Terminal Evaluation Review form, GEF Independent Evaluation Office, APR 2017

1. Project Data

Summary project data			
GEF project ID		2950	
GEF Agency project ID		521198	
GEF Replenishment Phase		GEF-3	
Lead GEF Agency (include all for joint projects)		IFC	
Project name		Lighting the "Bottom of the Pyramid"	
Country/Countries		Ghana, Kenya	
Region		AFR	
Focal area		Climate Change	
Operational Program or Strategic Priorities/Objectives		**Climate Change Strategic Priorities** 1 (Market transformation for high-volume low-GHG products), 2 (Increased access to local sources of finance), 4 (Productive uses of renewable energy) **GEF Operational Programs** 5 (Removal of Barriers to Energy Efficiency and Energy Conservation) and 6 (Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs)	
Executing agencies involved		NA	
NGOs/CBOs involvement		Beneficiary of business development activities, supported execution of consumer education and business development, consulted in project design	
Private sector involvement		Main beneficiaries (manufacturers, distributors, financial institutions), consulted in project design	
CEO Endorsement (FSP) /Approval date (MSP)		July 2007	
Effectiveness date / project start		September, 2007	
Expected date of project completion (at start)		December 2011	
Actual date of project completion		July 2013 (post-implementation activities end June 2014)	
Project Financing			
		At Endorsement (US $M)	**At Completion (US $M)**
Project Preparation Grant	GEF funding	UA	UA
	Co-financing	UA	UA
GEF Project Grant		5.4	5.258
Co-financing	IA own	5.0	UA
	Government	0.0	UA
	Other multi- /bi-laterals	1.0	UA
	Private sector	0.75	UA
	NGOs/CSOs	0.0	UA
Total GEF funding		5.4	5.258
Total Co-financing		6.75	UA
Total project funding (GEF grant(s) + co-financing)		12.15	UA
Terminal evaluation/review information			
TE completion date		December 2014	
Author of TE		Castalia Limited	
TER completion date		4/11/18	

TER prepared by	Nina Hamilton
TER peer review by (if GEF IEO review)	Molly Sohn

2. Summary of Project Ratings

Criteria	Final PIR	IA Terminal Evaluation	IA Evaluation Office Review	GEF IEO Review
Project Outcomes	S	NR	-	UA
Sustainability of Outcomes		NR	-	ML
M&E Design		NR	-	UA
M&E Implementation		NR	-	MS
Quality of Implementation		NR	-	MS
Quality of Execution		NR	-	MS
Quality of the Terminal Evaluation Report		NR	-	S

3. Project Objectives

3.1 Global Environmental Objectives of the project:

The project's global environmental objective was to reduce carbon emissions from fuel-burning for lighting, aiming to reduce between 782,000 (low-case scenario) to 3.9 megatonnes (high-case scenario) of CO2 emissions over a 10-year period, or 2 to 10% of the off-grid lighting-related CO2 emissions from Ghana and Kenya (PAD, pg. 12).

3.2 Development Objectives of the project:

The project's objective was to "accelerate the development of markets for modern (electric) off-grid lighting products to increase access to modern energy and reduce GHG emission by substituting the fuel-based lighting widely used in Ghana and Kenya", which would also "promote sustainable economic development by providing improved light quality at lower prices to communities that currently spend a disproportionate amount of their limited incomes on high cost fuels" (PAD, pg. 5). The PAD also noted other potential benefits including raising disposable income ~~at~~ for households and small businesses, and improving living conditions, specifically by improving health, safety and educational conditions (PAD, pg. 12).

To meet its objectives, the project planned to: (i) reduce market entry barriers for suppliers, (ii) reduce consumer costs (information, price, etc) in adopting the products, and (iii) ensure the long-term sustainability and commercial viability of the market (PAD, pg. 7). The project planned to achieve this through the following actions: (i) form a private sector consortium, (ii) understand customer needs and preferences, (iii) identify new distribution channels, (iv) set parameters for modern off-grid lighting products and foster competition, and (v) build institutions for market development (PAD, pg. 7).

3.3 Were there any **changes** in the Global Environmental Objectives, Development Objectives, or other activities during implementation?

Although the TE does not acknowledge any changes in the objectives or activities, the TE presents a different set of project components (and associated barriers they aim to reduce). Between the development of the PAD and the project start, the components were reframed (with some overlap) to: market intelligence, business development, access to finance, private sector development, and consumer education. The TE does not give an explanation, however the restructuring was likely done to better align the Kenya pilot project with the concurrent Lighting Africa Joint Venture (with the World Bank and IFC, which targeted African countries outside of Kenya and Ghana), which the TE evaluated jointly the Kenya program. The new components still addressed key barriers to market development,

however the barriers identified in the MTE and TE are slightly different than those identified in the PAD, resulting in different components. The revised objectives as outlined in the TE, with some overlap to the PAD but different targets, are:

- Increase access to better energy services for the base of the pyramid by mobilizing and providing support to the private sector to supply quality, affordable, clean and safe lighting to 1.5 million people through the sale of 300,000 off-grid lighting units
- Mitigate climate change: the conversion from fuel-based lighting to clean lighting will avoid emissions of GHG by 30,000 metric tonnes
- Mobilize IFC finance and non-IFC financing totaling $2.5 million
- Accelerate the development of a sustainable commercial market for quality off-grid lighting products in Kenya by: (i) facilitating the entry of six off-grid lighting products meeting Lighting Africa's quality standards and priced at below $25; (ii) increase the availability of quality products country-wide by linking international manufacturers to nine local distributors or bulk buyers with extensive distribution networks and (iii) enhance distribution of quality products to BOP by providing advisory services to 24 local distributors/importers to extend (TE, pg. 13).

