of feed-in-tariffs and PPAs on the part of regulators is permanently enhanced. As well, both Kakira and James Finlay indicated that they exchange information freely with other commercial players and are glad to be seen as a resource for those considering future deployment. The educational programs and resources at Mzuzu University have significant potential to offer growing value beyond the timeframe of the project. Realizing this potential will, however, depend on the extent to which the foundation built during the cogeneration for Africa project is maintained and enhanced, as addressed in Sections V.D.iii and VI. The sustainability of this sub-category is rated as ***Highly Likely***.

[112] **Environmental.** Advancement of biomass energy, and in particular cogeneration, is seen as positive in terms of GHG emission reduction, as is establishment of FiTs and PPAs and the opportunities this engendered for low carbon electricity sources other than cogen. More specifically, AFREPREN/FWD estimates avoided $CO_2$ emissions from the Kakira project between 2012 and 2018 at nearly a million tonnes.

[113] Sustainability is rated as moderately likely with respect to market establishment and highly likely with respect to institutional aspects and policy. On balance, and taking into consideration the

likelihood of large unintended benefits with respect to deployment of renewable electricity from sources other than cogen, the evaluation team rates sustainability as ***Moderately Likely.***

## V.I. Factors Affecting Performance

[114] This section presents a summary of findings against the factors affecting performance recognised by the UNEP Evaluation Office, some of which have been commented on in previous sections of this report.

### *i. Preparation and Readiness (rating: Satisfactory)*

[115] Considering the inception stage of the project, appropriate measures were taken between project approval and first disbursement to prepare the project team and engage stakeholder groups in the project, as reported by AFREPREN/FWD.

### *ii. Quality of Project Implementation and Execution (rating: Satisfactory)*

[116] Considering the AFREPREN/FWD role in the project, evidence suggests that timely and required measures were taken, such as the establishment and regular functioning of the Project Steering Committee, a professional team was constituted and located appropriately, providing speed responses when needed and frequent follow-up of project activities.

### *iii. Stakeholder Participation and Cooperation (rating: Satisfactory)*

[117] As indicated by evidence gathered, the selection and engagement of stakeholders was well conducted, particularly in the governmental context, allowing relevant improvement in the regulatory framework related to cogeneration. It should be noted that the social impacts received less attention in the project and so the communities in the neighborhood of potential or existing cogen plants were almost ignored, yet they could be directly benefited with job opportunities and extension of electricity services provided by the cogen plant surpluses. As far as the evaluation team was able to ascertain, the limited participation of AfDB was not a result of project management.

### *iv. Responsiveness to Human Rights and Gender Equity (rating: Satisfactory)*

[118] These aspects were addressed since the project preparation, as indicated in Prodoc, mentioning that the Steering Committee would “ensure an integrated approach to dealing with the challenges and opportunities that considers the interests of all stakeholders, including cross-cutting concerns/activities that incorporate and support gender and marginal group participation”.

[119] About the effective implementation of actions in this regard, AFREPREN/FWD informed that the project “was directly aligned with priorities and initiatives aimed at enhancing sustainability. Economic development, poverty alleviation, and enhancing energy access continue to be urgent priorities in the countries targeted by this study”. In practical terms, the project informed to promote equality and active participation in relevant occasions such as workshops, training seminars, etc.

[120] The relevance of these aspects is explicitly recognized in some national background documents associated to the implementation of CfA. For instance, the Malawi Renewable Energy Strategy aims to "develop incentives to encourage participation in renewables courses by women and girls as well as low-income groups and youths to try to increase gender balance in the industry and create greater equality in the industry" and encourage "gender balance when selecting candidates and seek ways to try to ensure more women" enroll Higher Education courses. Similar awareness was observed in official renewable energy policy docs from Kenya and Uganda, as well as referring these aspects in the context of progress to achieve UN MDG's.

### *v. Country ownership and Driven-ness (rating: Satisfactory)*

[121] In all three countries visited, the clear and well-informed involvement and interest of government officials with the project, including their endorsement of the projects results, especially on legal/regulatory improvement, was observed. Considering this engagement along with the context and national priorities, the lack of some financial support from ministries and public sector agencies does not imply a lower commitment with the project aims.

### *v.i. Communication and public awareness (rating: Moderately Satisfactory)*

[122] The large and open-access base of information and references created by Cogen for Africa, and the participation of project developers in several technical congresses and publications were effective contributions to diffuse concepts, constraints and benefits of cogeneration in the regional context. Nevertheless, the number of initiatives implemented in this regard can be considered relatively limited.

## V.J. Technology Transfer.

[123] Although not part of UN Environment's evaluation framework, the evaluation team was asked to consider Cogen for Africa in the context of technology transfer. Perspectives are offered below, drawing from the evaluation team's experience with both start-up companies and social development projects.

*[124] Define a deployment staircase, starting with low-hanging fruit*. In general, it is desirable to develop a "staircase" strategy wherein each step has a good probability of being implementable and enables the next. Cleverly conceiving such a staircase is commonly a key factor determining success or failure. In this context, Cogen for Africa's decision to focus first on the most promising countries, and within these on larger, more fully capable deployment project developers, were likely good ones.

*[125] Be nimble – that is, anticipate that the context will likely change, be prepared to respond, and to realize value in unforeseen ways*. Competitive landscapes, policies, and perceived needs and opportunities generally change in ways that cannot be anticipated. While plans are valuable and needed, a delicate balance is needed between coordinated, focused, strategically-guided action on the one hand, and dynamically responding to changing circumstances on the other hand. Illustrative of this, a highly successful Venture Capitalist (Vinod Khosla), once advised one of the evaluators that start-up companies should have names that "don't mean anything" because the initially-anticipated value proposition usually changes. Changing the profile of the project developer targeted by the project not only embodied the "low hanging fruit approach (above), but also was an

appropriate response to the environment for Cogen becoming less favourable than anticipated. On the other hand, the project could well have benefitted had it placed more emphasis on the larger social benefits accompanying biomass-based cogen projects compared to projects based on other renewable energy technologies. Recognizing the value of Cogen for Africa's policy work outside of the cogen sector, exemplifies the idea of taking credit for value in unforeseen ways.

*[126] Recognize that the success of technology transfer is often determined by factors other than technology.* Such factors include the business model, timing, the importance of infrastructure (or lack thereof), and people.

[127] Getting the business model right, and indeed best for the circumstances, is essential. Cogen for Africa identified and played a key role in fostering a business model that was new for the region, although not the world: production of electrical power by decentralized entities not involved with power distribution. This required new policies and was enabled, to various extents, by new coordinative relationships.

[128] Entering "Timing as a determinant of start-up success" into Google yields multiple prominent studies which underscore the importance of timing as a determinant – many argue the most important determinant – in the success of start-ups. In retrospect, timing likely worked more against Cogen for Africa than for it, in particular with respect to the strong competition from other renewable energy sources, and the balance of electricity supply and demand shifting from deficit to surplus in many target countries.

[129] Most technologies depend on value chains and infrastructure not fully under their control. Minimizing risk and performance compromise due to such factors is a key to success and particularly important in the African context. Responding to this imperative does not always result in maximization of social or environmental benefits. For example, a study led by one of the evaluators compares climate, economic profitability, and social benefits for sugar cane bioenergy with off-shore gas development in Mozambique. Although sugar cane bioenergy offers larger benefits on every count, it is not happening in Mozambique and off-shore gas development is. The main reason for this is that off-shore gas entails much less dependence on local infrastructure. In the case of Cogen for Africa, finding sites with reliable, round-the clock steam demand proved challenging. At James Finlays, such reliability was undermined by frequent power grid blackouts leading to shutdowns that led to transients that were difficult for cogen equipment to accommodate. At Kakira, steam demand was established independent of cogen technology and deployment of cogen enhanced the robustness of the plant by freeing the facility from dependence on power supply from the local grid.

[120] Experience and analysis indicate that the success and failure of technology transfer and start-up companies is highly impacted by the people involved, including both leaders and the composition and structure of project teams. For Cogen for Africa, ability to access and engage was critical with respect to multiple stake-holders, including project developers, regulatory agencies, and persons and institutions involved with capacity-building.

# VI. Conclusions and Recommendations

## *VI.A. Conclusions.*

[121] Cogen for Africa in general did what it said it would do, delivering on both a set of outputs which were largely unchanged from the original proposal as well as a set of outcomes, which have been represented in a reconstructed Theory of Change. The project assisted deployment of cogeneration technology at the Kakira sugar mill in Uganda and James Finlays tea company in Kenya. It is possible, although by no means certain, that such deployment would have occurred in the absence of the project.

[122] In the policy domain, the project substantially enhanced familiarity and understanding with respect to mechanisms, notably feed-in tariffs and power purchase agreements, that fostered assimilation of independent power producers into the electricity grid. In so doing, Cogen for Africa substantively fostered deployment of not only cogen systems using bioenergy, but also other renewable electricity technologies, with the magnitude of the latter being substantially larger in terms of avoided carbon emissions. Assistance in arranging financing for cogen projects was anticipated but did not prove to be needed. Capacity-building was achieved with respect to multiple audiences. In particular:

• The capacity of current and future project developers was increased with respect to understanding challenges and opportunities related to cogeneration.

• The capacity of government agencies to understand and implement FITs and PPAs was increased, and this likely led to increased deployment of renewable electricity in the region from other sources in addition to cogeneration.

• The capacity of educational institutions was expanded with respect to understanding, course offerings, and instructional materials related to cogeneration and renewable energy more broadly. This in turn has led to expanded capacity of students which is expected to continue beyond the project.

• The capacity of AFREPREN/FWD as an organization, as well as the employees thereof, has been expanded with respect to integrated analysis of renewable energy and development in East Africa, encompassing technical, business, social, and environmental aspects.

[123] Cogeneration, as put forward by Cogen for Africa, focused primarily on modern agro-industry, which uses sustainable locally produced biomass and requires process heat. This concept has a sound basis in terms of technical and economic feasibility, with relevant potential for social and environmental impacts, as indicated by the Kakira Sugar Limited plant, an example to be multiplied. However, considering the project objective to create a real cogeneration market, including local services (design and projects, specialized repairs and maintenance, performance monitoring, etc), parts, systems and equipment fabrication, it will no doubt be necessary that the cogeneration value chain be developed in steps, in line with market evolution. In this regard, it is necessary to reach meaningful production levels and access sufficient financial support, as well as to have trained professionals, and possibly have agreements and technical assistance from partners. The technology required by these cogeneration systems is well-established, with many suppliers.

[124] Key strengths of Cogen for Africa manifested during the project include:

• Familiarity with technology, best practices, and policies relevant to cogeneration built among relevant target groups;
• Access and impact with respect to regulatory agencies overseeing cogeneration;
• Dynamic management of the Project itself such that it was responsive to changing needs;
• Effective leveraging and coordination of consultants familiar with local circumstances;
• A multi-pronged, multi-level approach to capacity building;
• Comprehensive documentation of project activities.
The aspects above are commented in section *V.D. Effectiveness, ii. Achievement of direct outcomes (p.29-31).*

[125] Key features that would have enhanced project effectiveness had they been stronger include:

• Integral, rather than retrospective, analysis of benefits arising from cogeneration beyond energy production and greenhouse gas emissions;
• Stronger web-based communication;
• Greater attention to the issues raised in the mid-term review.

Key features that were highlighted during the evaluation process as opportunities to add value to the draft Project Final Report prepared by AFREPREN/FWD, and which were subsequently addressed in a substantively revised final report include:

• More complete elaboration of lessons learned, including from failures as well as successes and country-specific lessons;
• Highlighting benefits of the project's policy work in terms of deployment of renewable electricity technologies other than cogen.

[126] Starting with the state of affairs with respect to cogeneration in eastern and southern Africa as the Cogen for Africa project concludes, the evaluation team has difficulty extrapolating to the full realization of the project's stated goa, i.e. to transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote widespread implementation of highly efficient cogeneration systems by removing barriers to their application. The headwinds identified in *Section V.C.* were, in our view significant factors contributing to this result. With examples of cogeneration deployed in the region and with familiarity now in place with respect to FiTs and PPAs, to both of which Cogen for Africa meaningfully contributed, the evidence suggests that the likely future trajectory is for cogeneration capacity to gradually increase – but to generally follow rather than lead industrial development in the region.

**Table 12:** Evaluation Ratings
Criteria are rated on a six-point scale labelled as follows: Highly Satisfactory (HS); Satisfactory (S); Moderately Satisfactory (MS); Moderately Unsatisfactory (MU); Unsatisfactory (U); Highly Unsatisfactory (HU). Sustainability and Likelihood of Impact are rated from Highly Likely (HL) down to Highly Unlikely (HU) and Nature of External Context is rated from Highly Favourable (HF) to Highly Unfavourable (HU).

| Criterion | Summary Assessment | Rating |
|---|---|---|
| **A. Strategic Relevance** | | **HS** |

| Criterion | Summary Assessment | Rating |
|---|---|---|
| *1. Alignment to UNEP's Medium Term Strategy and Program of Work* | As explicitly indicated in section *V.A. Strategic relevance*, p. 23 | HS |
| *2. Alignment to UN Environment /Donor/GEF strategic priorities* | Idem | HS |
| *3. Relevance to regional, sub-regional and national environmental priorities* | Idem | HS |
| *4. Complementarity with existing interventions* | idem | HS |
| **B. Quality of Project Design** | Strong and well-documented strategic rationale, with a well-thought out analysis of the factors that limit the expansion of cogeneration, addressing measures to alleviate technical barriers, financing barriers, commercial and market barriers, and regulatory/policy/institutional barriers. | **HS** |
| **C. Nature of External Context** | Although the project did not face notable challenges in the external context, there were "headwinds" due to drivers and assumptions being for the most part less favourable than anticipated. | **MF** |
| **D. Effectiveness** | | |
| *1. Delivery of outputs* | The expected outputs in the reconstructed TOC have been reached, as indicated by the comparison of targeted and actual results. | **S** |
| *2. Achievement of direct outcomes* | In terms of deployment and financing, the project ended up being directly associated with one highly successful cogeneration installation, implemented in two phases at the Kakira mill, and one yet-to-be fully successful smaller project at James Finlay.<br>Although not fully expected at the start of the project, interesting impact clearly occurred with respect to policy and the individuals and organizations responsible for its formulation. See Table 11. | **S** |
| *3. Likelihood of impact* | Based on a) the status of achievement against Direct Outcomes at the end of the project and b) an assessment of the drivers and assumptions relevant to the transition from Direct Outcomes to the intended Impact, the likelihood of impact is rated as Moderately Likely with respect to the project's overarching goal of market creation, and Highly Likely with respect to policy and institutional aspects. The rating for likelihood of impact is therefore Likely. | **L** |
| **E. Financial Management** | | **HS** |

