United Nations Environment Programme

Terminal Evaluation of the Project

"Development of a Strategic Market Intervention Approach for Grid-Connected Solar Energy Technology (EMPower)"

Project Number: GF/2328-2722-4767/4866

Final Report

Brahmanand Mohanty

Evaluation Office

January 2013

Acronyms and Abbreviations

BMZ	**German Ministry for Economic Co-operation and Development**
BSP	**Bali Strategic Plan**
CSP	**Concentrated Solar Power**
EA	**Executing Agency**
GEF	**Global Environment Facility**
GHG	**Greenhouse gas**
IA	**Implementing Agency**
IAB	**Industry Advisory Board**
IEA	**International Energy Agency**
KfW	**Kreditanstalt für Wiederaufbau (Reconstruction Credit Institute)**
MSP	**Medium Sized Project**
MTS	**Medium Term Strategy**
OECD	**Organisation for Economic Cooperation and Development**
PIM	**Project Information Memorandum**
PIR	**Project Implementation Review**
PFS	**Project Feasibility Study**
REC	**Renewable Energy Certificate**
RET	**Renewable Energy Technology**
ROtI	**Review of Outcomes to Impacts**
RPS	**Renewable Portfolio Standard**
SET	**Solar Electric Technology**
SPV	**Solar Photovoltaic**
STAP	**Scientific and Technical Advisory Panel**
UNEP	**United Nations Environment Programme**
UNEP/DTIE	**UNEP's Division of Technology, Industry and Economics**
UNFCCC	**United Nations Framework Convention on Climate Change**
UNOPS	**United Nations Office for Project Services**

CONTENTS

PROJECT IDENTIFICATION TABLE

Table 1. Project Summary

GEF project ID:	**1599**	IMIS number:	**GF/2328-2722-4767**[1] **GF/2328-2722-4866**[2]
Focal Area(s):	Climate Change	**GEF OP #:**	**OP 7: Reducing the Long-Term Costs of Low Greenhouse Gas-Emitting Energy Technologies.**
GEF Strategic Priority/Objective:	5	**GEF approval date:**	**14 Nov 2003**
Approval date:	April 2004	**First Disbursement:**	**July 2004**
Actual start date:	July 2004	**Planned duration:**	**36**
Intended completion date:	Initial phase - March 2007; Second stage/refinanced subproject - March 2010	**Actual completion date:**	**Refinanced second stage completed - July 2010**
Project Type:	MSP	**GEF Allocation*:**	**US$ 0.975m**
PDF GEF cost:	US$ 0.025M	**PDF co-financing*:**	**0.010M**
Expected MSP/FSP Co-financing:	EUR 1.120M	**Total Cost*:**	**US$1.010M + EUR 1.120M**
Mid-term review/eval. (planned date):	-	**Terminal Evaluation (actual date):**	**July 2012 - January 2013**
Mid-term review/eval. (actual date):	-	**No. of revisions:**	**GFL/4767 Rev 3 GFL/4866 Rev 2**
Date of last Steering Committee meeting:	Last Steering Committee 19-21 March 2007; Industry Advisory Board (IAB) Kick-off Meeting 1 July 2009; Casablanca Forum 15-16 June 2010	**Date of last Revision*:**	**18 Dec 2007**
Disbursement as of 30 June 2010:	GFL/4767: US$ 116,950; GFL/4866 : US$762,693		
Total co-financing realized as of 30 June 2010:	**EUR 1,000,000**[3] **by German Ministry for Economic Cooperation and Development (BMZ) and EUR 60,000**[4] **by six IAB members**	Leveraged financing:	

[1] EMPower phase I completed in June 2007

[2] Refinanced EMPower phase II completed in July 2010

[3] EUR 300,000 for phase I and EUR 700,000 for phase II

[4] EUR 60,000 for Phase II

EXECUTIVE SUMMARY

Overview of the main findings, conclusions and recommendations of the evaluation. It should encapsulate the essence of the information contained in the report to facilitate dissemination and distillation of lessons. The main points for each evaluation parameter should be presented here (with a summary ratings table), as well as the most important lessons and recommendations.