4. GEF IEO assessment of Outcomes and Sustainability

Please refer to the GEF Terminal Evaluation Review Guidelines for detail on the criteria for ratings.

Relevance can receive either a Satisfactory or Unsatisfactory rating. For Effectiveness and Cost efficiency, a six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess. Sustainability ratings are assessed on a four-point scale: Likely=no or negligible risk; Moderately Likely=low risk; Moderately Unlikely=substantial risks; Unlikely=high risk. In assessing a Sustainability rating please note if, and to what degree, sustainability of project outcomes is threatened by financial, sociopolitical, institutional/governance, or environmental factors.

Please justify ratings in the space below each box.

4.1 **Relevance**	Rating: Satisfactory

This TER rates relevance as **satisfactory** as it aligns the GEF, IFC, World Bank, and national priorities in both Kenya and Ghana.

The project is aligned with GEF Climate Change Strategic Priorities 1) market transformation for high-volume low-GHG products, 2) increased access to local sources of finance, and 4) productive uses of renewable energy, in addition to GEF Operational Programs 5) Removal of Barriers to Energy Efficiency and Energy Conservation, and 6) Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs (PAD, pg. 11).

Furthermore, the World Bank Group made "energy access" one of the 3 key pillars of its *Clean Energy Investment Framework*, and within that "energy access" pillar, a key focus was the promotion of solutions for off-grid lighting (PAD, pg. 15). The project also aligns with IFC's Private Enterprise Partnership for Africa (PEP Africa), which aims to promote private sector investment in services (including energy), and to promote energy efficiency, among other objectives (TE, pg. 2).

In terms of alignment with country priorities, the PAD identified as many as 10 policy initiatives each in Kenya and Ghana that are consistent with the project's original objectives and activities (PAD, pg. 16). In Ghana, this includes the National Electrification Scheme (NES) which aims to provide grid connection to

all communities with over 500 residents by 2020, Energy Sector Reform including the National Petroleum Authority (NPA) which was created to oversee deregulation of downstream oil market, and the Strategic National Energy Plan (SNEP) 2006-2020 whose 10 core objectives include one to accelerate the use of renewable energies and energy efficiency technologies (PAD, pg. 17). However, evaluation interviews during the MTR suggested that "government skepticism about portable off-grid lighting products in general and the Lighting Africa program in particular remains high" (pg. 47).

In Kenya, the project is consistent with the country's national goal to provide 10% rural electrification by 2010 and 40% by 2020, with significant collaboration amongst multiple ministries. Furthermore, the project's objectives are in line with some of the key objectives from the Government of Kenya's 2006 Energy Act, which include: (i) supporting electrification of rural areas through renewable energy technologies (ii) promoting development of local capacity to maintain and operate basic renewable energy technologies, such as solar systems, (iii) facilitating implementation of pilot projects to promote efficient use of energy, and (iv) facilitating imports of energy efficient, cost-effective technologies (TE, pg. 2).

Interviews with authorities corroborated the relevance of the project, as one director at the Ministry of Energy indicated that the project "rightly targeted the country's objective of improving access to people living off the grid" (TE, pg. 41).

4.2 **Effectiveness**	Rating: Unable to assess

The TE does not provide a rating for effectiveness, and this TER is **unable to assess** the project's effectiveness since the project components and objectives changed substantially since the project appraisal phase, and because the evaluation only provides an assessment of achievements in one of the two project countries. Below is an assessment of effectiveness based on the revised objectives and components as outlined in section 3.3, for which the Kenya project satisfactorily met its output, outcome, and impact targets. Overall, four of the six revised market barriers were removed to a large extent, while two barriers still require more work (lack of access to finance for the supply chain, and lack of consumer awareness of solar lamps).

Although the TE did not evaluate the Ghana pilot, the MTR notes that effectiveness had been "uneven across geographies and interventions, with particular difficulties in Ghana" (pg. 9), a**nd that** external stakeholders perceived overall weaker execution of interventions in Ghana, as compared to Kenya (MTR, pg. 60). At the time of the MTR, the Ghana pilot had "begun to make notable gains in terms of quality lantern penetration, but many challenges remain unresolved, government buy-in is still lacking, and manufacturer commitment to the geography appears to be relatively weak" (pg. 11).

Market intelligence

The goal of this component was to research and disseminate information on consumer preferences and the off-grid lighting market. At the time of the MTR, the pilots in both Kenya and Ghana had reached above 300% over-performance against targets in terms of the number of copies of reports distributed or downloaded (MTR, pg. 66). The Kenya project did well at meeting its final market intelligence targets, as it assisted 24 companies through advisory services (120 percent of the target), delivered 20 reports (154 percent of the target), delivered 2 reports specifically with market-level recommendations (100 percent), and the recommendations were implemented by 12 entities (150 percent of target). Interviews with distributors also showed that the reports were useful and helped distributors learn more about trends in the market in Kenya, identify opportunities in new markets, and get statistics on household expenditure on kerosene and mobile phone chargers (TE, pg. 55).