| Criterion | Summary Assessment | Rating |
|---|---|---|
| *1.Completeness of project financial information* | According to UNEP Finance Office, the project financial reporting was generally well done and timely compared to other similar projects, with good communication between Implementing and Executing Agencies. These reports were supported by adequate documentation and certified by a duly authorized official. | HS |
| *2.Communication between finance and project management staff* | As above | HS |
| **F. Efficiency** | Basically, due to changes on the context, the project management introduced relevant changes, in accordance with UN Environment and approved by the Project Steering Committee: a) Reducing deployment-focused activities from seven to three countries; b) Focusing first on larger, more capable project developers, for whom assistance in securing financing was not required; and c) Subsequently shifting attention to smaller, less comprehensively capable project developers.<br>The evaluation team assesses the rationale underlying each of these changes as defensible. Having achieved some degree of success with larger project developers, it was logical to see if this success could be replicated with smaller developers, although efforts to launch a project with such developers were ultimately not successful. | **MS** |
| **G. Monitoring and Reporting** | | **S** |
| *1. Monitoring design and budgeting* | The Monitoring and Evaluation Plan defined properly the activities of monitoring and evaluation of project development, recorded their frequency, aspects to be evaluated, institution/individual in-charge of the M&R activity and approving entity. | HS |
| *2. Monitoring of project implementation* | Despite the quality and quantity of information provided about the project during its implementation, there is a lack of systematic follow-up of project impacts in terms of GHG emission mitigation, to be compared with the baseline. Even considering the changes introduced in the project scope and targets, it would have been valuable to present the direct contribution achieved by the cogen plants effectively deployed. | MS |
| *3.Project reporting* | Cogen for Africa project documentation is exhaustive, with a very large library of documents and about1200 attachments included with the final report. However, evaluation team at times found it difficult to extract understanding from this extensive catalogue. Highlighting of key points – e.g. lessons learned, social impacts, and impacts on sectors outside of cogen – was considerably improved in the revised final report. | S |

| Criterion | Summary Assessment | Rating |
|---|---|---|
| **H. Sustainability** | | **ML** |
| *1. Socio-political sustainability* | The project is aligned with priorities and initiatives aimed at enhancing sustainability. Economic development, poverty alleviation, and enhancing energy access continue to be urgent priorities in the countries targeted by this study. As well, the attention governments are giving to reduced GHG emissions has increased, both globally and in East Africa, culminating with the voluntary commitments associated with the Paris agreement. In these contexts, advancing cogeneration from biomass resources is clearly positive. | L |
| *2. Financial sustainability* | The Kakira project demonstrates the financial viability of cogeneration, as well as overcoming implementation obstacles within the regional context. ` | ML |
| *3. Institutional sustainability* | It was clear from our interviews that understanding of feed-in-tariffs and PPAs on the part of regulators is permanently enhanced. As well, both Kakira and James Finlay indicated that they exchange information freely with other commercial players and are glad to be seen as a resource for those considering future deployment. The educational programs and resources at Mzuzu University have significant potential to offer growing value beyond the timeframe of the project. Realizing this potential will, however, depend on the extent to which the foundation built during the Cogen for Africa project is maintained and enhanced. | HL |
| *4. Environmental* | Advancement of biomass energy, and in particular cogeneration, is seen as positive in terms of GHG emission reduction, as is establishment of FiTs and PPAs and the opportunities this engendered for low carbon electricity sources other than cogen. | |
| **I. Factors Affecting Performance** | | **S** |
| *1. Preparation and readiness* | Considering the inception stage of the project, appropriate measures were taken between project approval and first disbursement to prepare the project team and engage stakeholder groups in the project, as reported by AFREPREN/FWD. | S |

| Criterion | Summary Assessment | Rating |
|---|---|---|
| *2. Quality of project management and supervision*[5] | Considering the AFREPREN/FWD role in the project, evidence suggests that timely and required measures were taken, such as the establishment and regular functioning of the Project Steering Committee, a professional team was constituted and located appropriately, providing speed responses when needed and frequent follow-up of project activities. | S |
| *3. Stakeholders participation and cooperation* | Selection and engagement of stakeholders was well conducted, particularly in the governmental context, allowing relevant improvement in the regulatory framework related to cogeneration. It should be noted that the social impacts received less attention in the project and so the communities in the neighborhood of potential or existing cogen plants were almost ignored, yet they could be directly benefited. | S |
| *4. Responsiveness to human rights and gender equity* | These aspects were addressed since the project preparation, as indicated in Prodoc. In practical terms, the project informed to promote equality and active participation in workshops, training seminars, etc. The relevance of these aspects is explicitly recognized in some national background documents associated to the implementation of CfA. | S |
| *5. Country ownership and drivenness* | In the countries visited, the clear and well-informed involvement and interest of government officials with the project, including their endorsement of the projects results, especially on legal/regulatory improvement, was observed. Considering this engagement along with the context and national priorities, the lack of some financial support from ministries and public sector agencies does not imply a lower commitment with the project aims. | S |
| *6. Communication and public awareness* | The large and open-access base of information and references created by Cogen for Africa, and the participation of project developers in several technical congresses and publications were effective contributions to diffuse concepts, constraints and benefits of cogeneration in the regional context. Nevertheless, the number of initiatives implemented in this regard can be considered relatively limited. | MS |
| **Overall Project Rating** | | **S** |

### *VI.B. Lessons learned.*

[127] Key lessons offered by the Cogen for Africa experience recognized by the evaluation team include:

| | |
|---|---|
| **Lesson Learned #1:** | Include evaluation of social benefits as an integral element in project design and execution, both to avoid undesirable outcomes and to maximize desirable outcomes. |

| | |
|---|---|
| **Lesson Learned #2:** | Articulate in project reports learnings and outcomes, including from less successful as well as more successful project elements. |

| | |
|---|---|
| **Lesson Learned #3:** | Manage dynamically in response to changing circumstances and be open to realizing value in unanticipated ways. |

[128] These three points were all substantially more developed by AFREPREN/FWD in the course of revising their final report. Lessons offered by AFREPREN/FWD in their revised final report include, several of which echo themes mentioned above, and which provide the context for these lessons, are:

a) In the case of grid-connected cogeneration plants (which are time-consuming and skill-intensive projects), it is important to target large agro-industries such as Kakira Sugar Limited in Uganda with in-house project management experience plus the institutional resilience required to take on a long-term investment project.

b) The need for agro-industries to develop in-house sustainable energy project development expertise appears central to successful cogeneration scale-up. Kakira Sugar Limited in Uganda and James Finlay in Kenya are good case examples of where the presence of such expertise allowed the companies to scale-up the deployment of cogeneration across associated entities. Kakira Sugar Limited has successfully used cogen to power its ethanol plant while James Finlay is using the cogen principle in its biogas unit.

c) In a bid to ensure the success of projects such as the Cogen for Africa project, which are regional initiatives requiring the resolution of a wide range of region-wide challenges and country-specific constraints, it is important to allocate a generous time-frame for the project. In this regard, the initial 6-year span of the Cogen for Africa project was too short for its successful implementation and was subsequently extended to 11 year.

[129] A country-by-country analysis of challenges, barriers and lessons learnt is also included in AFREPREN/FWD's revised final report, representing an important resource for those working in relevant areas in the future.

[130] A final learning opportunity has to do with developing a theory of change conforming to UNEP Evaluation Office expectations. Although ultimately valuable, the evaluation team found TOC development to be time-consuming, requiring many iterations, and drawing time away from other tasks prior to field visits in the second half of February. With an eye toward avoiding this experience for future UN reviewers, and perhaps proposing organizations as well, we offer suggestions based on our experience, recognizing that this is limited and anecdotal.

[131] For the Cogen for Africa evaluation team, a key step in developing a TOC was to trace how project elements progressed through outputs, outcomes, and impacts in causative chains with ever-greater agency. We found it productive to visualize this in two dimensions, with the project elements arrayed vertically and the causative chains displayed horizontally from left to right, and to not try to incorporate drivers and assumptions at least at first. While this template may not be best for the final TOC for other projects, we think that it can in many cases likely provide a useful first step on the way to developing a TOC appropriate for that particular project. Had we done this, we would have saved a great deal of time.

### *VI.C. Recommendations.*

[132] During the evaluation process, the evaluation team made several recommendations to AFREPREN/FWD with respect to their Project Final Report, pertaining to social aspects, unintended benefits, and learnings as considered above. All of these recommendations were responded to in the revised Project Final Report, resulting in substantial changes to the evaluation team's recommendations now proposed in this evaluation report. Looking beyond the Project Final Report, the evaluation's recommendations are listed below and briefly discussed thereafter.

**Table 13.** Recommendations

| | |
|---|---|
| **Recommendation #1:** | Measures should be taken, by AFREPREN/FWD and perhaps others, to ensure and, possibly, transfer responsibility for access to project documents and/or learning materials. |
| **Context/comment:** | The quality of informational and instructional materials prepared by the project (e.g. Project Development Guide, on-line course materials) is laudably high in general. However, the evaluation team finds that web-based access to these materials is not as strong. We also observe that it would be desirable to at least maintain, and preferably update and further develop these materials. The evaluation team recommends measures be taken to ensure access to project materials going forward, and that transfer of responsibility for some or all of these materials (e.g. to Mzuzu University) be considered. |
| **Priority level:** | Important recommendation |
| **Responsibility:** | AFREPREN/FWD |
| **Proposed implementation time-frame:** | By mid 2020. |

| | |
|---|---|
| **Recommendation #2:** | UN Environment and GEF should consider a follow-up project aimed at expanded production of biomass-derived liquid fuels. |

| | |
|---|---|
| **Context/comment:** | A central theme of Cogen for Africa was maximizing the value of biomass-based energy production. Consistent with this team, the evaluation team heard in the three countries we visited indications of great unrealized potential for biomass- (and particularly sugar cane)- derived transport fuels and, as has been demonstrated in Kenya, cooking fuels. In light of emergent trends, we are left with the impression that a well-targeted project targeting maximization of benefits, alleviation of barriers, and assured sustainability outcomes could be highly beneficial and directionally consistent with the objectives of Cogen for Africa. We observe further that some of the persons and institutions we met could be valuable participants in such a project. |
| **Priority level:** | Opportunity for improvement |
| **Responsibility:** | UNEP Portfolio Manager/Task Manager |
| **Proposed implementation time-frame:** | In accordance with project management cycle (new project design) |

| | |
|---|---|
| **Recommendation #3:** | Include evaluation of social benefits as an integral element in project design and execution, both to avoid undesirable outcomes and to maximize desirable outcomes. |
| **Context/comment:** | The evaluation team finds that it would have been desirable to include benefit realization in the original project design. Cogeneration projects implemented in Africa will surely be evaluated by multiple parties (e.g. governments, impacted communities, NGOs) based on the extent to which social well-being is enhanced, particularly with respect to economic development and rural electrification. If the project achieved reduction of $CO_2$ emissions but negatively impacted economic development, it is unlikely that it would be considered a success. The existence and importance of impacts beyond GHG emission reduction is well recognized in the Project Document (see para 46, above) |
| **Priority level:** | Important recommendation |
| **Responsibility:** | UNEP Portfolio Manager/Task Manager |
| **Proposed implementation time-frame:** | In accordance with project management cycle (new project design) |

| | |
|---|---|
| **Recommendation #4:** | Extend project reports beyond reporting on deliverables and milestones to include learnings and outcomes, including from less successful as well as more successful project elements. |
| **Context/comment:** | Cogen for Africa project documentation is exhaustive, with a very large library of documents and about1200 attachments included with the final report. However, evaluation team at times found it difficult to extract understanding from this extensive catalogue. Highlighting of key points – e.g. lessons learned, social impacts, and impacts on sectors outside of cogen – was considerably improved in the revised final report. |
| **Priority level:** | Important recommendation |
| **Responsibility:** | UNEP Portfolio Manager, Task Manager |
| **Proposed implementation time-frame:** | In accordance with project management cycle (project reporting) |

| | |
|---|---|
| **Recommendation #5:** | Manage dynamically in response to changing circumstances and be open to realizing value in unanticipated ways. This approach needs to be embodied, embraced and encouraged by both project teams as well as those overseeing the activities of such teams. |
| **Context/comment:** | In addition to cost effectiveness and timeliness, mentioned in UNEP Guidelines, the evaluation team considers dynamic management to deserve consideration in the context of evaluating efficiency. Cogen for Africa shows substantial evidence of dynamic management, notably including:<br>a) Reducing deployment-focused activities from seven countries to three in the first year of the project;<br>b) Focusing first on larger, more comprehensively capable project developers than envisioned in the original proposal, - e.g. for whom assistance in securing financing was not required (see Section III.E);<br>c) Subsequently shifting attention to smaller, less comprehensively capable project developers. |
| **Priority level:** | Important recommendation |
| **Responsibility:** | UNEP Portfolio Manager, Task Manager |
| **Proposed implementation time-frame:** | As part of project management, monitoring and adaptive management. |

| | |
|---|---|
| **Recommendation #6:** | Carefully align success metrics with objectives. |
| **Context/comment:** | We note that while the stated project objective of the Cogen for Africa project is to reduce greenhouse gas emissions, the main metric reported was MW of installed capacity with respect to heat and electrical power whether GHG emissions were reduced or not. |
| **Priority level:** | Important recommendation |
| **Responsibility:** | UNEP Portfolio Manager, Task Manager |
| **Proposed implementation time-frame:** | In accordance with project management cycle (new project design) |

| | |
|---|---|
| **Recommendation #7:** | Define capacity building broadly to include institutions as well as individuals, and to include high as well as low levels of competence. |
| **Context/comment:** | The evaluation team found in interviews that capacity building was often thought of in terms of underserved populations, university students, and the technical capability of personnel associated with the various projects. Recognizing the importance of all of these, the evaluation team encourages capacity building to be conceived to include institutions as well as individuals, and to include high as well as low levels of competence. We note in this context that key additional capacity building outcomes of the project were associated with regulators, senior managers (e.g. Kakira), and AFREPREN/FWD itself. |
| **Priority level:** | Important recommendation |
| **Responsibility:** | UNEP Portfolio Manager, Task Manager |
| **Proposed implementation time-frame:** | In accordance with project management cycle (new project design) |

### *VI.D. Overall Evaluation*.

[138] Using the UNEP ratings matrix, (see VI.A. Conclusions. section) the evaluation team finds the project to be rated as ***Satisfactory*** overall.