1. **The Project:** Following the rationale that reduced greenhouse gas (GHG) emissions can be achieved through increased market volume and reduced price of solar energy technologies (SETs) in electric power utilities, the EMPower project (*Development of a Strategic Market Intervention Approach for Grid-Connected Solar Energy Technologies*) was initiated to support utilities around the world in identifying opportunities to introduce large scale solar power in their energy-mix. The project activities were initially designed to develop the institutional and organizational capabilities necessary for identifying grid-connected SET projects with commercial potential, aggregate market demand, developing appropriate financing and risk sharing mechanism and investigating innovative procurement techniques to offer the aggregated demand to the market.

2. With the guidance and support from an Industry Advisory Board, and with the active participation of the beneficiary utilities, project consultants successfully concluded pre-feasibility studies of 12 potential projects in 9 countries from Asia, Africa, Middle East and Latin America. To assist in capacity building of electric utilities, Toolkits were developed, consisting of modules on technical, economic and financial assessment, business models and lenders package, and tendering and procurement. All activities and achievements were shared through periodical newsletters and the EMPower homepage that was regularly updated.

3. The key results of the project were shared with a wide range of stakeholders (utilities and project developers, policy makers and regulators, manufacturers and suppliers, financial institutions and donors, etc.) in two high-level Regional Policy Workshops held in New Delhi and Casablanca. The workshop also provided a forum to raise the regulatory, market and financial challenges to be dealt with, and the types of policy and support measures needed to kick-start the development of large-scale solar power generation in the participating countries.

4. **The Evaluation:** This report is the outcome of an independent Terminal Evaluation of the project, carried out during the 2nd semester of 2012, to assess project performance and determine outcomes and impacts stemming from the project, including their sustainability. The evaluation addressed 5 key questions, based on the project's intended outcomes:

    a. How successful was the project in bringing about reductions in the cost of Solar Energy Technologies by aggregating sufficient demand and increasing market volume.
    b. To what extent the project has succeeded in establishing a shared view on the (i) technical and economic capabilities of SETs; (ii) market potential for grid-connected SETs; (iii) framework for valuing the deployment of SET technologies; and (iv) risks involved and the required risk mitigation activities/instruments.
    c. How successful the project has been in fostering commitment by the utilities to include Renewable Energy Technologies (RETs) in their system expansion plans, and to what extent the project has achieved market aggregation.
    d. In supporting this initiative, to what extent the project has attained involvement and commitment by (i) SET supply industries; (ii) regulators and local and national governments; (iii) private and public financial institutions.

e. How successful the project was in disseminating the findings of the feasibility studies implemented in the field and what have been the outcomes.

5. The evaluation was conducted in-depth starting with desk review of project documents followed by two short field visits to interview key project personnel, intended beneficiaries of project outputs and other stakeholders involved in the project using a participatory approach. Based on the data available and the discussions held, the evaluator developed details of the project's "impact pathways" and conducted the Review of Outcome to impacts or "ROtI" analysis, which led to the following conclusions.

6. **Main Findings:** The expected outcome of the project covering so many utilities from emerging and developing countries was too ambitious, given the modest size of the project, and as reflected by the project status and the project revisions made at the end of the initial implementation time frame of 36 months. The logical framework of the project had shortcomings such as no specific target, poor internal logic, inconsistencies between outputs/outcomes and the means of verification.

7. Relevance: The project has pursued the objectives set by the Agenda 21 and United Nations Framework Convention on Climate Change (UNFCCC) goals of achieving sustainable development. Also, the project's objectives and strategies were consistent with one of the focal areas of the Global Environment Facility (GEF): climate change.

8. Efficiency: The project encountered administrative, co-financing uncertainties and management issues, and needed double the time to be completed. However, the outputs of the projects have been achieved. The efficiency of project was initially poor, witnessed by the fact that quite low share of the budget was engaged during the first 4 years of the project. Due to delays in project execution, the project administration and management costs have been higher than budgeted for.

9. Effectiveness: The main outcomes of the project have highlighted the need to overcome the identified barriers to move the project towards its ultimate goal. But the project management team has not made any attempt at adopting follow-up strategies during the last 2 years following the completion of the project.

10. Sustainability: The project managed to attract all potential stakeholders to the high-level regional workshop and sensitized them by sharing the main results and emphasizing on several hurdles to overcome for achieving the ultimate goal. However, barring the energy utilities, the ownership of all other stakeholders is low. Barring a limited number of countries like India, Morocco, the Philippines, etc., the institutional, governance and regulatory framework in other developing countries is quite low to promote RETs. Additional support and incentives would be needed to ensure their commitment to the objective of the project. Countries covered by the project are aware of their environmental compulsions but achieving environmental sustainability would require policy reforms, mobilization of finances, active support of internal community, removal of fossil fuel subsidies, etc. Considering the interest that was shown by the national stakeholders during the regional workshops, additional funds could be found but the project management team has taken no follow-up initiative in this direction.