Business Development
The goal of this component was to identify and link supply chain companies, and provide training on how to store and repair solar lamps. The MTR notes that the conferences in both Ghana (2008) and Kenya (2010) were universally praised by stakeholders for their "contributions to building positive attention for the market and for helping market participants share ideas and connect to potential partners and investors" (MTR, pg. 13).

The Kenya project did well at meeting its business development targets, meeting 23 of its 25 output indicators and 13 of its 15 outcome targets. The project delivered 16 workshops and training events (target was 12) and reached 340 people (target 200), and the majority of participants that provided feedback said they were satisfied with the workshops and confirmed that they had improved knowledge and practices as a result of their participation. In this component, 14 companies/organizations also implemented recommendations made through the project's business reports (TE, pg. 63-64). Notably, the target number of total female participants in the conferences and training events was not met, although the total participants target was met. Furthermore, the project outperformed on its efforts to expand and link the value chain for solar lamps, since 8 organizations reported changes to their business lines as a result of recommendations made by the project team, such as agreeing to become off-grid lighting channels.

Partly attributable to the project's advisory services, distributors sold 686,685 Lighting Africa-certified lamps, 129 percent more than targeted. As discussed in section 6.2, this number is likely an overestimate of the project's direct impact on expanding access to improved services, since interviews indicate that many of the end-users are already connected and use solar lamps as back-up.

Consumer Education
The goal of this component was to launch advertisements and hold education campaigns to inform base of the pyramid (BOP) off-grid lighting consumers about the benefits of solar lamps.
The Kenya project did well at meeting its targets, meeting 5 of its 6 output targets and all 3 of its outcomes. The project successfully leveraged media advertisements to reach 97% more people than targeted with 33% less advertisements than planned (TE, pg. 67). The project also reached over 6 times more people than targeted through its education campaigns about solar lamps, holding 4 times more forums than originally planned (1,157 forums held). The project reached 43,616 people through forums, 287,757 people through roadshows in Kenya, and an estimated 29.5 million people through media advertisements (fliers, TV, and radio) (TE, pg. 84). However, the TE questions the project's ability to reach the target audience through TV advertised since they are target at populations already connected to the grid. Furthermore, despite meeting these targets, evidence indicates that consumer awareness could still be improved in Kenya. For example, interviews and focus groups showed that many people still do not know solar lamps exist, and some have "more pressing needs to spend their money on", therefore the "concept of savings from buying a solar lamp had not been clearly communicated" (TE, pg. 84-85).

Access to Finance
The goal of this component was to consult with financial institutions to mobilize finance to the supply chain and end-users. In Ghana at the time of the MTR, "concrete outcomes have not yet materialized," but the project had "gained commitment from two local microfinance institutions for collaboration in sales and financing of solar portable lights" (MTR, pg. 74). Furthermore, the project had "enabled access to trade financing by Ghana's Trust Bank for four distributors marketing Lighting Africa-approved products" (MTR, pg. 75).

The Kenya project met or exceeded all of its final access to finance targets, as it provided advisory services to more than double the target number of financial institutions targeted, and 17 of the 19 institutions receiving advisory services implemented the recommended changes (three times higher than the target) and as a result began distributing and lending for Lighting Africa-certified products (TE, pg. 72). However, interviews over half the manufacturers interviewed reported that they had difficulties raising finance to implement recommended changes, and that the project had not supported them to raise finance (TE, pg. 83).

Private Sector Development
The component aimed to consult with off-grid lighting stakeholders to maintain the relevance of the project to stakeholder needs. Although this component did not have any indicators reported, the project successfully engaged with the Kenya Renewable Energy Association (KEREA) to take over certain activities after project completion (see section 4.4).

Impacts
The project successfully met all of its impact targets, although the accuracy of the Number of people receiving access to improved services and the Value of IFC financing facilitated is discussed in section 6.2.

- GHG emissions reduced: 68,669 metric tons (target: 30,000)
- Number of people receiving access to improved services: 3,433,425 (target: 1,500,000)
- Value of financing facilitated (US$): 1,766,519 (target: 1,500,000)
- Value of IFC financing facilitated (US$): 5,000,000 (target: 1,000,000)
- Number of LA approved products available in the market under $25: 7 (target: 6)

4.3 **Efficiency**	Rating: Moderately satisfactory

The TE does not provide a rating for project efficiency. Although there is very limited information on the efficiency of the Ghana project, the information provided is sufficient to assess overall efficiency as moderately satisfactory.