**Annex A:** Key Achievements of Cogen for Africa Project (from Project Manager,12 April 2019)

| Achievement | *Support Documents* |
|---|---|
| **1. Feed-in-Tariffs (FiTs)** Operationalisation and updating of Feed-in-Tariffs (FiTs) policies in Kenya, Uganda and Tanzania. Malawi initiated the process of enacting its FiTs policy. | ***Kenya*** *– Kenya Energy Bill, 2017 - http://www.afrepren.org/cogen/countrygeneral/EnergyBill2017.pdf– Kenya Energy Bill, 2014 - http://www.afrepren.org/cogen/documents/downloads/Kenya%20Energy%20Bill%202014.pdf – Feed-in-Tariff Policy for Kenya, 2012 - https://docs.google.com/viewer?url=http%3A%2F%2Fwww.afrepren.org%2Fcogen%2Fdocuments%2Fdownloads%2Fppa%2FKenya%2520FITs%2FKenyan%2520FIT%2520Policy%2520December%25202012.pdf* ***Uganda*** *- http://www.afrepren.org/cogen/documents/downloads/ppa/Uganda%20FIT/Approved_Uganda%20REFIT%20Guidelines%20V4%20(2).pdf – Renewable Energy Policy for Uganda - http://www.afrepren.org/cogen/documents/downloads/ppa/Uganda%20FIT/RENEWABLE_ENERGY_POLICY.pdf – Uganda Renewable Energy Feed-in Tariff (REFIT), July 2016 - https://www.getfit-uganda.org/downloads/* |
| **2. Key Cogen Demonstration Plants** Commissioning in 2014 of the 30MWe cogeneration plant at Kakira Sugar Ltd in Uganda and 160kWe/160MWth biogas CHP plant at James Finlay – their respective pre-feasibility studies were co-financed by the Cogen Project | *– Attachment 1932 – An Overview of Bioenergy at Kakira Sugar Company, Uganda - http://www.afrepren.org/cfa/pir/Attachments2018/Attachment1932.pdf – Attachment 145 – Update of Kakira Cogen Installation and Ethanol Expansion - http://www.afrepren.org/cfa/pir/Attachments2017/Attachment145.pdf – Skype conference with James Finlay Technical Director, Hugo Douglas-Dusfrene – Brief on the CHP biogas plant at James Finlay Kenya - https://www.finlays.net/biogas-brilliance/* |
| **3. University Curriculum Development and Redesign of University Course** – Forged close collaboration with the regional universities, and particularly the Mzuzu University that has renewable energy course. The curriculum was modified to incorporate a detailed content on cogeneration in the existing bio-energy course | *- Attachment 161B: Final Draft of Curriculum Review Study in Malawi - Attachment 450: Universities in the Region that are Potential candidates for A Cogeneration Curriculum - Correspondence with Dr. Maxon Chitawo, Lecturer (Renewable Energy Systems), Research Coordinator and Head of Bioenergy Systems Research Group, Mzuzu University* |
| **4. Online Courses Roll-Out** - Designed and rolled out over 40 online courses (http://www.afrepren.org/cogen | *– Attachment 1325 – Cogen Project Final Report - http://www.afrepren.org/cfa/pir/Attachments2018/Attachment1325.pdf (attachment nos. 124A, 124B, 124C, 124D, 124E, 124F,124G, 124H,* |

| | |
|---|---|
| /Train.htm) covering a wide range of technologies and energy efficiency measures that arose from the Cogen feasibility studies as well as studies undertaken by associated sister co-financed projects that included a wider range of sustainable energy options that addressed wider challenge of widening access to cleaner energy services | *124I, 124J, 124K, 124K, 124L, 331, 332, 333, 334, 335, 336, 338 on http://www.afrepren.org/cfa/pir/attachments_list2018.html)*<br><br>*– Online Training Courses home page*<br>*- http://www.afrepren.org/cogen/Train.htm* |
| **5. New Sectors**<br>During the extension period and after meeting its key deliverables of implementing FiTs and commissioning key cogen demonstration plants, the Cogen project used the extension period to widen its sectoral coverage to include new sectors such as the floriculture. | *18th PSC Meeting Minutes held on 14th August 2013*<br>*Agenda Item 2:*<br>*The 18th PSC meeting formally reviewed and approved the minutes of the 17th PSC meeting held on 4th September 2012 with the proviso that greater emphasis should be placed on cogen investments that meet at least one of the five (5) key criteria for future Cogen for Africa project support, namely:*<br>*1. New financial institution*<br>*2. New sector*<br>*3. New business size.scale (e.g. SMEs)*<br>*4. New technology*<br>*5. New country*<br><br>*- Attachment 249: Study Tour of Model COGEN/Biogas at Simbi Roses*<br>*- Attachment 254: COGEN for Africa/AGRICEN/CABURESA/HIVOS Training Workshop-Energy Audits at Tambuzi Flower Farm*<br>*- Attachment 213: COGEN Training for Horticulture Sector*<br>*- Attachment 482: Updated Report on Assessment of Cogeneration Potential of Kenya Horticulture Sector Report with New 2017 Statistics*<br>*- Attachment 498: Updated Report on Assessment of Cogeneration Potential of Uganda Horticulture Sector scoping Study with Latest 2017 Statistics*<br>*- Attachment 537: Updated Report on Assessment of Cogeneration Potential of Ethiopia Horticulture Sector Scoping Study with 2017 Statistics Report*<br>*- Attachment 549: Financial Analysis of Renewable Energy Technologies in Flower farms- Tambuzi Flower Farm*<br>*- Attachment 1966: Tambuzi AGRICEN Feasibility Study- Final Draft*<br>*- Attachment 1583: PJ Dave Flowers and Cogeneration Online Training Courses*<br>*- Attachment 1960: PJ Dave AGRICEN Feasibility Study* |

**Annex B. Persons contacted/interviewed**

| Date (2019) | Name (s) | Position | Organization | Country |
|---|---|---|---|---|
| **In-person interviews during the field visit** | | | | |
| 2/18 | Paul Mbuthi | Senior Assistant Director of Renewable Energy | Ministry of Petroleum and Energy, Directorate of Renewable Energy | Kenya |
| 2/18 & 2/27 | Stephen Karekezi | Director | African Energy Policy Network | Kenya |
| 2/18 | Geordie Colville & Cecilia Martin | UN Environment Task Manager | UN Environment | Kenya |
| 2/19 | Martin Okun & Cicilia Magare | UN Environment Fund Manager Office | UN Environment | Kenya |
| 2/20 | Job Kaibei | Energy and Compliance Manager | James Finlay Plantation | Kenya |
| 2/20 | Chris Birgen | Engineering Manager | James Finlay Plantation | Kenya |
| 2/21 | James Baanabe, | Acting Director of Energy Resources Development, Project Focal Point | Ministry of Energy and Mineral Development | Uganda |
| 2/22 | Farhan Nakooda | Projects Director | Kakira Sugar Works | Uganda |
| 2/22 | Erick T.S. Adriko | Chairperson Board of Directors | Kakira Outgrowers Rural Development Fund | |
| 2/24 | Lewis Mhango | Former Director of Energy Affairs, now consultant, Project Focal Point | Department of Energy Affairs | Malawi |
| 2/25 | Maxon Chitawo | Professor, Director Renewable Energy Dept | Mzuzu University | Malawi |
| 2/25 | Wilfred Kasakula, Frank Mphulupulu, | Senior Renewable Energy Specialist, Renewable Energy Specialist, Senior Economist, | Malawi Energy Regulatory | Malawi |

| | | | | |
|---|---|---|---|---|
| | Dennis Mwomgonde, Enock Palapandu, and Michael Mwase | Renewable Energy Specialist, Technical Director | Authority (MERA) | |
| 2/25 | Joseph Kalowekamo | Director of Energy Affairs | Department of Energy Affairs | Malawi |
| 2/27 | Stephen Karekezi | AFREPREN/FWD, Cogen for Africa Project Manager | AFREPREN | Kenya |
| 2/27 | Geordie Colville | UN Environment Task Manager | UN Environment | Kenya |
| **Remote interviews subsequent to the field visit** | | | | |
| 3/27 | Hugo Douglas-Defresne | Technical Director | James Finlay | Kenya |

**Annex C: Documents consulted**

**Documents Provided by UN Environment**

Cogen for Africa Project Document (2007).

Cogen for Africa Interim Evaluation (2011).

Cogen for Africa Terminal Review Terms of Reference (2018).

Cogen for Africa Draft Final Report (2018).

UN Environment Documents:

1. Criterion Rating Description Matrix
8. Project Identification Table.
9. Guidance on Structure and Contents of the Inception Report
12. Template on Assessment of Project Design Quality
13. Guidance on Stakeholder Analysis
14. Use of Theory of Change in Project Evaluation
23. Examples of Possible Evaluation Questions by Criteria

Haiti Draft Inception Report (2018)

Afghanistan Climate Change Inception Report (2018)

**Documents Obtained by the Review Team**

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The Republic of Uganda (1999), Uganda Electricity Act 1999. Cap 145.

The Republic of Uganda (2016), Power Purchase Agreement, 00214583-10.

The World Bank (2017), GET FiT Annual Report, Global Energy Transfer Feed-in Tariff Program.

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**Annex D. Financial Management Evaluation.**

| **Financial management components:** | | **Rating** | **Evidence/ Comments** |
|---|---|---|---|
| **1. Completeness of project financial information[6]:** | | | |
| Provision of key documents to the evaluator (based on the responses to A-G below) | | HS | |
| A. | Co-financing and Project Cost's tables at design (by budget lines) | Yes | Enough Detailed |
| B. | Revisions to the budget | Yes | |
| C. | All relevant project legal agreements (e.g. SSFA, PCA, ICA) | n/a | Available, not evaluated |
| D. | Proof of fund transfers | n/a | Not evaluated |
| E. | Proof of co-financing (cash and in-kind) | n/a | Not evaluated |
| F. | A summary report on the project's expenditures during the life of the project (by budget lines, project components and/or annual level) | Yes | Enough Detailed |
| G. | Copies of any completed audits and management responses | Yes | Available and accessed |
| H. | Any other financial information that was required for this project | Yes | All financial information requested was supplied |
| Any gaps in terms of financial information that could be indicative of shortcomings in the project's compliance with the UN Environment or donor rules | | No | |
| Project Manager, Task Manager and Fund Management Officer responsiveness to financial requests during the evaluation process | | HS | |
| **2. Communication between finance and project management staff** | | HS | |
| Project Manager and/or Task Manager's level of awareness of the project's financial status. | | HS | |
| Fund Management Officer's knowledge of project progress/status when disbursements are done. | | HS | |
| Level of addressing and resolving financial management issues among Fund Management Officer and Project Manager/Task Manager. | | HS | As informed by UN Environment |
| Contact/communication between by Fund Management Officer, Project Manager/Task Manager during the preparation of financial and progress reports. | | HS | |
| **Overall rating** | | HS | |

**Annex E: Terminal Evaluation Terms of Reference**

# Section 1: PROJECT BACKGROUND AND OVERVIEW

## 1. Project General Information

**Table 1. Project summary**

| | | | |
|---|---|---|---|
| **GEF Project ID:** | 2597 (?GFL / 2328 - 2721 – 4976<br>PMS: GF/ 4010 – 07- xx) | | |
| **Implementing Agency:** | UNEP and African Development Bank | **Executing Agency:** | Energy, Environment and Development Network for Africa (AFREPREN/FWD) |
| **Sub-programme:** | Economy | **Expected Accomplishment(s):** | |
| **UN Environment approval date:** | 24 May 2007 | **Programme of Work Output(s):** | |
| **GEF approval date:** | GEF approval date is 2 May 2007 (Date of GEF CEO signature) | **Project type:** | Full Size Project |
| **GEF Operational Programme #:** | OP 6: Renewable Energy and cuts across<br><br>OP 5: "Removal of Barriers to Energy Efficiency and Energy Conservation". | **Focal Area(s):** | Climate Change |
| | | **GEF Strategic Priority:** | CC-2: Power sector policy frameworks supportive of renewable energy and energy efficiency.<br>SP-2: Increased Access to Local Resources of Financing for Renewable Energy and Energy Efficiency.<br>SP-4: Productive uses of renewable energy.<br><br>GEF-4 SP-2 – Promoting Industrial Energy Efficiency. The project will assist in promoting energy efficiency in |

| | | | | |
|---|---|---|---|---|
| | | | agro/forest industries as well as other industries and institutions developing cogeneration investments.<br>GEF 4 SP-3 – Promoting On-grid Renewables. The project will promote policies that are supportive of On-grid renewables. | |
| ***Expected* start date:** | March 2007 | **Actual start date:** | 4 July 2007 | |
| ***Planned* completion date:** | Feb 2013 | **Actual completion date:** | 31 July, 2018 | |
| ***Planned* project budget at approval:** | US$5,248,165 | **Actual total expenditures reported as of 30 June 2018:** | US$ 5,098,777.14 | |
| **GEF grant allocation:** | US$ 5,248,165 | **GEF grant expenditures reported as of 30 June 2018*:** | US$5,098,777.14 | |
| **Project Preparation Grant - GEF financing:** | US$ 367,400 | **Project Preparation Grant - co-financing:** | US$ 50,000 | |
| ***Expected* Full-Size Project co-financing:** | US$ 61,586,350 | **Secured Medium-Size Project/Full-Size Project co-financing:** | Total co-financing realized: US$ 81,067,158i<br>Leveraged financing: US$ 79,800,000 | |
| **First disbursement:** | 9 July 2007, US$ 474,118.00 | **Date of financial closure:** | | |
| **No. of revisions:** | 3 | **Date of last revision:** | 4 January 2017 | |
| **No. of Steering Committee meetings:** | 21 | **Date of last/next Steering Committee meeting:** | **Last:** | **Next:** |
| **Mid-term Review/ Evaluation *(planned date):*** | 3rd Year, 4th Quarter | **Mid-term Review/ Evaluation (actual date):** | 28th March 2011 - 22nd July 2011 | |
| **Terminal Evaluation *(planned date):*** | | **Terminal Evaluation (actual date):** | January 2019 | |
| **Coverage - Country(ies):** | Ethiopia, Tanzania, Uganda, Kenya, Swaziland, Malawi and Sudan | **Coverage - Region(s):** | Regional | |
| **Dates of previous project phases:** | | **Status of future project phases:** | none | |

## 2. Project rationale

More than 620 million people in Sub-Saharan Africa do not have access to reliable electricity. Energy supply lags demand, and in as many as 30 countries in Africa, recurrent electricity outages and load shedding are the norm. In a continent with an increasing demand for energy, cogeneration could become the common standard wherever appropriate and applicable. In both Asia and Africa alike, biomass residues were considered waste in the region and the bulk of agro-residues were disposed of either by burning them in the open atmosphere or discarding them into landfills. For the industries that use them as fuel, such as in the sugar and palm oil industries, the residues were used to generate low pressure steam that was sent to back pressure turbines generating heat for the process and electricity just enough for the needs of the factories. In some factories, the power generated was not even enough for the needs of the factory that they had to import power from the grid. In particular, using bagasse (sugarcane by-product) for cogeneration serves to improve competitiveness of the sugar industry in the African region through increased productivity, cost effectiveness and increased revenues from sources- other than sugar sales- such as selling the extra power and heat not needed for sugar processing to the main electricity grid or mini grids (in the case of rural areas).

In Africa, the problem is further compounded by a pervasive under-utilization of nationally installed equipment for cogeneration in sugar and other factories (see data for project participating countries below)

Table 2. Summary of current cogeneration installed capacity in selected project countries

| **Country** | **Current Cogeneration Installed Capacity (MWe)** | **Installed National Capacity (MWe)** | **As % of total their National Capacity** |
|---|---|---|---|
| Ethiopia | 13.4 | 726 | 1.85% |
| Kenya | 38.0 | 1143 | 3.32% |
| Malawi | 18.8 | 238 | 7.90% |
| Sudan | 55.3 | 755 | 7.32% |
| Swaziland | 53 | 128 | 41.41% |
| Tanzania | 33.3 | 881 | 3.78% |
| Uganda | 10.0 | 303 | 3.30% |

However, despite the profit potential, limited expertise, financial constraints, absence of supportive policies, and other barriers/risks have deterred investment in cogeneration-related equipment e.g. buying high pressure boilers and turbo generators. This project aimed to address skills, financial, policy as well as other barriers to cogeneration using the strategies in table 3 below. Project Stakeholders include the local communities living adjacent to the cogeneration installations as well as other projects eg," Agro-Industries and Clean Energy in Africa (AGRICEN)", "Greening the Tea industry in East Africa - Small Hydro Development" to cooperate in promoting widening access to clean energy in communitie within and outside estates of agro-industries as well as sale of excess power from the cogeneration plants to the grid using standard PPAs and prevailing Feed-in-Tariffs (FiT) policies.