11. Catalytic role and replication: The project has played a catalytic role in strengthening capabilities of the utilities in conducting assessment of solar power project. However, it had a very limited role in influencing institutional and policy changes or mobilization of finances needed to sustain activities for achieving the intended impacts. The project is undoubtedly suitable for replication as it will ultimately benefit developing countries in dealing effectively with fossil fuel price volatility, import dependence and climate change. For successfully

achieving this purpose, a number of impact drivers have to be considered, as identified in the Review of Outcomes to Impacts (ROtI) analysis.

12. Implementation approach: The implementation mechanisms outlined in the project document were not closely followed. There is no clear evidence of the structure of the steering committee and its effective role in influencing project management. Challenges and constraints encountered in the initial project implementation phase could be sorted out during the stakeholders meeting at the end of EMPower I that led to reorientation of project activities and selection of suitable consultants to ensure the project's expected outcomes.

13. Stakeholders' participation: Key stakeholders (policy makers and energy regulators) were not involved during the project designing as well as implementation. No public awareness activities have been undertaken in the framework of the project. Moreover, there is no progress in adopting and sharing lessons on EMPower approach since the completion of the project.

14. Country ownership and driven-ness: As national governments were not involved in the project formulation and its implementation, they have neither made commitment nor assumed responsibility / provided support to the project.

15. Financial planning and management: The information available for the terminal evaluation is deemed inadequate for assessing the quality and effectiveness of financial planning and control of financial resources during the implementation of the project. The details available from the budget revisions made show inconsistencies and lack of regular financial monitoring of the project. The last budget revision was made several months after the completion of the project.

16. United Nations Environment Programme (UNEP) supervision and backstopping: Deficiencies were noted in monitoring, reporting and project implementation, especially during EMPower I. Moreover, no follow-up action has been taken with interested national stakeholders since the completion of the project to ensure that the project's ultimate purpose is achieved.

17. Monitoring and evaluation (M&E): The logical framework had shortcomings as no specific target was set and it was not clear how the project outputs could lead to the intended impacts. The M&E system was less effective during EMPower I but improved substantially after deciding to reorient project activities in EMPower II. There were at times lack of coherence between annual project reports and PIRs. There is no evidence of logical framework and work plan being updated during the project. Though the project document considered mid-term and final evaluation, no separate budget line appeared in the in the initial budget of the project document for this purpose.

18. **Conclusions:** While the project was successful in concluding all the components and achieved the expected output successfully, it failed to address one of the important recommendations of the Scientific and Technical Advisory Panel (STAP) of GEF, that "*projects should pay more attention to developing a supportive policy and regulatory environment which reduces the cost of energy services rather than focusing on buying down the hardware cost of large, high-risk, capital intensive projects*". Though energy utilities and their energy sector regulators and policymakers were clearly identified during the project formulation as the key stakeholder in the implementation of grid-connected solar electricity, the project activities were mostly limited to collaborating with electric utilities, and practically no efforts were made to engage dialogue with energy sector regulators and policymakers.

19. Among the aspects that are critical for the success of the solar photovoltaic (SPV) and Concentrated Solar Power (CSP) projects, first and foremost are a strong public support and a close alignment of key public partners. Along with the public support, both in terms of policy and financial engagement, significant financial and technical contributions are needed from

International Financial Institutions to overcome the very high capital costs of solar technologies that have yet to achieve commercial viability

20. Two of the important barriers identified in the Casablanca workshop were the inadequate capacity to design simple and consistent policy and regulatory framework, and the absence of long-term political commitment to the development of solar power projects. Based on the recommendations of the high-level regional workshops, the project had acknowledged the need for further capacity building in countries that are to host solar power plants and that GEF support under GEF-5 should be explored. However, no further action has been taken by the project proponents over the last couple of years to make progress in this regard in order to overcome the very important barriers hindering the achievement of the intended impacts of the project.