The TE notes that the programs' relative administrative costs were reasonable and in fact lower than similar programs (TE, pg. 4). The TE also indicates that the budget was overall well-managed, spending $5.252 million of the $5.258 million secured (TE, pg. 20). However, the TE notes that there are inconsistencies in the reported budget and spending across different sources, making it difficult to determine the total project budget and costs (TE, pg. 19). Furthermore, the spending for the Ghana project were not included in the evaluation. IFC was also able to recoup some of their costs by charging registration fees for the conferences in the business development component (TE, pg. 19).
Overall, the management and operational structure was efficient, particularly the size, geographic distribution and use of both short-term and long-term staff (TE, pg. 24). However, the Kenya and Ghana projects were delayed approximately six months while replacing the Program Managers, who both left at the end of 2008. During this time the activities were delayed and did not fully get underway until mid-2009 when the manager was replaced (TE, pg. 23).

Furthermore, the TE's cost-benefit analysis calculated a positive net benefit from the solar lamps, including environmental, economic, and health benefits, however the calculation included both the Kenya project and the separate Joint Venture (TE, pg. 11).

Another noteworthy efficiency was in the consumer education component, where "although the target for media advertisements was not met, the outcome of people reached was far exceeded," indicating that the activities were highly efficient at reaching the target number of people (TE, pg. 67).

4.4 **Sustainability**	Rating: Moderately likely

The TE does not provide a rating for sustainability, and this TER rates sustainability **moderately likely** since the project identified a sustainability partner for projects in Kenya and at a global scale, and a financing facility was established, despite risks to sustainability in Ghana.

Sociopolitical:
This TER rates sociopolitical sustainability as **moderately likely**, given the strong ownership by stakeholders to sustain project activities, however there are some risks pertaining to the Ghana pilot and Kenya's consumer education activities.

Distributors in Kenya and Ghana, both energy and non-energy related expressed great interest in the project and in the market for off-grid lighting given the latent demand for better lighting services, and the project was developed in partnership with the industry to ensure support from the lighting industry and stakeholders at large (PAD, pg. 6).

The benefits of informing suppliers of consumer preferences in Kenya is likely to be sustained since the team had made most of the project's information products available for free on the Lighting Africa website, ensuring these entities' long-term capacity to understand the market. Furthermore, supply chain firms that have found other benefits through partnership with Lighting Africa are likely to maintain the partnership (TE, pg. 36).

In Kenya, the Kenya Renewable Energy Association (KEREA) has already taken ownership over the sustainability of the project, already working with supply chain businesses to facilitate business networking and linkages, such as by leading a tour of Kenyan businesses to meet the Bavarian Employers Association in Germany and facilitate business linkages in the solar, geothermal, and micro-hydro sectors (TE, pg. 36). However, the TE notes that consumer awareness appears to not have been "catalyzed sufficiently for information to be sustained by word-of-mouth" and KEREAs smaller-scale activities, and after project completion there is a risk that the momentum for consumer education activities in Kenya will be lost (TE, pg. 41).

In Ghana, however, a lack of stakeholder buy-in greatly undermined the project's effectiveness and presents a serious risk to the pilot's sustainability. The MTR notes that the Ghana pilot "has from its earliest days been a more difficult case partly due to less relevance at the outset of the pilot given Ghana's smaller and harder to access off-grid consumer base, its less developed renewable energy market, and more limited government buy-in" (MTR, pg. 10). For example, MTR interviews noted that "that Ghanaian government stakeholders saw off-grid lighting as an "inferior" solution to grid extension for the mass market" and "have expressed skepticism" (MTR, pg. 88). Furthermore, the "presence of another WB off-grid energy initiative on the ground (GEDAP) with different execution modalities but arguably competing objectives and overlapping stakeholder groups, was another complication and source for market confusion," resulting in low buy-in from relevant stakeholders (MTR, pg. 10). Overall, the lack of major visible successes in Ghana had led to strong skepticism about the project's overall effectiveness.

In fact, the MTR anticipated serious risks to the Ghana pilot's sustainability and recommended that the project team "prepare for an exit from Ghana or develop clear rationale for continued presence" by

starting to prepare the organization and external stakeholders, re-align remaining Ghana spending to prioritize learning, invest in sustainability in Ghana, and explore opportunities for handover to the Ghana Energy Development and Access Project (GEDAP) which was another World Bank off-grid energy initiative in Ghana that had overlapping stakeholder groups and was a source for market confusion (MTR, pg. 127).

Environmental:
The environmental sustainability is rated **moderately unlikely**, since environmental benefits are likely to continue as long as the lighting products are in the market and there is sustained demand, however a lack of mitigation measures for battery disposal pose a great risk.

The PAD noted that many programs promoting off-grid solutions have had the unintentional consequence of creating a solid waste problem due to unmanaged battery disposal, and emphasized the need for a mechanism to mitigate this issue (PAD pg. 37). However, there is no evidence that mitigation measures were implemented, such as the suggested "trade in" concept which would "encourage consumers to bring expired products in for proper disposal by distributors and manufacturers with local recycling agents" (TE, pg. 90). This environmental risk must be addressed to ensure the project's environmental sustainability.

Financial:
Financial sustainability is rated **moderately likely**, given the IFC's work identifying entities to carry on project activities post-completion without donor funding, and given recent advancements in establishing a financing facility.