Table 3. Summary of barriers and measures within the project to remove them

| Barriers | Measures to remove barriers | Specific activities of Cogen for Africa Project to remove barriers |
|---|---|---|
| **I. Technical**<br>• Lack of in-country experience in using high-pressure, high-temperature systems<br>• Lack of local capability/ expertise to support the development, implementation, operation and maintenance of modern and efficient cogeneration systems<br>• Absence of local manufacturing capability | • Capacity building activities to develop local expertise<br>• Provision of expert advice and support to potential developers<br>• Partnerships between foreign equipment suppliers and local manufacturers<br>• Visits and study tours to successful installations in a similar environment | • Conduct seminars, workshops and trainings<br>• Train local engineers within the Cogen Centre<br>• Provide technical advice and services to project developers<br>• Matchmaking for partnerships between foreign suppliers and local manufacturers<br>• Organize visits to successfully operated references in Mauritius and later, within the region |
| **II. Financing**<br>• Absence or lack of low-cost, long-term financing<br>• Lack of assets that could be used as collaterals and guarantees to secure loans<br>• Lack of developers with the skills to prepare financing packages that responds to the needs of financial institutions<br>• Financial institutions lack the expertise to evaluate cogeneration projects<br>• Lack of experience by financing institutions working | • Assistance to project developers in obtaining funds at favorable terms to the project<br>• Assistance to financing institutions in the conduct of technical due diligence and project/technology assessments<br>• Capacity building and training of project developers on financing matters<br>• Capacity building and training of financing institutions on understanding biomass energy and assessment of cogeneration technologies | • Assist project developers in mobilization of funds, financial structuring and financial packaging<br>• Provide financing advice and services<br>• Assist financing institutions in the conduct of due diligence and technical evaluation of projects<br>• Conduct training of project developers on investment appraisal and financial analysis<br>• Conduct training for financing institutions on biomass aspects and assessment of cogeneration technologies |

The Cogen Africa project design drew lessons learned from a successful 13-year Cogen Programme in Asia which provided equipment co-finance, technical support, policy interventions and other kinds of services, more than 20 demonstration projects have been implemented and the widespread promotion of cogeneration has resulted in the implementation of around 600 MW of cogeneration capacity in the region.

## 3. Project objectives and components

Extended from 6 to 11 years, this project promoted (mostly biomass-based) cogeneration, generating power out of (mainly agricultural) waste across 7 countries: Kenya, Uganda, Tanzania, Malawi, Ethiopia, Sudan and Swaziland. Amongst other criteria, project participating countries were selected based on the availability of potential cogeneration

plants and AFREPREN/ FWD Kenya's ability to provide technical assistance to these countries. Delivered by a regional cogen centre, the technical assistance took the form of : training/capacity building, identification of,financial opportunities (pre-feasibility/feasibility/Cogeneration Investment Packages (CIPs)), technologies and suppliers to establish high pressure systems for cogeneration using biomass; technical advice to developers, financiers and investors; and, policy guidance (power purchase arrangements/Feed-in-Tariffs policies for captive and excess firm/non-firm power, etc). with associated satellite national cogen units/focal points. Upon completion of the project, the regional cogen centre was expected to spin-off into a self sustaining entity which will continue to provide institutional and practical support to the cogeneration industry in the region.

The development goal of the Cogen for Africa Project was the creation of a self-sustaining cogeneration industry in Africa, thereby contributing to the reduction of CO2 emissions.

The overall objective of the Cogen for Africa project was to help transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote widespread implementation of highly efficient cogeneration systems by removing barriers to their application. The project expected to yield the following outcomes:

Outcome 1: Capacity of project developers, technical service providers and local manufacturers of modern and efficient cogeneration systems developed and enhanced

Outcome 2: Financing for cogeneration projects made available and accessed at terms and conditions that are favorable for investments

Outcome 3: Commercial, technical, economic and environmental benefits of modern and efficient cogeneration systems demonstrated in a number of new cogeneration plants and confidence on the certainty of the cogeneration market enhanced

Outcome 4: More favorable policies and institutional arrangements that support cogeneration promoted

The target of total installed cogeneration capacity of 40 MW(e+th) or 6 Full Scale Promotion Projects (FSPPs), along with supporting activities on capacity building/training, advisory, financing, institutional and policy aspects were expected to encourage project developers to replicate these FSPPs in other factories, sectors and even countries. An additional 20 MW(e+th) of direct post-project replication and another 180 MW(e+th) of indirect replication were targeted for implementation 5 to 10 years after the project completion

The COGEN Africa Project planned to execute Full-Scale Promotion Projects (FSPP) within the seven participating countries. These purpose of these FSPPs was to convince other potential end-users to implement these technologies by demonstrating the technical reliability, economic viability and environmental friendliness of modern and efficient cogeneration technologies. The criteria UN Environment and AfDB used for selecting FSPPs included projects with the highest probability of implementation, financial soundness of the project sponsor, willingness of the project sponsor to invest and commitment from financial partners to invest in the project. (Figure 1: Full Scale Full

Scale Promotion Project Framework) The evaluation will investigate where and how COGEN Africa executed the full scale promotion projects.

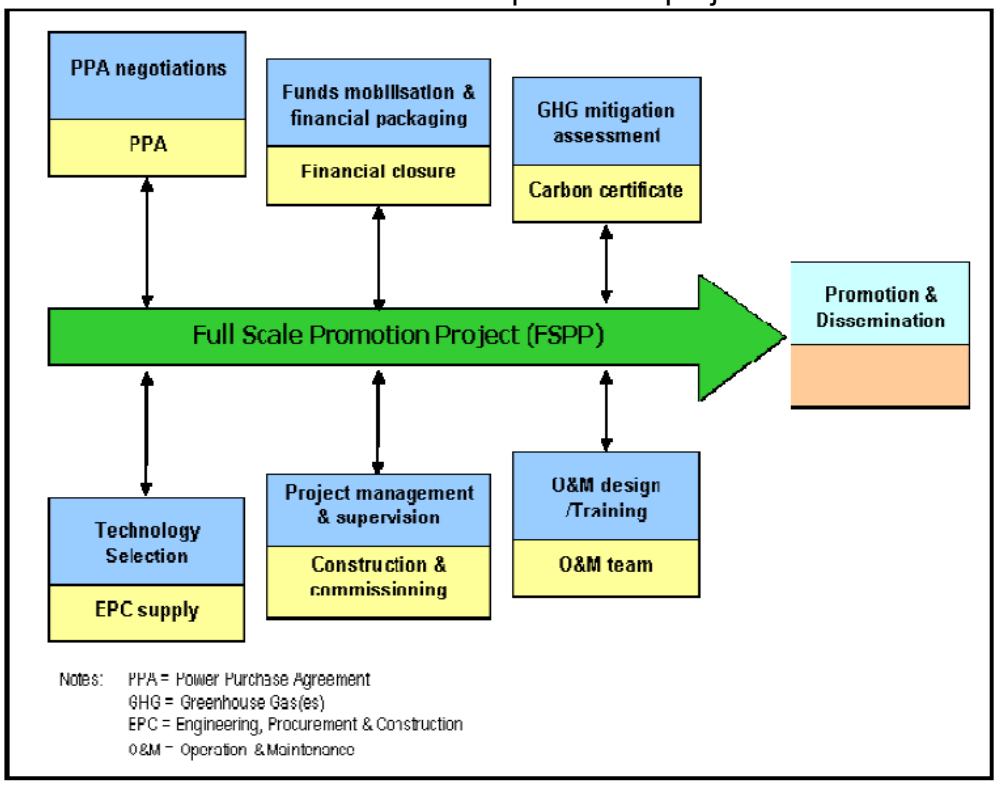



Table 4. Project objective, outcomes and outputs

| **Objectives & Outcomes** |
|---|
| Developmental Objective |
| Creation of a self-sustaining cogeneration industry in Africa thereby contributing to the reduction of CO2 emissions. |
| **Project Objectives** |
| To help transform the cogeneration industry in Eastern and Southern Africa into a profitable cogeneration market and promote widespread implementation of highly efficient cogeneration systems by removing barriers to their application. |
| **OUTCOMES** |
| **Outcome 1:** Capacity of project developers, technical service providers and local manufacturers of modern and efficient cogeneration systems developed and enhanced |
| **Outputs for Outcome 1 :** |
| 1.1. Review of fuel resources and assessments of their potential for cogeneration 1.2. Relevant technologies for cogeneration and their suppliers identified and their information inputted in the Database<br>1.3. A framework for partnerships between foreign equipment suppliers and local manufacturers developed and established<br>1.4. Local technical personnel trained and assisted on technical and project development aspects of cogeneration<br>1.5. Visits organized for relevant stakeholders to successfully operated cogeneration references |
| **OUTCOME 2:** Financing for cogeneration projects made available and accessed at terms and conditions that are favorable for investments |
| **Outputs for Outcome 2:** |
| 2.1 A portfolio of relevant financing sources identified and creation/opening up of innovative financing schemes applicable to cogeneration facilitated<br>2.2 Project developers trained and assisted in financial structuring, financial packaging and accessing of funds<br>2.3 Financing institutions trained and assisted in evaluation and assessment of cogeneration technologies |
| **OUTCOME 3:** Commercial, technical, economic and environmental benefits of modern and efficient cogeneration systems demonstrated in a number of new cogeneration plants and confidence on the certainty of the cogeneration market enhanced |
| **Outputs for Outcome 3:** |

| |
|---|
| 3.1 Project Development Guide completed 3.2 Cogeneration Investment Packages developed and promoted 3.3 Full Scale Promotion Projects (FSPPs) implemented and promoted for replication 3.4 Technical assistance provided to pipeline of projects (i.e. non-FSPP projects) |
| **OUTCOME 4:** More favourable policies and institutional arrangements that support cogeneration promoted |
| **Outputs for Outcome 4:** 4.1 Policies and regulations in the different participating countries reviewed and analyzed 4.2 Appropriate regulations, incentives and other measures supporting cogeneration formulated, and submitted to the relevant authorities and decision makers 4.3 Key decision-makers made aware of policy and institutional options for promoting cogeneration investments and encouraging cogeneration-based rural electrification 4.4 One-stop information and service center established and service provided to stakeholders 4.5 Promotion strategy and information dissemination program developed and implemented 4.6 Standard Power Purchase Agreements (PPAs) with reasonable tariffs and conditions in the participating countries drafted and the stage set for approval |

The PIRs report that Cogen project realized leverage financing of USD 79.8 million against a target of USD 60 million.

The total realized/leveraged financing for the commissioned and operational 110.8MWe+th cogen project supported investments is USD 79.8m (surpasses the end of project target of USD 60m) which consists of:

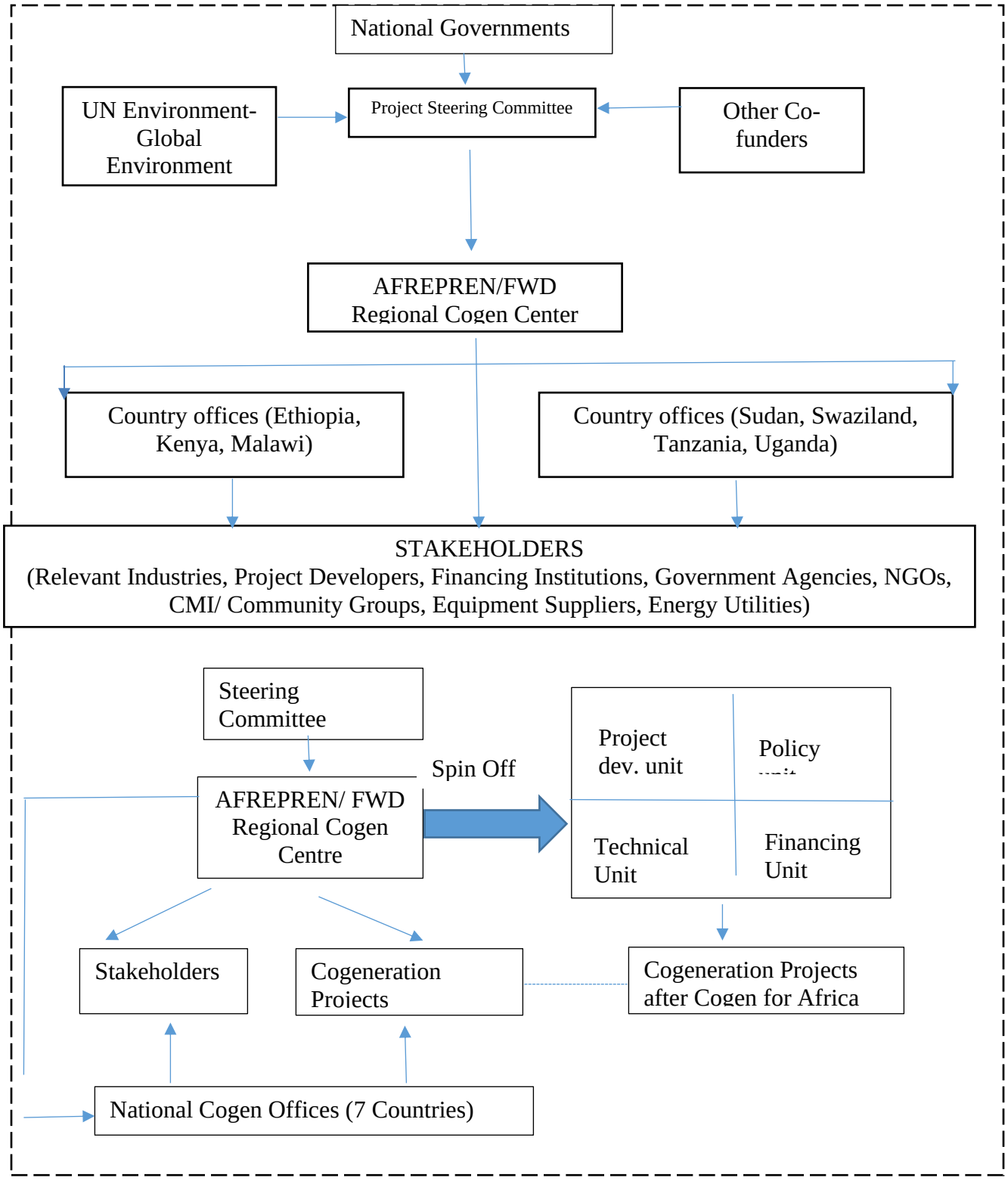
- USD 2.8m for 11.8MWe+th (0.8MWe+11MWth) Cogeneration Plant at James Finlay Tea, Kenya
- USD 2m for 9MWe+th Cogeneration Plant at Kakira Sugar, Uganda
- USD 75m for 90MWe+th (30MWe +60Mwth) Cogeneration Plant at Kakira Sugar Limited, Uganda.

## 4. Executing Arrangements

UN Environment was the GEF Implementing Agency was responsible for overall project supervision. The executing agency was AFREPREN/FWD, based in Nairobi Kenya. The AFREPREN/FWD Regional Cogen Centre, which managed the day-to-day operations of the Project, reported to the Project Steering Committee. The National Cogen Offices reported to the Regional Cogen Centre and were in direct contact with the stakeholders in their respective countries. The Regional Cogen Centre monitored and supervised the activities of the National Cogen Offices and supported them through training and technical assistance. The pipeline of projects generated by project activities were meant to provide a pipeline of potential investments for the African Development Bank.

The UN Environment Economy Division monitored implementation of the activities and were responsible for clearance and transmission of financial and progress reports to the GEF.

The COGEN Africa project was to report Project Steering Committee (PSC). Convening every six (6) months, the PSC was to be comprised of: representatives from UNEP-GEF,African Development Bank,AFREPREN/FWD, each major Co-Funding agency, Ministry in-charge of Energy or, the National power utility or Energy Regulator from each participating country, or the relevant industry such as the sugar industry, or financing institution or local manufacturing. The functions of the PSC included directing and guiding the Project, monitoring and supervising the implementation of the Project, approving Full Scale Promotion Projects and corresponding support, endorsing adaptations to the project components during the project execution, evaluating the performance and impacts of the Project, and approving progress, Mid-term and Terminal Reports of the COGEN Africa Project. (See project management structure below)




## Project Cost and Financing

The total costs of the Cogen for Africa Project amounts to USD 66,834,515 for a Project duration of six (6) years and covering seven (7) Eastern and Southern African countries.