Summary Ratings Table

Criterion	Rating
A. Attainment of project objectives and results (overall rating)	**Moderately satisfactory**
A. 1. Effectiveness	**Moderately satisfactory**
A. 2. Relevance	**Satisfactory**
A. 3. Efficiency	**Moderately unsatisfactory**
B. Sustainability of Project outcomes	**Moderately unlikely**
B. 1. Financial	**Moderately unlikely**
B. 2. Socio Political	**Moderately unlikely**
B. 3. Institutional framework and governance	**Moderately unlikely**
B. 4. Environmental	**Moderately likely**
C. Catalytic Role	**Moderately unsatisfactory**
D. Stakeholders involvement	**Moderately unsatisfactory**
E. Country ownership / driven-ness	**Moderately unsatisfactory**
F. Achievement of outputs and activities	**Satisfactory**
G. Preparation and readiness	**Moderately unsatisfactory**
H. Implementation approach	**Moderately unsatisfactory**
I. Financial planning and management	
J. Monitoring and Evaluation	**Moderately satisfactory**
H. 1. M&E Design	**Moderately satisfactory**
H. 2. M&E Plan Implementation	**Moderately satisfactory**
H. 3. Budgeting and Funding for M&E activities	**Moderately unsatisfactory**
K. UNEP Supervision and backstopping	**Moderately unsatisfactory**

21. **Recommendations:** The Review of Outcomes to Impacts (ROtI) analysis has identified several impact drivers for the project to achieve the intended impacts. It is therefore recommended that UNEP re-establish relationship at the earliest with those countries and organizations which had expressed interest in developing a follow-on project for addressing the barriers that were identified during the high-level regional workshops, and propose capacity building and strengthening of policy and regulatory frameworks in the concerned countries. Keeping in mind the need for technology transfer, the proposal could also include components that support building technical capacity of all steps along the value chain in order to create the local competence to absorb and indigenize international solar technologies.

22. Now that the project has been completed for more than two years, there is a risk that the consultants who developed and managed the web site of EMPower II may close it and the wealth of information and the Toolkits available in this website may no longer be available to other interested project developers or energy utilities in future. It is therefore recommended that UNEP find a way to take over the management of the web site immediately and update it with the latest developments in the field around the world.

I. EVALUATION BACKGROUND

II.A. CONTEXT

Overview of the broader institutional and country context, in relation to the project's objectives.

23. The EMPower project was formulated under the Operational Program 7 (OP7) of the Global Environment Facility (GEF), aimed at reducing the long-term costs of low greenhouse gas-emitting energy technologies. One of the major barriers identified by OP7 is the trade-off between global environmental benefits versus national costs. Developing countries keen to pursue sustainable development goals are often unable to adopt technologies that are new and are way beyond their means. This is particularly true for electric utilities serving a population whose ability to pay for electricity is limited. Secondly, majority of government-owned electric utilities are not profitable and have inadequate scope to mobilize market mechanisms and favourable financial conditions needed to buy down the cost of new technologies.

24. The EMPower project was launched when several countries were witnessing energy market liberalization and power sector reforms. The timing seemed ripe for the project to engage with a large number of individual utilities in order to mobilize market forces and create favourable financial conditions that could bridge the cost gap between the GHG-free solar energy technologies and the high GHG emitting conventional technologies. The focus of the project during the initial phase appears to have been geared towards achieving economies of scale by increasing the market volume for solar photovoltaic applications in rural areas or areas that were away from the main grid and had to depend on small-scale and expensive diesel-based power plants. However, the situation had changed considerably by the time the project had to undergo a revision after the first 3 years of its implementation. The policy scenarios in several countries had evolved; moreover the solar technologies had achieved greater economy of scale and were proving their economic merits to certain extent in industrialized countries. Taking advantage of such favourable conditions, and with active support from the technology suppliers, the project focused on exploring the economic viability of larger-scale solar photovoltaic (SPV) or Concentrated Solar Power (CSP) systems as alternatives to the traditional fossil fuel based thermal power plants.

II.B. THE PROJECT

Presentation of the project: rationale, objectives, components, intervention areas and target groups, milestones in design, implementation and completion, implementation arrangements and main partners, financing (amounts and sources), modifications to design before or during implementation.

25. The project was developed with the rationale that an increased market volume and lower price of solar energy technologies (SETs) would help power utilities around the world to increase their energy-mix in favour of low-carbon alternatives and achieve lower GHG emissions.