The team successfully identified the Kenya Renewable Energy Association (KEREA), a local organization established in 2002 by the renewable energy committee of the Kenya Bureau of Standards (KEBS), as a sustainability partner since many project activities fit well within KEREA's mission, and the TE found no concerns relating to KEREA's ability to manage these activities (TE, pg. 4-5). Furthermore, despite difficulties setting up a facility during project implementation, the IFC reached an agreement with Responsibility and Shell Foundation shortly after project completion to set up a US$30 million financing facility for manufacturers importing products to Kenya, and there plans to scale up the facility to $100 million once the model is proved successful (TE, pg. 83). Therefore, although limited, the project has mobilized sustainable financing.

Furthermore, the TE notes that in Kenya "it seems that the market is functioning well enough on its own to [mobilize finance to additional consumers in Kenya] with no further assistance," since there are "approximately 11 microfinance institutions in Kenya now providing consumer finance for Lighting Africa-certified solar lamps" and they appear to also be taking an active role in directly promoting and selling solar lamps (TE, pg. 38).

Institutional framework and governance:
Institutional sustainability is rated **moderately likely**, since mechanisms are in place for sustainability partners to take over project activities in Kenya and at the global level.

The project identified the Kenya Renewable Energy Association (KEREA) as a sustainability partner to sustain project activities in Kenya, and the Global Off-Grid Lighting Association (GOGLA) and IFC are continuing activities at the global scale (TE, pg. 32). KEREA was also involved in the project early on by joining the Lighting Africa Advisory Council, and specifically plans to sustain the following benefits: (i) improving tariffs and policies to support the solar lamp market, and (ii) increasing consumer awareness

of solar lamps (TE, pg. 34). The TE notes that KEREA seems well placed to sustain these benefits, particularly sustaining a supportive policy and regulatory environment for solar lamps, since KEREA was established by a government agency which facilitates their connections with government agencies, and because KEREA was already operating in the sector long before this project began.

Furthermore, the regulatory environment in Kenya has become more supportive of solar lamps than at the beginning of the project, when the Government of Kenya raised import taxes on solar lamps. In 2011, the government removed these taxes for all solar lamps as a result of KEREA's engagement with the project team to review the bill. The project also engaged with the Kenya National Bureau of Standards (KEBS) to advise them on adopting Lighting Africa minimum quality standards following suite of the International Electro-technical Commission (IEC), and at the time the TE consultation process was still underway (TE, pg. 82).

5. Processes and factors affecting attainment of project outcomes

5.1 Co-financing. To what extent was the reported co-financing essential to the achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The Kenya and Ghana projects had planned to secure $1 million from donors and/or IFC cash contribution (including contributions from several European governments and the European Commission) and $750,000 in direct industry contributions, and leverage $18.7 million from end-users through the purchase of energy-efficient lighting products and $6.25 million from private companies investing in product development and marketing initiatives (PAD, pg. 8-10). However, the PAD noted that IFC did not seek formal commitments for co-funding at the project appraisal stage, and instead estimated the amount of co-financing it would leverage by asking companies to express interest in the project by "signing-up" via a website set up to capture these expressions of interest (pg. 10).

The TE does not provide clear information on the materialization of co-financing, noting that the Kenya project completion report did not provide complete reporting on the project funding sources and that there were inconsistencies in the reported budget and spending across different sources (TE, pg. 27). However, the TE also indicates that the Italian Government contributed approximately $2.5 million for activities during implementation and post-implementation (TE, pg. 20). There is no discussion of the extent to which co-financing affected outcomes, and there is no information on co-financing for the Ghana project.

5.2 Project extensions and/or delays. If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The Kenya and Ghana projects were delayed approximately six months while replacing the Program Managers, who both left at the end of 2008. During this time the activities were delayed and did not fully get underway until mid-2009 when the managers were replaced (TE, pg. 23). Furthermore, the Kenya project officially closed (along with the Joint Venture) in July 2013, however post-implementation activities continued until mid-2014, specifically for the policy and business development components (TE, pg. 9). At the time of the MTR, there was a 12-month delay in meeting the mid-term target number of sales of quality lanterns, "a shortfall at least in part due to the significantly delayed launch of LA country pilots" (MTR, pg. 112).

5.3 Country ownership. Assess the extent to which country ownership has affected project outcomes and sustainability? Describe the ways in which it affected outcomes and sustainability, highlighting the causal links:

Lighting manufacturers, suppliers, and distributors in Kenya and Ghana expressed great interest in the project early on, and the project design was developed in partnership and received strong support from the lighting industry and stakeholders at large (PAD, pg. 6).

The Government of Kenya has also shown commitment regarding a supportive regulatory environment since it has become more supportive of solar lamps than it was at the beginning of the project, when the Government of Kenya raised import taxes on solar lamps. In 2011, the government removed these taxes for all solar lamps (TE, pg. 82). However, the TE also notes that activities could have been designed more efficiently by "leveraging more of the consumer associations in Kenya as key partners in spreading the word about Lighting Africa-certified solar lamps", indicating a key group that must be engaged in the future (TE, pg. 30).

Furthermore, during the project, stakeholders in Kenya demonstrated continued commitment by paying for attendance at international conferences under the business development component (TE, pg. 49). Overall, continued commitment by relevant stakeholders, government, and industry are crucial to the sustainability of the project outcomes and continued market development.