Out of this amount, GEF was to cover an incremental financing of USD 5,248,165, while the remaining portion of USD 61,586,350 was planned from non-GEF resources. The breakdown of the GEF and non-GEF contributions according to the different outcomes and components of the Project are given in the following table:.

| | **PDF-B** | **Project** | **Realised Co-financing (US$)** | |
|---|---|---|---|---|
| | | | Cash | In-kind |
| Cost to the GEF Trust Fund | 367,400 | 5,248,165 | | |
| **Co-financing** | | | | |
| **Co-financing for Technical Assistance** | | | | |
| Government (breakdown in table below) | | 705,600 (in-kind) | | |
| Ministry of Energy, Kenya | | | | 127 |
| British High Commission, Tanzania | | | 1,120 | |
| | | | | |
| **Executing Agency: AFREPREN/FWD (related projects & TA)** | 50,000 (in-kind) | 45,422 (cash) | | |
| Biofuels Project with UNIDO | | | 17,125 | |
| Biofuels workshop in Ethiopia | | | | 393 |
| Biofuels Project with UNIDO | | | 17,550 | |
| GNESD UPEA II/Sonning Road Service Station | | | | 118 |
| GNESD ESEE/Genset Kenya Ltd | | | | 179 |
| ODI (Overseas Development Institute) | | | | 425 |
| SAIIA (South Africa Institute of International Affairs) | | | | 725 |
| GTZ/DEA | | | | 364 |
| CABURESA Project - staff training | | | 4,377 | |
| UNISA Meeting Costs | | | 715 | |
| AFREPREN/FWD-AfDB SEFA Meeting | | | 2,625 | |
| AFREPREN/FWD - co-financing of mission costs | | | 445 | |
| AFREPREN/FWD - travel costs to COP17 | | | 1,073 | |
| GNESD Meeting, Abu Dhabi | | | 1,035 | |
| AfDB-Scaling up of Renewable Energy Program in Low Income Countries - co-financing of travel costs to meet Cogen PSC representative in AfDB offices. | | | 1,090 | |
| | | | | |
| AfDB - African Development Bank | | 336,960 (in-kind) | | 778,320 |

| | | | | |
|---|---|---|---|---|
| COOPENER | | 375,000 (cash) | | |
| REEEP | | 50,000 (cash) | 30,759 | 425 |
| Triodos | | 60,000 (cash) | | |
| | | | | |
| **Leveraged Financing Private sector/ Utilities** | | | | |
| Private Sector | | 60,013,368 (cash) | | |
| James Finlay Kenya Ltd | | | 2,027,960 | |
| Kakira Sugar Ltd - 3MW Plant & Study | | | 2,862,337 | |
| Kakira Sugar Ltd - 30MW Plant | | | 75,000,000 | |
| Sotik Tea Co. | | | 24,057 | |
| West Kenya Sugar Co. | | | 18,000 | |
| Kibos Sugar and Allied Industries Ltd | | | 56,687 | |
| Mpanga Growers Tea Factory | | | 10,180 | |
| Greening the Tea Industry in East Africa (GTIEA) | | | 9,666 | |
| TPC Ltd, Tanzania & IFC | | | 55,339 | |
| CABURESA - co-financing of pre-feasibility study at TPC | | | 6,500 | |
| CABURESA - mission costs to Sao Hill (Tanzania) | | | 3,035 | |
| Agro-industries and Cleaner Energy Options (AGRICEN) | | | 101,908 | |
| AfDB (African Development Bank) assignment under the Scale-up of Renewable Energy Program in Low Income Countries promoting pro-cogen policies among other RETs | | | 34,000 | |
| Uganda Tea Corporation (UTCL) | | | | 3,625 |
| NegaWatt Uganda Ltd | | | | 3,626 |
| PJ Dave Flower Farm | | | | 2,685 |
| Bio Power Systems Ltd | | | | 4,000 |
| | | | | |
| Co-financing Total | 50,000 | 61,586,350 | | |
| **Total** | **417,400** | **66,834,515** | **80,287,583** | **795,012** |

| **In-kind Contribution by National Governments** | **Estimated Amount per Country (US$)** |
|---|---|

| | |
|---|---|
| Contribution related to policy work, power sector reforms and tariff negotiations | 87,800 |
| Provision of office facilities, utilities, equipment etc. | 11,000 |
| Contribution to field trips by the regional cogen centre staff | 2,000 |
| **Total in-kind contribution from each national government** | **100,800** |
| | |
| **In-kind contribution by 7 national governments** | **705,600** |

| Table 4.3: Project budget summary and corresponding sources of funds (in USD) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Co-financing for Technical Assistance | | | | | | | Leveraged financing private sector |
| **Budget Items** | **TOTAL COSTS** | **GEF financing** | **Nat. Gov** | **AFDB** | **COOPENER** | **REEEP** | **TRIODOS** | **AFREPREN / Add. Projects and additional TA** | **Private sector** | **Investment** |
| Outcome 1: Capacity of project developers, technical service providers and local manufacturers of modern and efficient cogeneration systems developed and enhanced | 1,015,498 | 838,498 | 161,000 | 0 | 0 | 6,000 | 0 | 10,000 | 0 | 0 |
| Outcome 2: Financing for cogeneration projects made available and accessed at terms and conditions that are favorable for investments. | 1,335,700 | 998,360 | 0 | 159,840 | 140,000 | 37,500 | | 0 | 0 | 0 |
| Outcome 3: Commercial, technical, economic and environmental benefits of modern and efficient cogeneration systems demonstrated in a number of new cogeneration plants and confidence on the certainty of the cogeneration market enhanced. | 62,045,617 | 1,668,409 | 0 | 159,840 | 140,000 | 0 | 60,000 | 4,000 | 13,368 | 60,000,000 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Outcome 4: More favorable policies and institutional arrangements that support cogeneration promoted | 1,712,706 | 1,149,106 | 467,600 | 0 | 80,000 | 0 | 0 | 16,000 | 0 | 0 |
| Project Management (including establishment of AFREPREN / FWD Regional Cogen Centre and coordination of National Cogen Offices | 597,178 | 465,976 | 77,000 | 17,280 | 15,000 | 6,500 | 0 | 15,422 | 0 | 0 |
| Monitoring and Evaluation | 127,816 | 127,816 | 0 | 0 | 0 | 0 | 0 | | | |
| **GRAND TOTAL** | **66,834,515** | **5,248,165** | **705,600** | **336,960** | **375,000** | **50,000** | **60,000** | **45,422** | **13,368** | **60,000,000** |

### 7. Implementation Issues

Implementation focused on Kenya, Uganda, Ethiopia and Malawi rather than equally across the seven participating countries. The project had most uptake in Kenya and Uganda. Political instability in Sudan has hindered implementation of activities in the country (PIR 2017). Project reports and materials provided an investment pipeline of opportunities for the African Development Bank. However the two cogeneration power plant projects, Kakira, Uganda and James Finlay Kenya obtained financing from other sources. (Source: Interviews with Task Manager, Geordie Colville, Project Officer, Cicilia Migare and PIRs)

There were three main reasons why the project was extended from 6 to 11 years. The first was the additional time need to identify companies willing and ready to invest in cogeneration. The second reason was the attainment of all key deliverables and outputs without exhausting the available funds – as result, the Project Steering Committee set more ambitious targets and provided more time for their attainment. The third reason was the absence of an AfDB representative on the Project Steering for period of close to 2 years which hampered project activities which were temporarily placed on hold.

## Section 2. OBJECTIVE AND SCOPE OF THE EVALUATION

### 8. Key Evaluation principles

Evaluation findings and judgements should be based on sound evidence and analysis, clearly documented in the evaluation report. Information will be triangulated (i.e. verified

from different sources) as far as possible, and when verification is not possible, the single source will be mentioned (whilst anonymity is still protected). Analysis leading to evaluative judgements should always be clearly spelled out.

The "Why?" Question. As this is a terminal evaluation, particular attention should be given to learning from the experience. Therefore, the "*Why?*" question should be at the front of the consultants' minds all through the evaluation exercise and is supported by the use of a theory of change approach. This means that the consultants need to go beyond the assessment of "*what*" the project performance was, and make a serious effort to provide a deeper understanding of "*why*" the performance was as it was. This should provide the basis for the lessons that can be drawn from the project.

Baselines and counterfactuals. In attempting to attribute any outcomes and impacts to the project intervention, the evaluators should consider the difference between *what has happened with, and what would have happened without, the project*. This implies that there should be consideration of the baseline conditions, trends and counterfactuals in relation to the intended project outcomes and impacts. It also means that there should be plausible evidence to attribute such outcomes and impacts to the actions of the project. Sometimes, adequate information on baseline conditions, trends or counterfactuals is lacking. In such cases this should be clearly highlighted by the evaluators, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about project performance.

Communicating evaluation results. A key aim of the evaluation is to encourage reflection and learning by UN Environment staff and key project stakeholders. The consultant should consider how reflection and learning can be promoted, both through the evaluation process and in the communication of evaluation findings and key lessons. Clear and concise writing is required on all evaluation deliverables. Draft and final versions of the main evaluation report will be shared with key stakeholders by the Evaluation Manager. There may, however, be several intended audiences, each with different interests and needs regarding the report. The Evaluation Manager will plan with the consultant(s) which audiences to target and the easiest and clearest way to communicate the key evaluation findings and lessons to them. This may include some or all of the following; a webinar, conference calls with relevant stakeholders, the preparation of an evaluation brief or interactive presentation.

## 9. Objective of the Evaluation

In line with the UN Environment Evaluation Policy[7] and the UN Environment Programme Manual[8], the Terminal Evaluation (TE) is undertaken at completion of the project to assess project performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UN Environment,

[7] http://www.unep.org/eou/StandardsPolicyandPractices/UNEPEvaluationPolicy/tabid/3050/language/en-US/Default.aspx
[8] http://www.unep.org/QAS/Documents/UNEP_Programme_Manual_May_2013.pdf . *This manual is under revision.*

African Development Bank and AFREPREN/FWD. Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation.

## 10. Key Strategic Questions

In addition to the evaluation criteria outlined in Section 10 below, the evaluation will address the **strategic questions** listed below. These are questions of interest to UN Environment and to which the project is believed to be able to make a substantive contribution:

(a) What enabled the Cogen Project to play a significant role in promotion and enactment of Feed-in-Tariff policy in Kenya, Uganda and other target countries which in turn set the stage for successful implementation of cogen investments in Uganda (Kakira) and Kenya (James Finlays)?

(b) What were the drivers for investment in cogeneration for Kakira and James Finlay ?

(i) To what extent is it possible to sell excess energy to the grid from Kakira and James Finlay cogeneration plants? Will this energy benefit the local communities? To what extent is the financing model sustainable?

(ii) To what extent are these conditions now in place for other banks and investment vehicles to stimulate investment in the project countries?

(c) What were the key factors influencing Kakira and James Finlay to adopt cogeneration? What were the sources of financing?

(d) TO what extent is there potential for scaling up and replication using the Cogen Africa model with/ without AFREPREN/FWD? (could probe for the use of company and country level checklists/ tools developed to see analyze whether cogeneration technology is an appropriate fit)

(e) To what extent were there any environmental and social impacts for communities living near cogeneration plants across project participating countries (where the project was most active)?

## 11. Evaluation Criteria

All evaluation criteria will be rated on a six-point scale. Sections A-I below, outline the scope of the criteria and a link to a table for recording the ratings is provided in Annex 1). A weightings table will be provided in excel format (link provided in Annex 1) to support the determination of an overall project rating. The set of evaluation criteria are grouped in nine categories: (A) Strategic Relevance; (B) Quality of Project Design; (C) Nature of External Context; (D) Effectiveness, which comprises assessments of the delivery of outputs, achievement of outcomes and likelihood of impact; (E) Financial Management; (F) Efficiency; (G) Monitoring and Reporting; (H) Sustainability; and (I) Factors Affecting Project Performance. The evaluation consultants can propose other evaluation criteria as deemed appropriate.

### *A. Strategic Relevance*

The evaluation will assess, in line with the OECD/DAC definition of relevance, *'the extent to which the activity is suited to the priorities and policies of the target group, recipient and donor'*. The evaluation will include an assessment of the project's relevance in relation to UN Environment's mandate and its alignment with UN Environment's policies and

strategies at the time of project approval. Under strategic relevance an assessment of the complementarity of the project with other interventions addressing the needs of the same target groups will be made. This criterion comprises four elements:

i. *Alignment to the UN Environment Medium Term Strategy*[9] *(MTS) and Programme of Work (POW)*

The evaluation should assess the project's alignment with the MTS and POW under which the project was approved and include, in its narrative, reflections on the scale and scope of any contributions made to the planned results reflected in the relevant MTS and POW.

ii. *Alignment to UN Environment / Donor/GEF Strategic Priorities*

Donor, including GEF, strategic priorities will vary across interventions. UN Environment strategic priorities include the Bali Strategic Plan for Technology Support and Capacity Building10 (BSP) and South-South Cooperation (S-SC). The BSP relates to the capacity of governments to: comply with international agreements and obligations at the national level; promote, facilitate and finance environmentally sound technologies and to strengthen frameworks for developing coherent international environmental policies. S-SC is regarded as the exchange of resources, technology and knowledge between developing countries. GEF priorities are specified in published programming priorities and focal area strategies.

iii. *Relevance to Regional, Sub-regional and National Environmental Priorities*

The evaluation will assess the extent to which the intervention is suited, or responding to, the stated environmental concerns and needs of the countries, sub-regions or regions where it is being implemented. Examples may include: national or sub-national development plans, poverty reduction strategies or Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements etc.

iv. *Complementarity with Existing Interventions*

An assessment will be made of how well the project, either at design stage or during the project mobilization, took account of ongoing and planned initiatives (under the same sub-programme, other UN Environment sub-programmes, or being implemented by other agencies) that address similar needs of the same target groups . The evaluation will consider if the project team, in collaboration with Regional Offices and Sub-Programme Coordinators, made efforts to ensure their own intervention was complementary to other interventions, optimized any synergies and avoided duplication of effort. Examples may include UN Development Assistance Frameworks or One UN programming. Linkages with other interventions should be described and instances where UN Environment's comparative advantage has been particularly well applied should be highlighted.

*Factors affecting this criterion may include:*

- Stakeholders' participation and cooperation

[9] UN Environment's Medium Term Strategy (MTS) is a document that guides UN Environment's programme planning over a four-year period. It identifies UN Environment's thematic priorities, known as Sub-programmes (SP), and sets out the desired outcomes, known as Expected Accomplishments (EAs), of the Sub-programmes.

[10] http://www.unep.org/GC/GC23/documents/GC23-6-add-1.pdf

- Responsiveness to human rights and gender equity
- Country ownership and driven-ness

### *B. Quality of Project Design*

The quality of project design is assessed using an agreed template during the evaluation inception phase, ratings are attributed to identified criteria and an overall Project Design Quality rating is established (https://www.unenvironment.org/about-un-environment/evaluation). This overall Project Design Quality rating is entered in the final evaluation ratings table as item B. In the Main Evaluation Report a summary of the project's strengths and weaknesses at design stage is included, while the complete Project Design Quality template is annexed in the Inception Report.

*Factors affecting this criterion may include (at the design stage):*

- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity

### *C. Nature of External Context*

At evaluation inception stage a rating is established for the project's external operating context (considering the prevalence of conflict, natural disasters and political upheaval). This rating is entered in the final evaluation ratings table as item C. Where a project has been rated as facing either an Unfavourable or Highly Unfavourable external operating context, and/or a negative external event has occurred during project implementation, the ratings for Effectiveness, Efficiency and/or Sustainability may be increased at the discretion of the Evaluation Consultant and Evaluation Manager together. A justification for such an increase must be given.

### *D. Effectiveness*

#### *i. Delivery of Outputs*

The evaluation will assess the project's success in producing the programmed outputs *(products, capital goods and services resulting from the intervention)* and achieving milestones as per the project design document (ProDoc). Any *formal* modifications/revisions made during project implementation will be considered part of the project design. Where the project outputs are inappropriately or inaccurately stated in the ProDoc, reformulations may be necessary in the reconstruction of the TOC. In such cases a table should be provided showing the original and the reformulation of the outputs for transparency. The delivery of outputs will be assessed in terms of both quantity and quality, and the assessment will consider their ownership by, and usefulness to, intended beneficiaries and the timeliness of their delivery. The evaluation will briefly explain the reasons behind the success or shortcomings of the project in delivering its programmed outputs and meeting expected quality standards.

*Factors affecting this criterion may include:*

- Preparation and readiness

- Quality of project management and supervision[11]

***ii. Achievement of Direct Outcomes***

The achievement of direct outcomes (short and medium-term effects of the intervention's outputs; a change of behaviour resulting from the use/application of outputs, which is not under the direct control of the intervention's direct actors) is assessed as performance against the direct outcomes as defined in the reconstructed[12] Theory of Change. These are the first-level outcomes expected to be achieved as an immediate result of project outputs. As in 1, above, a table can be used where substantive amendments to the formulation of direct outcomes is necessary. The evaluation should report evidence of attribution between UN Environment's intervention and the direct outcomes. In cases of normative work or where several actors are collaborating to achieve common outcomes, evidence of the nature and magnitude of UN Environment's 'substantive contribution' should be included and/or 'credible association' established between project efforts and the direct outcomes realised.

*Factors affecting this criterion may include:*

- Quality of project management and supervision
- Stakeholders' participation and cooperation
- Responsiveness to human rights and gender equity
- Communication and public awareness

***iii. Likelihood of Impact***

Based on the articulation of longer term effects in the reconstructed TOC *(i.e. from direct outcomes, via intermediate states, to impact),* the evaluation will assess the likelihood of the intended, positive impacts becoming a reality. Project objectives or goals should be incorporated in the TOC, possibly as intermediate states or long term impacts. The Evaluation Office's approach to the use of TOC in project evaluations is outlined in a guidance note available on the Evaluation Office website, https://www.unenvironment.org/about-un-environment/evaluation and is supported by an excel-based flow chart, 'Likelihood of Impact Assessment Decision Tree'. Essentially the approach follows a 'likelihood tree' from direct outcomes to impacts, taking account of whether the assumptions and drivers identified in the reconstructed TOC held. Any unintended positive effects should also be identified and their causal linkages to the intended impact described.

The evaluation will also consider the likelihood that the intervention may lead, or contribute to, unintended negative effects. Some of these potential negative effects may have been

[11] In some cases 'project management and supervision' will refer to the supervision and guidance provided by UN Environment to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UN Environment.

[12] UN Environment staff are currently required to submit a Theory of Change with all submitted project designs. The level of 'reconstruction' needed during an evaluation will depend on the quality of this initial TOC, the time that has lapsed between project design and implementation (which may be related to securing and disbursing funds) and the level of any changes made to the project design. In the case of projects pre-dating 2013 the intervention logic is often represented in a logical framework and a TOC will need to be constructed in the inception stage of the evaluation.

identified in the project design as risks or as part of the analysis of Environmental, Social and Economic Safeguards.[13]

The evaluation will consider the extent to which the project has played a catalytic role or has promoted scaling up and/or replication[14] as part of its Theory of Change and as factors that are likely to contribute to longer term impact.

Ultimately UN Environment and all its partners aim to bring about benefits to the environment and human well-being. Few projects are likely to have impact statements that reflect such long-term or broad-based changes. However, the evaluation will assess the likelihood of the project to make a substantive contribution to the high-level changes represented by UN Environment's Expected Accomplishments, the Sustainable Development Goals[15] and/or the high level results prioritised by the funding partner.

*Factors affecting this criterion may include:*

- Quality of Project Management and Supervision (including adaptive management)
- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity
- Country ownership and driven-ness
- Communication and public awareness

### *E. Financial Management*

Financial management will be assessed under two themes: *completeness* of financial information and *communication* between financial and project management staff. The evaluation will establish the actual spend across the life of the project of funds secured from all donors. This expenditure will be reported, where possible, at output level and will be compared with the approved budget. The evaluation will assess the level of communication between the Project/Task Manager and the Fund Management Officer as it relates to the effective delivery of the planned project and the needs of a responsive, adaptive management approach. The evaluation will verify the application of proper financial management standards and adherence to UN Environment's financial management policies. Any financial management issues that have affected the timely delivery of the project or the quality of its performance will be highlighted.

*Factors affecting this criterion may include:*

- Preparation and readiness
- Quality of project management and supervision

### *F. Efficiency*

In keeping with the OECD/DAC definition of efficiency the evaluation will assess the extent to which the project delivered maximum results from the given resources. This will include

[13] Further information on Environmental, Social and Economic Safeguards (ESES) can be found at http://www.unep.org/about/eses

[14] *Scaling up* refers to approaches being adopted on a much larger scale, but in a very similar context. Scaling up is often the longer term objective of pilot initiatives. *Replication* refers to approaches being repeated or lessons being explicitly applied in new/different contexts e.g. other geographic areas, different target group etc. Effective replication typically requires some form of revision or adaptation to the new context. It is possible to replicate at either the same or a different scale.

[15] A list of relevant SDGs is available on the EO website www.unep.org/evaluation

an assessment of the cost-effectiveness and timeliness of project execution. Focussing on the translation of inputs into outputs, cost-effectiveness is the extent to which an intervention has achieved, or is expected to achieve, its results at the lowest possible cost. Timeliness refers to whether planned activities were delivered according to expected timeframes as well as whether events were sequenced efficiently. The evaluation will also assess to what extent any project extension could have been avoided through stronger project management and identify any negative impacts caused by project delays or extensions. The evaluation will describe any cost or time-saving measures put in place to maximise results within the secured budget and agreed project timeframe and consider whether the project was implemented in the most efficient way compared to alternative interventions or approaches.

The evaluation will give special attention to efforts by the project teams to make use of/build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. to increase project efficiency. The evaluation will also consider the extent to which the management of the project minimised UN Environment's environmental footprint.

The factors underpinning the need for any project extensions will also be explored and discussed. As management or project support costs cannot be increased in cases of 'no cost extensions', such extensions represent an increase in unstated costs to implementing parties.

*Factors affecting this criterion may include:*

- Preparation and readiness (e.g. timeliness)
- Quality of project management and supervision
- Stakeholders participation and cooperation

### *G. Monitoring and Reporting*

The evaluation will assess monitoring and reporting across three sub-categories: monitoring design and budgeting, monitoring implementation and project reporting.

#### *i. Monitoring Design and Budgeting*

Each project should be supported by a sound monitoring plan that is designed to track progress against SMART[16] indicators towards the delivery of the project's outputs and achievement of direct outcomes, including at a level disaggregated by gender, vulnerability or marginalisation. The evaluation will assess the quality of the design of the monitoring plan as well as the funds allocated for its implementation. The adequacy of resources for mid-term and terminal evaluation/review should be discussed if applicable.

#### *ii. Monitoring of Project Implementation*

The evaluation will assess whether the monitoring system was operational and facilitated the timely tracking of results and progress towards projects objectives throughout the project implementation period. This should include monitoring the representation and

[16] SMART refers to indicators that are specific, measurable, assignable, realistic and time-specific.

participation of disaggregated groups (including gendered, vulnerable and marginalised groups) in project activities. It will also consider how information generated by the monitoring system during project implementation was used to adapt and improve project execution, achievement of outcomes and ensure sustainability. The evaluation should confirm that funds allocated for monitoring were used to support this activity.

#### *iii. Project Reporting*

UN Environment has a centralised Project Information Management System (PIMS) in which project managers upload six-monthly status reports against agreed project milestones. This information will be provided to the Evaluation Consultant(s) by the Evaluation Manager. Some projects have additional requirements to report regularly to funding partners, which will be supplied by the project team (e.g. the Project Implementation Reviews and Tracking Tool for GEF-funded projects). The evaluation will assess the extent to which both UN Environment and donor reporting commitments have been fulfilled. Consideration will be given as to whether reporting has been carried out with respect to the effects of the initiative on disaggregated groups.

*Factors affecting this criterion may include:*

- Quality of project management and supervision
- Responsiveness to human rights and gender equity (e.g. disaggregated indicators and data)

### *H. Sustainability*

Sustainability is understood as the probability of direct outcomes being maintained and developed after the close of the intervention. The evaluation will identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of achieved direct outcomes (ie. 'assumptions' and 'drivers'). Some factors of sustainability may be embedded in the project design and implementation approaches while others may be contextual circumstances or conditions that evolve over the life of the intervention. Where applicable an assessment of bio-physical factors that may affect the sustainability of direct outcomes may also be included.

#### *i. Socio-political Sustainability*

The evaluation will assess the extent to which social or political factors support the continuation and further development of project direct outcomes. It will consider the level of ownership, interest and commitment among government and other stakeholders to take the project achievements forwards. In particular the evaluation will consider whether individual capacity development efforts are likely to be sustained.

#### *ii. Financial Sustainability*

Some direct outcomes, once achieved, do not require further financial inputs, e.g. the adoption of a revised policy. However, in order to derive a benefit from this outcome further management action may still be needed e.g. to undertake actions to enforce the policy. Other direct outcomes may be dependent on a continuous flow of action that needs to be

resourced for them to be maintained, e.g. continuation of a new resource management approach. The evaluation will assess the extent to which project outcomes are dependent on future funding for the benefits they bring to be sustained. Secured future funding is only relevant to financial sustainability where the direct outcomes of a project have been extended into a future project phase. Even where future funding has been secured, the question still remains as to whether the project outcomes are financially sustainable.

#### *iii. Institutional Sustainability*

The evaluation will assess the extent to which the sustainability of project outcomes (especially those relating to policies and laws) is dependent on issues relating to institutional frameworks and governance. It will consider whether institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. are robust enough to continue delivering the benefits associated with the project outcomes after project closure. In particular, the evaluation will consider whether institutional capacity development efforts are likely to be sustained.

*Factors affecting this criterion may include:*

- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity (e.g. where interventions are not inclusive, their sustainability may be undermined)
- Communication and public awareness
- Country ownership and driven-ness

### *I. Factors and Processes Affecting Project Performance*

*(These factors are rated in the ratings table, but are discussed within the Main Evaluation Report as cross-cutting themes as appropriate under the other evaluation criteria, above)*

#### *i. Preparation and Readiness*

This criterion focuses on the inception or mobilisation stage of the project (ie. the time between project approval and first disbursement). The evaluation will assess whether appropriate measures were taken to either address weaknesses in the project design or respond to changes that took place between project approval, the securing of funds and project mobilisation. In particular the evaluation will consider the nature and quality of engagement with stakeholder groups by the project team, the confirmation of partner capacity and development of partnership agreements as well as initial staffing and financing arrangements. *(Project preparation is included in the template for the assessment of Project Design Quality)*.

#### *ii. Quality of Project Management and Supervision*

In some cases 'project management and supervision' will refer to the supervision and guidance provided by UN Environment to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project

management performance of the executing agency and the technical backstopping and supervision provided by UN Environment.

The evaluation will assess the effectiveness of project management with regard to: providing leadership towards achieving the planned outcomes; managing team structures; maintaining productive partner relationships (including Steering Groups etc.); communication and collaboration with UN Environment colleagues; risk management; use of problem-solving; project adaptation and overall project execution. Evidence of adaptive management should be highlighted.

#### *iii. Stakeholder Participation and Cooperation*

Here the term 'stakeholder' should be considered in a broad sense, encompassing all project partners, duty bearers with a role in delivering project outputs and target users of project outputs and any other collaborating agents external to UN Environment. The assessment will consider the quality and effectiveness of all forms of communication and consultation with stakeholders throughout the project life and the support given to maximise collaboration and coherence between various stakeholders, including sharing plans, pooling resources and exchanging learning and expertise. The inclusion and participation of all differentiated groups, including gender groups should be considered.

#### *iv. Responsiveness to Human Rights and Gender Equity*

The evaluation will ascertain to what extent the project has applied the UN Common Understanding on the human rights based approach (HRBA) and the UN Declaration on the Rights of Indigenous People. Within this human rights context the evaluation will assess to what extent the intervention adheres to UN Environment's Policy and Strategy for Gender Equality and the Environment.

In particular the evaluation will consider to what extent project design, implementation and monitoring have taken into consideration: (i) possible gender inequalities in access to, and the control over, natural resources; (ii) specific vulnerabilities of women and children to environmental degradation or disasters; and (iii) the role of women in mitigating or adapting to environmental changes and engaging in environmental protection and rehabilitation.

#### *v. Country Ownership and Driven-ness*

The evaluation will assess the quality and degree of engagement of government / public sector agencies in the project. While there is some overlap between Country Ownership and Institutional Sustainability, this criterion focuses primarily on the forward momentum of the intended projects results, ie. either a) moving forwards from outputs to direct outcomes or b) moving forward from direct outcomes towards intermediate states. The evaluation will consider the involvement not only of those directly involved in project execution and those participating in technical or leadership groups, but also those official representatives whose cooperation is needed for change to be embedded in their respective institutions and offices. This factor is concerned with the level of ownership generated by the project over outputs and outcomes and that is necessary for long term

impact to be realised. This ownership should adequately represent the needs of interest of all gendered and marginalised groups.

***vi. Communication and Public Awareness***

The evaluation will assess the effectiveness of: a) communication of learning and experience sharing between project partners and interested groups arising from the project during its life and b) public awareness activities that were undertaken during the implementation of the project to influence attitudes or shape behaviour among wider communities and civil society at large. The evaluation should consider whether existing communication channels and networks were used effectively, including meeting the differentiated needs of gendered or marginalised groups, and whether any feedback channels were established. Where knowledge sharing platforms have been established under a project the evaluation will comment on the sustainability of the communication channel under either socio-political, institutional or financial sustainability, as appropriate.

## Section 3. EVALUATION APPROACH, METHODS AND DELIVERABLES

The Terminal Evaluation will be an in-depth evaluation using a participatory approach whereby key stakeholders are kept informed and consulted throughout the evaluation process. Both quantitative and qualitative evaluation methods will be used as appropriate to determine project achievements against the expected outputs, outcomes and impacts. It is highly recommended that the consultant(s) maintains close communication with the project team and promotes information exchange throughout the evaluation implementation phase in order to increase their (and other stakeholder) ownership of the evaluation findings. Where applicable, the consultant(s) should provide a geo-referenced map that demarcates the area covered by the project and, where possible, provide geo-reference photographs of key intervention sites (e.g. sites of habitat rehabilitation and protection, pollution treatment infrastructure, etc.)