Microfinance institutions in Kenya have also demonstrated commitment to sustain the project's benefits, as the TE notes that "it seems that the market is functioning well enough on its own to [mobilize finance to additional consumers in Kenya] with no further assistance," since there are "approximately 11 microfinance institutions in Kenya now providing consumer finance for Lighting Africa-certified solar lamps" and they appear to also be taking an active role in directly promoting and selling solar lamps (TE, pg. 38). Furthermore, and the project's outcomes indicate, the majority of financial institutions receiving advisory services implemented the recommended changes and now distribute and lend for Lighting Africa-certified products. This further illustrates the ownership by Kenya's financial institutions.

In Ghana, however, a lack of country ownership greatly undermined the project's effectiveness. The MTR notes that the Ghana pilot "has from its earliest days been a more difficult case partly due to less relevance at the outset of the pilot given Ghana's smaller and harder to access off-grid consumer base, its less developed renewable energy market, and more limited government buy-in" (MTR, pg. 10). For example, MTR interviews noted that "that Ghanaian government stakeholders saw off-grid lighting as an "inferior" solution to grid extension for the mass market" and "have expressed skepticism" (MTR, pg. 88). Furthermore, the "presence of another WB off-grid energy initiative on the ground (GEDAP) with different execution modalities but arguably competing objectives and overlapping stakeholder groups, was another complication and source for market confusion," resulting in low buy-in from relevant stakeholders (MTR, pg. 10).

6. Assessment of project's Monitoring and Evaluation system

Ratings are assessed on a six point scale: Highly Satisfactory=no shortcomings in this M&E component; Satisfactory=minor shortcomings in this M&E component; Moderately Satisfactory=moderate shortcomings in this M&E component; Moderately Unsatisfactory=significant shortcomings in this M&E component; Unsatisfactory=major shortcomings in this M&E component; Highly Unsatisfactory=there were no project M&E systems.

Please justify ratings in the space below each box.

6.1 **M&E Design at entry**	Rating: Unable to assess

The TE does not provide a rating, and this TER is **unable to assess** the quality of the M&E plan since there were significant changes made to the structure of the program since CEO endorsement.

As outlined in the PAD, the project planned to conduct reviews of progress after each step/phase in the project to ensure the expected results are being achieved and make adjustments as necessary (pg. 28), however the project structure outlined in the TE does not involve a phased approach.

The M&E plan in the PAD was based on SMART indicators which aligned well with the logical framework, and drew from lessons learned from the IFC/GEF Efficient Lighting Initiative, the "first multi-country global market transformation program undertaken with a fully integral, large-scale M&E effort built into the program design and execution," particularly lesson learned regarding the development of measurable project objectives (PAD, pg. 59).

The project planned to identify 1 to 2 countries in Africa with similar characteristics to Kenya and Ghana to serve as a reference market for the project's impact, and had planned to collect baseline data as part of the component regarding end-user preferences, identifying and clarifying end-user needs and preferences in terms of lighting services, total spending, key purchasing criteria, and social/cultural drivers of lighting choices (PAD, pg. 30). However, it is unclear whether this was planned for the project design evaluated in the TE.

The TE notes that the project used standard indicators that are used across IFC projects, and the would have benefited from customized indicators, in addition to the standard ones, to more accurately capture the project's benefits. This was noted in the MTE, however the indicators were not adapted, making it difficult to track project performance in relation to expected outcomes (TE, pg. 88). Furthermore, the indicators given in the TE do not cover all components of the project, for example there were no indicators for the policy development and market development components.

Overall, the TE indicates that the project could have improved monitoring through a "more careful definition of the theory of change, and a smaller, more focused set of output, outcome and impact indicators" (TE, pg. 6). However, the changes in project design, objectives, and indicators make it difficult to assess the project's final M&E system.

6.2 **M&E Implementation**	Rating: Moderately satisfactory

The TE does not provide a rating for M&E implementation, and this TER provides a rating of **moderately satisfactory**. However, the TE does not provide information on the M&E implementation for the Ghana project.

The M&E system was generally well-implemented, however the TE notes a few indicators that were likely overestimated by the project team. First, the value of IFC financing facilitated for the Kenya project should be reported as zero, instead of USD 5 million, since the USD 5 million financing facility for distributors was approved during project but has since been put on hold and no funds have been disbursed (TE, pg. 3). Second the number of people receiving access to improved services as a result of the project is likely overestimated (3,433,425 people in Kenya) since interviews with consumers in Kenya revealed that some people who purchased solar lamps were already connected to the grid and used

solar lamps as a back-up during electricity outages, and therefore "these people did not gain access to improved services in the sense of having modern lighting for the first time" (TE, pg. 3). Further research is needed to determine the extent to which the solar lamp sales can be attributed to the project. More customized indicators and additional approaches, such as 'follow the product' exercises, could help capture the project's benefits more accurately.

Furthermore, as noted earlier, there were inconsistencies in the reported budget and spending with different totals across different sources (e.g. Completion Reports and other spreadsheets). Because the spending and budget are reported differently in the two sources (by program component versus type of spending), "the differences cannot be easily reconciled" (TE, pg. 27).

The PAD noted that IFC would pay attention to progress at critical points between project phases/components (in the original project design) for adaptive management (pg. 42), however it is unclear whether this was implemented.