The findings of the evaluation will be based on the following:

(a) A **desk review** of:

- Relevant background documentation such as the Project Implementation Review (PIR), documentation on Feed-in-Tariffs promoted by the Cogen Project, capacity building/training reports, country studies, feasibility studies of beneficiary companies, Project Steering Committee Meeting Minutes, workshop / mission reports, etc – link to drop box and project database will be availed
- Project design documents (including minutes of the project design review meeting at approval); Annual Work Plans and Budgets or equivalent, revisions to the project (Project Document Supplement), the logical framework and its budget;
- Project reports such as six-monthly progress and financial reports, progress reports from collaborating partners, meeting minutes, relevant correspondence and including the Project Implementation Reviews and Tracking Tool etc.;
- Project outputs: see project database (access to be provided to the consultants)

- Mid-Term Evaluation of the project;
- Evaluations/reviews of similar projects.

(b) **Interviews** (individual or in group) with:

- UN Environment Task Manager (TM);
- Project management team including: AFREPREN/ FWD Regional Cogen Centre;
- UN Environment Fund Management Officer (FMO);
- African Development Bank representative on Cogen Project Steerign Committee
- Agro-industries and Cleaner Energy Options (AGRICEN) representative
- GNESD (Global Network on Energy for Sustainable Development) representative

- Coordinator of the UN Environment Climate Change Sub-Programme;
- Selective sampling across project supported countries- project partners, including Cogeneration project: owners, developers, fuel (biomass residue) suppliers, equipment suppliers, local manufacturers, local consultants and service providers as well as policy makers (energy security, private sector investment in energy), communities surrounding cogeneration installation, power utilities, private sector energy investors.
- Other relevant resource persons.

(c) **Field visits:** Field sites will be selected using the following criteria: countries with the largest number of high or well performing projects (40 MW in 6 Full Scale Promotion Projects-in terms of MW targets achieved?), where project support to national cogeneration policies have allowed for the establishment of Cogeneration plants. *(PIR (2017) suggests that Kenya, Malawi and Uganda would fit this criteria)*

## 12. Evaluation Deliverables and Review Procedures

The evaluation team will prepare an in-depth evaluation report of the project combined with brief study papers of each project country  Specifically, the evaluation team will deliver;

**Inception Report:** (see Annex 1 for links to all templates, tables and guidance notes) containing an assessment of project design quality, a draft reconstructed Theory of Change of the project, project stakeholder analysis, evaluation framework and a tentative evaluation schedule.

**Preliminary Findings Note:** typically in the form of a PowerPoint presentation, the sharing of preliminary findings is intended to support the participation of the project team, act as a means to ensure all information sources have been accessed and provide an opportunity to verify emerging findings.

**Draft and Final Evaluation Report:** (see links in Annex 1) containing an executive summary that can act as a stand alone document; detailed analysis of the evaluation findings

organized by evaluation criteria and supported with evidence; lessons learned and recommendations and an annotated ratings table. The report would be informed by field visits to the selected countries complemented by a brief summary of what happened in the other countries, focused on progress towards outcomes.

**Evaluation Bulletin:** a 2-page summary of key evaluation findings for wider dissemination through the Evaluation Office website.

**Review of the draft evaluation report**. The evaluation team will submit a draft report to the Evaluation Manager and revise the draft in response to their comments and suggestions. Once a draft of adequate quality has been peer-reviewed and accepted, the Evaluation Manager will share the cleared draft report with the Task Manager, who will alert the Evaluation Manager in case the report contains any blatant factual errors. The Evaluation Manager will then forward revised draft report (corrected by the evaluation team where necessary) to other project stakeholders, for their review and comments. Stakeholders may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions as well as providing feedback on the proposed recommendations and lessons. Any comments or responses to draft reports will be sent to the Evaluation Manager for consolidation. The Evaluation Manager will provide all comments to the evaluation team for consideration in preparing the final report, along with guidance on areas of contradiction or issues requiring an institutional response.

Based on a careful review of the evidence collated by the evaluation consultants and the internal consistency of the report, the Evaluation Manager will provide an assessment of the ratings in the final evaluation report. Where there are differences of opinion between the evaluator and the Evaluation Manager on project ratings, both viewpoints will be clearly presented in the final report. The Evaluation Office ratings will be considered the final ratings for the project.

The Evaluation Manager will prepare a **quality assessment** of the first and final drafts of the main evaluation report, which acts as a tool for providing structured feedback to the evaluation consultants. The quality of the report will be assessed and rated against the criteria specified in template listed in Annex 1 and this assessment will be appended to the Final Evaluation Report.

At the end of the evaluation process, the Evaluation Office will prepare a **Recommendations Implementation Plan** in the format of a table, to be completed and updated at regular intervals by the Task Manager. The Evaluation Office will track compliance against this plan on a six monthly basis.

## 13. The Evaluation Consultant

For this evaluation, the evaluation team will consist of a Team Leader and one Supporting Consultant acting in an advisory capacity, who will work under the overall responsibility of the Evaluation Office represented by an Evaluation Manager Zahra Hassanali in consultation with the UN Environment Task Manager, Geordie Colville, Fund Management Officer, Martin Okun, and the Sub-programme Coordinator of the Climate Change Sub-programme, Niklas Hagelberg. The Consultant will liaise with the Evaluation Manager on

any procedural and methodological matters related to the evaluation. It is, however, the consultants' individual responsibility to arrange for their visas and immunizations as well as to plan meetings with stakeholders, organize online surveys, obtain documentary evidence and any other logistical matters related to the assignment. The UN Environment Task Manager and project team will, where possible, provide logistical support (introductions, meetings etc.) allowing the consultants to conduct the evaluation as efficiently and independently as possible.

The Team Leader will be hired for 6 months spread over the period 15 Janurary 2019 to 14 July 2019and should have: an advanced university degree in engineering; a minimum of 10 years of technical experience related to bio mas cogeneration plants in and analyzing the regulatory framework and contractual models with distribution utilities / evaluation experience, with excellent writing skills in English; team leadership experience and, where possible, knowledge of the UN system, specifically of the work of UN Environment.

Acting in an advisory capacity to the Lead, the Supporting Consultant will be hired for 6 months spread over 15 Janurary 2019 to 14 July 2019 and should have: an undergraduate university degree in engineering or environmental sciences, a minimum of 10 years of conducting assessments for bio-mas based cogeneration activities, along with excellent writing skills in English and, where possible, knowledge of the UN system, specifically of the work of UN Environment. Experience in managing partnerships, knowledge management and communication is desirable for all evaluation consultants.

The Team Leader will be responsible, in close consultation with the Evaluation Office of UN Environment, for overall management of the evaluation and timely delivery of its outputs, described above in Section 11 Evaluation Deliverables, above. The Supporting Consultant will make substantive and high quality contributions to the evaluation process and outputs. Both consultants will ensure together that all evaluation criteria and questions are adequately covered.

Team leader and Supporting Consultant will jointly conduct the missions and be responsible for the delivery of the evaluation report. The team leader and supporting consultant will conduct the missions, and be responsible for the delivery of the evaluation. Details of Evaluation Consultants' Team Roles can be found on the Evaluation Office of UN Environment website: www.unep.org/evaluation.

## 14. Schedule of the evaluation

The table below presents the tentative schedule for the evaluation. The Supporting Consultant will provide inputs for the Team Leader into the methodology, inception and draft reports through meetings and written comments as necessary per schedule determined by the Evaluation Office.

**Table 3. Tentative schedule for the evaluation**

| Milestone | Tentative Dates |
|---|---|
| Inception Phase – (homebased, skype interviews as necessary) | Jan 2019 |

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|---|---|
| Inception Report | 25 Jan 2019 |
| Evaluation Mission – (Uganda, Malawi and Kenya) | 15 Feb 2019 – 27 Feb 2019 |
| Telephone interviews, surveys etc. | January 2019- March 2019 |
| Powerpoint/presentation on preliminary findings and recommendations | 20 March 2019 |
| Draft report to Evaluation Manager (and Peer Reviewer) | 7 April 2019 |
| Draft Report shared with UN Environment Project Manager and team | 7 May 2019 |
| Draft Report shared with wider group of stakeholders | 20 May 2019 |
| Final Report | 30 May 2019 |
| Final Report shared with all respondents | 30 May 2019 |

## 15. Contractual Arrangements

Evaluation Consultants will be selected and recruited by the Evaluation Office of UN Environment under an individual Special Service Agreement (SSA) on a "fees only" basis (see below). By signing the service contract with UN Environment/UNON, the consultant(s) certify that they have not been associated with the design and implementation of the project in any way which may jeopardize their independence and impartiality towards project achievements and project partner performance. In addition, they will not have any future interests (within six months after completion of the contract) with the project's executing or implementing units. All consultants are required to sigh the Code of Conduct Agreement Form.

Fees will be paid on an instalment basis, paid on acceptance by the Evaluation Manager of expected key deliverables. The schedule of payment is as follows:

Schedule of Payment for the Team Leader:

| Deliverable | Percentage Payment |
|---|---|
| Approved Inception Report *(as per annex document 7)* | 30% |
| Approved Draft Main Evaluation Report *(as per annex document 13)* | 30% |
| Approved Final Main Evaluation Report | 40% |

Schedule of Payment for the Support Consultant:

| Deliverable | Percentage Payment |
|---|---|
| Approved Inception Report *(as per annex document 7)* | 30% |
| Approved Draft Main Evaluation Report *(as per annex document 13)* | 30% |
| Approved Final Main Evaluation Report | 40% |

Fees only contracts: Air tickets will be purchased by UN Environment and 75% of the Daily Subsistence Allowance for each authorised travel mission will be paid up front. Local in-country travel will only be reimbursed where agreed in advance with the Evaluation

Manager and on the production of acceptable receipts. Terminal expenses and residual DSA entitlements (25%) will be paid after mission completion.

The consultants may be provided with access to UN Environment's Programme Information Management System (PIMS) and if such access is granted, the consultants agree not to disclose information from that system to third parties beyond information required for, and included in, the evaluation report.

In case the consultants are not able to provide the deliverables in accordance with these guidelines, and in line with the expected quality standards by the UN Environment Evaluation Office, payment may be withheld at the discretion of the Director of the Evaluation Office until the consultants have improved the deliverables to meet UN Environment's quality standards.

If the consultant(s) fail to submit a satisfactory final product to UN Environment in a timely manner, i.e. before the end date of their contract, the Evaluation Office reserves the right to employ additional human resources to finalize the report, and to reduce the consultants' fees by an amount equal to the additional costs borne by the Evaluation Office to bring the report up to standard.

## Annex 1: Tools, Templates and Guidance Notes for use in the Evaluation

The tools, templates and guidance notes listed in the table below, and available on the Evaluation Office website (www.unep.org/evaluation), are intended to help Evaluation Managers and Evaluation Consultants to produce evaluation products that are consistent with each other and which can be compiled into a biennial Evaluation Synthesis Report. The biennial summary is used to provide an overview of progress to UN Environment and the UN Environmental Assembly. This suite of documents is also intended to make the evaluation process as transparent as possible so that all those involved in the process can participate on an informed basis. It is recognised that the evaluation needs of projects and portfolio vary and adjustments may be necessary so that the purpose of the evaluation process (broadly, accountability and lesson learning), can be met. Such adjustments should be decided between the Evaluation Manager and the Evaluation Consultant in order to produce evaluation reports that are both useful to project implementers and that produce credible findings.
ADVICE TO CONSULTANTS: As out tools, templates and guidance notes are updated on a continuous basis, kindly download documents from these links during the Inception Phase and use those versions throughout the evaluation.

| Document | Name | URL link |
|---|---|---|
| 1 | Evaluation Process Guidelines for Consultants | Link |
| 2 | Evaluation Consultants Team Roles *(Team Leader and Supporting Consultant)* | Link |
| 3 | List of documents required in the evaluation process | Link |
| 4 | Evaluation Criteria *(summary of descriptions, as in these terms of reference)* | Link |
| 5 | Evaluation Ratings Table (only) | Link |
| 6 | Matrix Describing Ratings by Criteria | Link |
| 7 | Weighting of Ratings (excel) | Link |
| 8 | Project Identification Tables (GEF and non-GEF) | Link |
| 9 | Structure and Contents of the Inception Report | Link |
| 10 | Template for the Assessment of the Quality of Project Design (Word template) | Link |

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| | Template for the Assessment of the Quality of Project Design (Excel tool) | Link |
| 11 | Guidance on Stakeholder Analysis | Link |
| 12 | Gender Note for Evaluation Consultants | Link |
| 13 | Use of Theory of Change in Project Evaluations | Link |
| 14 | Assessment of the Likelihood of Impact Decision Tree (Excel) | Link |
| 15 | Possible Evaluation Questions | Link |
| 16 | Structure and Contents of the Main Evaluation Report | Link |
| 17 | Cover Page, Prelims and Style Sheet for Main Evaluation Report | Link |
| 18 | Financial Tables | Link |
| 19 | Template for the Assessment of the Quality of the Evaluation Report | Link |

[1] Attachment 115 - Contribution to Policy (Feed in Tariff and Standard Power Purchase Agreements) in the Region; Attachment 145 - Update of Kakira Cogen Installattion and Ethanol Expansion , Attachment 128 - Kakira Grant Agreement And Support Letters On Cogen Investment; Attachment 166 – Status of Cogeneration in East Africa and Kakira Grant Agreement

[1] Attachment 115 - Contribution to Policy (Feed in Tariff and Standard Power Purchase Agreements) in the Region; Attachment 115A - Draft Standard Power Purchase Agreement For Malawi; Attachment 115B - Draft Feed-In-Tariffs Policy For Malawi; Attachment 115C - Minutes of Stakeholders Meeting on Feed in Tariff and Standard Power Purchase Agreement, Lilongwe, Malawi; Attachment 145 - Update of Kakira Cogen Installation and Ethanol Expansion, Attachment 128 - Kakira Grant Agreement And Support Letters On Cogen Investment

[1] African Development Bank (AfDB) and GET FiT scheme; Attachmet 145 - Update of Kakira Cogen Installation and Ethanol Expansion; Attachment 14 - List of Financial Institutions contacted by project

## Annex F: Assessment of the Quality of the Evaluation Report

Evaluand Title:

**Cogen for Africa: GEF ID 2597**

All UNEP evaluations are subject to a quality assessment by the Evaluation Office. This is an assessment of the quality of the evaluation product (i.e. evaluation report) and is dependent on more than just the consultant's efforts and skills.

| | UNEP Evaluation Office Comments | Final Report Rating |
|---|---|---|
| **Substantive Report Quality Criteria** | | |
| ***Quality of the Executive Summary:***<br>The Summary should be able to stand alone as an accurate summary of the main evaluation product. It should include a concise overview of the evaluation object; clear summary of the evaluation objectives and scope; overall evaluation rating of the project and key features of performance (strengths and weaknesses) against exceptional criteria (plus reference to where the evaluation ratings table can be found within the report); summary of the main findings of the exercise, including a synthesis of main conclusions (which include a summary response to key strategic evaluation questions), lessons learned and recommendations. | Final report:<br>This section provides a stand alone summary of the evaluation report – the reader would benefit from reading the context of the recommendations, found in the Conclusions section. | **5** |
| ***I. Introduction***<br>A brief introduction should be given identifying, where possible and relevant, the following: institutional context of the project (sub-programme, Division, regions/countries where implemented) and coverage of the evaluation; date of PRC approval and project document signature); results frameworks to which it contributes (e.g. Expected Accomplishment in POW); project duration and start/end dates; number of project phases (where appropriate); implementing partners; total secured budget and whether the project has been evaluated in the past (e.g. mid-term, part of a synthesis evaluation, evaluated by another agency etc.)<br>Consider the extent to which the introduction includes a concise statement of the purpose of the evaluation and the key intended audience for the findings? | Final report:<br>This section is concise and complete. IT provides the reader with sufficient understanding of the evaluand for them to begin reading the report. | **5** |
| ***II. Evaluation Methods***<br>This section should include a description of how the *TOC at Evaluation*[i] was designed (who was involved etc.) and applied to the context of the project?<br>A data collection section should include: a description of evaluation methods and information sources used, including the number and type of respondents; justification for methods used (e.g. qualitative/ quantitative; electronic/face-to-face); any selection criteria used to identify respondents, case studies or sites/countries visited; strategies used to increase stakeholder engagement and consultation; details of how data were verified (e.g. triangulation, review by stakeholders etc.).<br>Methods to ensure that potentially excluded groups (excluded by gender, vulnerability or marginalisation) are reached and their experiences captured effectively, should be made explicit in this section.<br>The methods used to analyse data (e.g. scoring; coding; thematic analysis etc.) should be described. | Final report:<br>A detailed section giving the reader insight into the evaluation process. No specific section on limitations but these are addressed within the individual paragraphs. | **5** |

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| It should also address evaluation limitations such as: low or imbalanced response rates across different groups; gaps in documentation; extent to which findings can be either generalised to wider evaluation questions or constraints on aggregation/disaggregation; any potential or apparent biases; language barriers and ways they were overcome.<br>Ethics and human rights issues should be highlighted including: how anonymity and confidentiality were protected and strategies used to include the views of marginalised or potentially disadvantaged groups and/or divergent views. Is there an ethics statement? | | |
| ***III. The Project***<br>This section should include:<br>• *Context:* Overview of the main issue that the project is trying to address, its root causes and consequences on the environment and human well-being (i.e. synopsis of the problem and situational analyses).<br>• *Results framework*: Summary of the project's results hierarchy as stated in the ProDoc (or as officially revised)<br>• *Stakeholders:* Description of groups of targeted stakeholders organised according to relevant common characteristics<br>• *Project implementation structure and partners:* A description of the implementation structure with diagram and a list of key project partners<br>• *Changes in design during implementation:* Any key events that affected the project's scope or parameters should be described in brief in chronological order<br>• *Project financing:* Completed tables of: (a) budget at design and expenditure by components (b) planned and actual sources of funding/co-financing | Final report:<br><br>All sections well-covered. | **6** |
| ***IV. Theory of Change***<br>The *TOC at Evaluation* should be presented clearly in both diagrammatic and narrative forms. Clear articulation of each major causal pathway is expected, (starting from outputs to long term impact), including explanations of all drivers and assumptions as well as the expected roles of key actors.<br>Where the project results as stated in the project design documents (or formal revisions of the project design) are not an accurate reflection of the project's intentions or do not follow UNEP's definitions of different results levels, project results may need to be re-phrased or reformulated. In such cases, a summary of the project's results hierarchy should be presented for: a) the results as stated in the approved/revised Prodoc logframe/TOC and b) as formulated in the *TOC at Evaluation*. *The two results hierarchies should be presented as a two-column table to show clearly that, although wording and placement may have changed, the results 'goal posts' have not been 'moved'.* | Final report:<br><br>The TOC section is well described, including how the results framework was re-aligned to form the reconstructed TOC, TOC diagram and drivers and assumptions.<br><br>The results at Direct Outcome level are still 'loose' and uptake/use of outputs is implied (e.g. understanding and capability enhanced).<br><br>Since this report was drafted UNEP has refined its use of terms under Outcomes (in this report Immediate Outcomes would now be labelled Direct Outcomes and Direct Outcomes would be Project Outcomes). | **5** |
| ***V. Key Findings***<br><br>**A. Strategic relevance:**<br>This section should include an assessment of the project's relevance in relation to UNEP's mandate and its alignment with UNEP's policies and strategies at the time of project approval. An assessment of the complementarity of the project at design (or during inception/mobilisation[i]), with other interventions addressing the needs | Final report:<br><br>Clear and concise section, covering all elements. | **5** |

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| of the same target groups should be included. Consider the extent to which all four elements have been addressed:<br>i. Alignment to the UNEP Medium Term Strategy (MTS) and Programme of Work (POW)<br>ii. Alignment to Donor/GEF Strategic Priorities<br>iii. Relevance to Regional, Sub-regional and National Environmental Priorities<br>iv. Complementarity with Existing Interventions | | |
| **B. Quality of Project Design**<br>To what extent are the strength and weaknesses of the project design effectively summarized? | Final report:<br><br>Summarises design strengths and weaknesses. | **5** |
| **C. Nature of the External Context**<br>For projects where this is appropriate, key external features of the project's implementing context that limited the project's performance (e.g. conflict, natural disaster, political upheaval[i]), and how they affected performance, should be described. | Final report:<br><br>The report adopts a broad approach to nature of external context, going beyond the types of external factor described by UNEP, to capture changes in the operating context.<br><br>It also discusses Drivers and Assumptions in this section. As the rating on Nature of External Context does not affect the overall project performance rating, this interpretation is useful contextual material. | **5** |
| **D. Effectiveness**<br>**(i) Outputs and Project Outcomes:** How well does the report present a well-reasoned, complete and evidence-based assessment of the a) availability of outputs, and b) achievement of project outcomes? How convincing is the discussion of attribution and contribution, as well as the constraints to attributing effects to the intervention.<br><br>The effects of the intervention on differentiated groups, including those with specific needs due to gender, vulnerability or marginalisation, should be discussed explicitly. | Final report:<br><br>The report clearly sets out the evaluators assessment of performance at the output and outcome levels and the reasoning behind the ratings.<br><br>Capacity assessments at outcome level are always constrained by a lack of any pre- and post assessments by the project itself and as part of its monitoring plans. | **5** |
| **(ii) Likelihood of Impact:** How well does the report present an integrated analysis, guided by the causal pathways represented by the TOC, of all evidence relating to likelihood of impact?<br>How well are change processes explained and the roles of key actors, as well as drivers and assumptions, explicitly discussed?<br>Any unintended negative effects of the project should be discussed under Effectiveness, especially negative effects on disadvantaged groups. | Final report:<br><br>This short section would benefit from a slightly more in-depth discussion of the drivers and assumptions, although it is noted that the discussion of the broader context does occur throughout the report. | **4** |
| **E. Financial Management**<br>This section should contain an integrated analysis of all dimensions evaluated under financial management and include a completed 'financial management' table.<br>Consider how well the report addresses the following:<br>• *Adherence* to UNEP's financial policies and procedures | Final report:<br><br>A concise section supported by information on expenditures under Project Finance and Annex D | **5** |

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| • *completeness* of financial information, including the actual project costs (total and per activity) and actual co-financing used<br>• *communication* between financial and project management staff | | |
| **F. Efficiency**<br>To what extent, and how well, does the report present a well-reasoned, complete and evidence-based assessment of efficiency under the primary categories of cost-effectiveness and timeliness including:<br>• Implications of delays and no cost extensions<br>• Time-saving measures put in place to maximise results within the secured budget and agreed project timeframe<br>• Discussion of making use during project implementation of/building on pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc.<br>• The extent to which the management of the project minimised UNEP's environmental footprint. | Final report:<br><br>A clear section in which the evaluators make their assessment of efficiency evident. It is noted the environmental sustainability is also discussed under Sustainability. | **5** |
| **G. Monitoring and Reporting**<br>How well does the report assess:<br>• Monitoring design and budgeting *(including SMART results with measurable indicators, resources for MTE/R etc.)*<br>• Monitoring of project implementation *(including use of monitoring data for adaptive management)*<br>• Project reporting *(e.g. PIMS and donor reports)* | Final report:<br><br>Discussion of all three sub-categories is provided. | **5** |
| **H. Sustainability**<br>How well does the evaluation identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of achieved project outcomes including:<br>• Socio-political Sustainability<br>• Financial Sustainability<br>• Institutional Sustainability | Final report:<br><br>The discussion covers all three dimensions and notes different levels of likelihood that underpin the overall rating. | **5** |
| **I. Factors Affecting Performance**<br>These factors are <u>not</u> discussed in stand-alone sections but are **integrated in criteria A-H as appropriate**. Note that these are described in the Evaluation Criteria Ratings Matrix. To what extent, and how well, does the evaluation report cover the following cross-cutting themes:<br>• Preparation and readiness<br>• Quality of project management and supervision[i]<br>• Stakeholder participation and co-operation<br>• Responsiveness to human rights and gender equity<br>• Environmental and social safeguards<br>• Country ownership and driven-ness<br>• Communication and public awareness | Final report:<br><br>All elements are summarised. The discussion of gender is general but does include reference to the content of country-level strategies/policy documents.<br><br>An additional section on Technology Transfer is provided at the request of the project team. | **5** |
| ***VI. Conclusions and Recommendations***<br><br>**i. Quality of the conclusions:** The key strategic questions should be clearly and succinctly addressed within the conclusions section.<br>It is expected that the conclusions will highlight the main strengths and weaknesses of the project and connect them in a compelling story line. Human rights and gender dimensions of the intervention (e.g. how these dimensions were considered, addressed or impacted on) should be discussed explicitly. Conclusions, as well as lessons and recommendations, should be consistent with the | Final report:<br><br>The conclusion brings together the main findings and insights contained in the report. It is noted that the strategic questions set out in the TOR are not explicitly addressed in this section but are covered throughout the report. | **5** |

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| evidence presented in the main body of the report. | | |
| **ii) Quality and utility of the lessons:** Both positive and negative lessons are expected and duplication with recommendations should be avoided. Based on explicit evaluation findings, lessons should be rooted in real project experiences or derived from problems encountered and mistakes made that should be avoided in the future. Lessons must have the potential for wider application and use and should briefly describe the context from which they are derived and those contexts in which they may be useful. | Final report:<br><br>Relevant lessons are identified and combined with other learning derived during the project itself. | **5** |
| **iii) Quality and utility of the recommendations:**<br>To what extent are the recommendations proposals for specific action to be taken by identified people/position-holders to resolve concrete problems affecting the project or the sustainability of its results? They should be feasible to implement within the timeframe and resources available (including local capacities) and specific in terms of who would do what and when.<br>At least one recommendation relating to strengthening the human rights and gender dimensions of UNEP interventions, should be given.<br>Recommendations should represent a measurable performance target in order that the Evaluation Office can monitor and assess compliance with the recommendations. | Final report:<br><br>The recommendations relate, broadly, to how similar work could be improved in the future. Some effort will be needed to convert these into actionable points at both project and institutional levels. | **4.5** |
| ***VII. Report Structure and Presentation Quality*** | | |
| **i) Structure and completeness of the report:** To what extent does the report follow the Evaluation Office guidelines? Are all requested Annexes included and complete? | Final report:<br>.All elements are included. | **5** |
| ii) **Quality of writing and formatting:**<br>Consider whether the report is well written (clear English language and grammar) with language that is adequate in quality and tone for an official document? Do visual aids, such as maps and graphs convey key information? Does the report follow Evaluation Office formatting guidelines? | Final report:<br><br>The quality of writing and formatting falls within the UNEP guidance. | **5** |
| **OVERALL REPORT QUALITY RATING** | | **5 Satisfactory** |

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1. The overall quality of the evaluation report is calculated by taking the mean score of all rated quality criteria.

At the end of the evaluation, compliance of the evaluation process against the agreed standard procedures is assessed, based on the table below. *All questions with negative compliance must be explained further in the table below.*

| **Evaluation Process Quality Criteria** | **Compliance** | |
|---|---|---|
| | **Yes** | **No** |
| **Independence:** | | |
| 1. Were the Terms of Reference drafted and finalised by the Evaluation Office? | **Y** | |
| 2. Were possible conflicts of interest of proposed Evaluation Consultant(s) appraised and addressed in the final selection? | **Y** | |
| 3. Was the final selection of the Evaluation Consultant(s) made by the Evaluation Office? | **Y** | |
| 4. Was the evaluator contracted directly by the Evaluation Office? | **Y** | |
| 5. Was the Evaluation Consultant given direct access to identified external stakeholders in order to adequately present and discuss the findings, as appropriate? | **Y** | |
| 6. Did the Evaluation Consultant raise any concerns about being unable to work freely and without interference or undue pressure from project staff or the Evaluation Office? | | **N** |

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| 7. If Yes to Q6: Were these concerns resolved to the mutual satisfaction of both the Evaluation Consultant and the Evaluation Manager? | **N/A** | |
| **Financial Management:** | | |
| 8. Was the evaluation budget approved at project design available for the evaluation? | **Y** | |
| 9. Was the final evaluation budget agreed and approved by the Evaluation Office? | **Y** | |
| 10. Were the agreed evaluation funds readily available to support the payment of the evaluation contract throughout the payment process? | **Y** | |
| **Timeliness:** | | |
| 11. If a Terminal Evaluation: Was the evaluation initiated within the period of six months before or after project operational completion? Or, if a Mid Term Evaluation: Was the evaluation initiated within a six-month period prior to the project's mid-point? | **Y** | |
| 12. Were all deadlines set in the Terms of Reference respected, as far as unforeseen circumstances allowed? | **Y** | |
| 13. Was the inception report delivered and reviewed/approved prior to commencing any travel? | **Y** | |
| **Project's engagement and support:** | | |
| 14. Did the project team, Sub-Programme Coordinator and identified project stakeholders provide comments on the evaluation Terms of Reference? | **Y** | |
| 15. Did the project make available all required/requested documents? | **Y** | |
| 16. Did the project make all financial information (and audit reports if applicable) available in a timely manner and to an acceptable level of completeness? | **Y** | |
| 17. Was adequate support provided by the project to the evaluator(s) in planning and conducting evaluation missions? | **Y** | |
| 18. Was close communication between the Evaluation Consultant, Evaluation Office and project team maintained throughout the evaluation? | **Y** | |
| 19. Were evaluation findings, lessons and recommendations adequately discussed with the project team for ownership to be established? | Y | |
| 20. Did the project team, Sub-Programme Coordinator and any identified project stakeholders provide comments on the draft evaluation report? | **Y** | |
| **Quality assurance:** | | |
| 21. Were the evaluation Terms of Reference, including the key evaluation questions, peer-reviewed? | **Y** | |
| 22. Was the TOC in the inception report peer-reviewed? | **Y** | |
| 23. Was the quality of the draft/cleared report checked by the Evaluation Manager and Peer Reviewer prior to dissemination to stakeholders for comments? | **Y** | |
| 24. Did the Evaluation Office complete an assessment of the quality of both the draft and final reports? | **Y** | |
| **Transparency:** | | |
| 25. Was the draft evaluation report sent directly by the Evaluation Consultant to the Evaluation Office? | **Y** | |
| 26. Did the Evaluation Manager disseminate (or authorize dissemination) of the cleared draft report to the project team, Sub-Programme Coordinator and other key internal personnel (including the Reference Group where appropriate) to solicit formal comments? | **Y** | |
| 27. Did the Evaluation Manager disseminate (or authorize dissemination) appropriate drafts of the report to identified external stakeholders, including key partners and funders, to solicit formal comments? | **Y** | |
| 28. Were all stakeholder comments to the draft evaluation report sent directly to the Evaluation Office | **Y** | |
| 29. Did the Evaluation Consultant(s) respond adequately to all factual corrections and comments? | **Y** | |
| 30. Did the Evaluation Office share substantive comments and Evaluation Consultant responses with those who commented, as appropriate? | **Y** | |

**Provide comments / explanations / mitigating circumstances below for any non-compliant process issues.**

| **Process Criterion Number** | **Evaluation Office Comments** |
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