7. Assessment of project implementation and execution

Quality of Implementation includes the quality of project design, as well as the quality of supervision and assistance provided by implementing agency(s) to execution agencies throughout project implementation. Quality of Execution covers the effectiveness of the executing agency(s) in performing its roles and responsibilities. In both instances, the focus is upon factors that are largely within the control of the respective implementing and executing agency(s). A six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess.

Please justify ratings in the space below each box.

7.1 **Quality of Project Implementation**	Rating: Moderately satisfactory

The TE does not provide a rating for quality of project implementation or execution, and this TER rates both as **moderately satisfactory**. The IFC directly executed this project, taking on the role of both implementing and executing agency.

Overall, the Kenya project's human and financial resources were well-managed. The team and logistics were appropriately managed, for the most part, in-country (TE, pg. 23). Having the management team was critical for designing and executing an approach that was adapted to the local market. The local presence also facilitated the development of partnerships with local partners, such as for identifying corporations and NGOs to reach out to for employee trainings on solar lamps (TE, pg. 23). The project also made good use of balancing short-term specialists and a smaller, long-term core team. This was particularly appropriate given that these projects were pilots "without the certainty of scaling up in the future" and therefore "made sense to have a lot of temporary staff rather than hire full-time IFC staff to work on the programs" (TE, pg. 23). The core IFC team was also beneficial for gaining the trust of financial institutions which IFC consulted with regarding access to finance. The IFC's "strong reputation for making sound financial investments and being a 'first mover' in promising markets" and existing relationship with many international banks and investors facilitated these consultations since they had already instilled confidence in the financial institutions (TE, pg. 20).

However, the team did run into difficulties when the Kenya and Ghana projects were delayed approximately six months while replacing the Program Managers, who both left at the end of 2008. During this time the activities were delayed and did not fully get underway until mid-2009 when the managers were replaced (TE, pg. 23).

Kenya's project team also did well to respond to stakeholder needs that arose during the project, such as when retailers and bulk buyers were not properly storing or using the solar lamps, in response the project "trained these retailers and bulk buyers how to use solar lamps and how to properly store them to retain the quality" (TE, pg. 19).

The MTR notes that "external stakeholders commended Lighting Africa staff on their professionalism, responsiveness, dedication, strong client relationships, and experience with off-grid lighting in the region," however the Ghana pilot was criticized for "a lack of tangible results and renewable energy expertise on the local Lighting Africa team" (MTR, pg. 100).

7.2 **Quality of Project Execution**	Rating: Moderately satisfactory

See above.

8. Assessment of Project Impacts

Note - In instances where information on any impact related topic is not provided in the terminal evaluations, the reviewer should indicate in the relevant sections below that this is indeed the case and identify the information gaps. When providing information on topics related to impact, please cite the page number of the terminal evaluation from where the information is sourced.

8.1 Environmental Change. Describe the changes in environmental stress and environmental status that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

Exceeding the project's target, the sale of solar lamps is estimated to have reduced GHG emissions by 68,669 metric tons.

8.2 Socioeconomic change. Describe any changes in human well-being (income, education, health, community relationships, etc.) that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

As a result of the project, an estimated 3,433,425 people in Kenya are receiving access to improved services, which has the potential to increase the of Small Enterprises, increase disposable income of households, and provide educational benefits due to the link between quality of lighting and levels of educational performance.

8.3 Capacity and governance changes. Describe notable changes in capacities and governance that can lead to large-scale action (both mass and legislative) bringing about positive environmental change. "Capacities" include awareness, knowledge, skills, infrastructure, and environmental monitoring systems, among others. "Governance" refers to decision-making processes, structures and systems, including access to and use of information, and thus would include laws, administrative bodies, trust-building and conflict resolution processes, information-sharing systems, etc. Indicate how project activities contributed to/ hindered these changes, as well as how contextual factors have influenced these changes.

a) Capacities

The greatest impact of this project was in the capacity development of manufacturers, distributors, and financial institutions. The project's reports directly helped distributors learn more about trends in the market in Kenya, identify opportunities in new markets, and get statistics on household expenditure on kerosene and mobile phone chargers (TE, pg. 81). Furthermore, suppliers can now access information on consumer preferences in Africa and on the state of the market for free on the Lighting Africa website. Interviews also indicated the workshops and trainings did improve participants' knowledge and practices regarding the off-grid lighting market. By implementing recommended changes from advisory services and business reports in business development, access to finance, and market intelligence components, entities have also demonstrated their increased capacity to continue developing the market.

Furthermore, the project successfully mobilized USD 1,766,519 of financing and has established a USD 30 million financing facility with Responsibility and Shell Foundation, and as a result of the project 7 Lighting Africa-approved products available in the market, all priced under $25.

b) Governance

The regulatory environment in Kenya has become more supportive of solar lamps than at the beginning of the project, when the Government of Kenya raised import taxes on solar lamps. In 2011, the government removed these taxes for all solar lamps as a result of KEREA's engagement with the project team to review the bill.

8.4 Unintended impacts. Describe any impacts not targeted by the project, whether positive or negative, affecting either ecological or social aspects. Indicate the factors that contributed to these unintended impacts occurring.

There were no documented unintended impacts.

8.5 Adoption of GEF initiatives at scale. Identify any initiatives (e.g. technologies, approaches, financing instruments, implementing bodies, legal frameworks, information systems) that have been mainstreamed, replicated and/or scaled up by government and other stakeholders by project end. Include the extent to which this broader adoption has taken place, e.g. if plans and resources have been established but no actual adoption has taken place, or if market change and large-scale environmental benefits have begun to occur. Indicate how project activities and other contextual factors contributed to

these taking place. If broader adoption has not taken place as expected, indicate which factors (both project-related and contextual) have hindered this from happening.

As a result of IFC's efforts to identify sustainability partners to sustain the project's activities post-completion, the Kenya Renewable Energy Association (KEREA), Global Off-Grid Lighting Association (GOGLA) and IFC are already continuing activities in Kenya and the global scale (TE, pg. 32). KEREA specifically plans to sustain the following benefits: (i) improving tariffs and policies to support the solar lamp market, and (ii) increasing consumer awareness of solar lamps (TE, pg. 34).

Furthermore, the IFC and World Bank created the Lighting Africa Joint Venture (a global program) to support activities that were not country-specific, such as "developing industry quality standards for the solar lamps, fostering industry associations to support the market for off-grid lighting products, market intelligence activities, and advising governments on a supportive regulatory environment for solar lamps" (TE, pg. 9).

9. Lessons and recommendations

9.1 Briefly describe the key lessons, good practices, or approaches mentioned in the terminal evaluation report that could have application for other GEF projects.

- **As the project is scaled up, three key success factors need to maintained**: 1) operate in areas where there is proven strong demand for improved off-grid lighting solutions, 2) have a carefully designed set of interventions which simultaneously target all major market barriers and tailor the components to target the specific barriers identified in the target countries, and 3) continue to focus on market transformation and resist the ever-present temptation to spend money buying lamps for poor people, while vigorously pursuing pro-market interventions like micro-finance to assist purchase of solar lamps.

Regarding project design:

- **An "on-the box" quality seal is needed**. Lighting Africa needs a consumer-facing, recognizable quality-seal that lets consumers know which lamps then can trust.
- **Consumer education activities need to focus on effective channels**. While effective channels will differ from market to market, experience in Kenya suggest that partnering with existing associations and micro-finance providers can turbo-charge consumer education and uptake.
- **Access to Finance needs to be boosted for the supply chain and consumers.**

Regarding M&E:

- **Attribution of sales to Lighting Africa program should be improved**. Before starting in a new country, baseline studies in the target country should be undertaken. At the same intervention should be done. Sales should then be tracked in the target and non-target countries.
- **Estimation of sales to un-electrified households should be improved**. This can be done through 'follow the product' exercises with a sample of LA-certified solar lamps.

9.2 Briefly describe the recommendations given in the terminal evaluation.

- **Operations can be improved in the areas of key staff and information management**. Risks from staff turnover, particularly key staff such as program managers, should be better managed. All key program documents need to be stored in a central, easy-to-access location. Data needs to be reported consistently across program documents. Information technology systems and staff processes need to ensure that key data is frequently backed-up to the central location.
- **The Lighting Africa team needs to be specialized**. The LA team must include experts in each component area (or at least people who can acquire the skills on the job and use them in other countries going forward). Not having a specialized team will lead to efficiency losses.
- **Lighting Africa should have regional hubs**, as is currently been done with Lighting Asia/India and Lighting MENA. Each regional hub should have at least one LA component specialist that will be deployed to work on engagements in countries within the region, as needed.
- **Each country team should have at least one dedicated full time staff member that is solely focused on LA activities**. This dedicated team structure was one of the success factors in the LA Kenya pilot, and the LA Kenya team has developed a specialized skillset that makes them well placed to support program implementation in other countries.

10. Quality of the Terminal Evaluation Report

A six point rating scale is used for each sub-criteria and overall rating of the terminal evaluation report (Highly Satisfactory to Highly Unsatisfactory)

Criteria	**GEF IEO comments**	Rating
To what extent does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives?	The TE provides a comprehensive assessment of outcome and output indicators, as well as the extent to which these actually reduced market barriers.	**MU**
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	The report was internally consistent, however not always clear on whether outcomes were attributed to the Kenya pilot, Joint Venture, or the two combined (for example, with cost-benefit analysis).	**MS**
To what extent does the report properly assess project sustainability and/or project exit strategy?	The TE gives a comprehensive assessment of project sustainability.	**S**
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	The TE provides comprehensive recommendations for replication and scaling of this project.	**S**
Does the report include the actual project costs (total and per activity) and actual co-financing used?	The TE reports actual project cost, total and per activity, however does not provide information on actual co-financing used.	**MU**
Assess the quality of the report's evaluation of project M&E systems:	The TE gives a strong assessment of the project's M&E systems and theory of change, accurately pointing out assumptions that led to overestimates of outcomes directly attributable to the project (for example, the number of people receiving access to improved services).	**HS**
Overall TE Rating		**MS**

11. Note any additional sources of information used in the preparation of the terminal evaluation report (excluding PIRs, TEs, and PADs).

No additional sources of information were used.