26. With the above rationale, the overall objective of the EMPower project was to mobilize and engage relevant stakeholders in order to aggregate sufficient demand for solar energy

technologies (SETs), specifically SPV and CSP, and help in rendering the cost of electricity generation from SETs more competitive with thermal alternatives for electric utilities in both developed and developing countries. The four specific objectives identified by the project were the following:

a. 5 to 10 utilities commit to systematically include renewable energy technologies (RETs) in their system expansion plans;

b. Utilities form procurement coalition to bundle RET orders into large packages;

c. RET suppliers and installers commit to future supplies at substantially reduced prices as a function of order sizes; and

d. Financiers commit to finance RET packages for individual or multiple groups of utilities at competitive market prices.

27. The five main components identified to fulfil the above four specific objectives were as follows:

a. Coalition building by "bringing willing partners together" in order to aggregate large volumes of demand that can be offered to the supply community in a credible manner;

b. Sharing with four groups of stakeholders (utilities, technology suppliers, governments, and financial community) a common understanding of the technologies, market status and the actions needed to aggregate market demand;

c. Capability building of the participating utilities so that they are able to develop comprehensive capital expansion plans, and of the regulatory bodies as well as local and national governments so that they could better understand the framework necessary to support the use of SETs by the interested utilities;

d. Develop tools, studies and methodologies needed by the stakeholders: (1) market aggregation techniques for building global demand; (2) Financial strategies for utilities and regulatory community; (3) Assess supply industry dynamics for assuring cost-competitive supply of SETs; (4) Investigate innovative procurement techniques for offering the demand; and (5) Analyse and draft good policies and regulatory frameworks that would prove effective for the development of grid-connected SPV and CSP power plants; and

e. Facilitate the initial set of deals between participating utilities and suppliers.

28. The intervention areas and target groups for the project were identified as utilities, policy makers and regulators in both developing and developed countries, as well as the financial community and technology suppliers.

29. The project was designed for implementation within a span of 3 years and the work plan highlighted the time frame for the execution of the different project components. The establishment of alliance was expected to be completed by the end of the third quarter and all components except the deal flow were to be implemented within 2 years so that the main focus of the final year would be to facilitate the initial sets of deals.

30. UNEP and Kreditanstalt für Wiederaufbau (KfW) handled the project implementation and execution together with United Nations Office for Project Services (UNOPS). UNEP acted as the project's Implementing Agency (IA) and was responsible for project management, overview, monitoring and liaison with GEF. KfW acted as the Executive Agency (EA).

31. The financing for the project came mainly from two sources: an allocation of US$ 975,000 from the GEF and a total contribution of EUR 1 million (EUR 300,000 in the first phase and an additional EUR 700,000 for the second phase) from the German Ministry for Economic

Cooperation and Development (BMZ). In addition, six industry partners who participated as Industry Advisory Board (IAB) members contributed EUR 10,000 each as membership fee and this amount was used to cover the elaboration of the Business Models and Lenders Package and some of the expenses of the EMPower Workshops/Conferences. It is to be noted that the electric utility REAOL from Libya also participated in the EMPower project. But as Libya is not an eligible country for the EA, the participation of the Renewable Energy Agency of Libya (REAOL) was on a commercial basis and a fee of EUR 50,000 was charged to cover the consultants' extra expenses for the site visit and elaboration of the project feasibility study (PFS).

32. The project was launched in April 2004 with a time line for its completion in 36 months. Though KfW was proposed to be the EA for the project, they could not take up the responsibility as the funds that BMZ was supposed to contribute to the project was not approved in time. As a result, there was a slight delay in starting the project activities. During the initial phase, the project execution was assured by UNOPS. Once the BMZ funds were approved, KfW started functioning as the EA and let out contracts for project management and technical experts. Countries were identified and requests were received from electric utilities to assess solar electric power potential. Due to delays in the execution, there was a realization by June 2006 that the medium sized project (MSP) was too ambitious and only a modest attempt could be made to quantify the opportunity to aggregate the market. The project should make a real effort to stimulate solar power projects but could not realistically claim broad influence. It was decided to drop the component 2 aimed at informing and engaging the market. Instead focus was put on individual country utility engagement.

33. At the end of 36 months, a stakeholder meeting was held in Berlin with country representatives, sponsors, technology suppliers and consultants. Preliminary studies performed concluded that the interest from many utility partners was deemed inadequate. However, some electric utilities were keen to continue and showed promise of near commercial deployment. Thanks to pledges for additional co-financing received from BMZ/KfW, solar industry players as well as participating utilities, it was agreed during the meeting to extend the duration of the project by another 36 months and reorient the project activities in order to meet the project's objectives and deliver the expected outputs. Based on industry and utility inputs, the component 4 was restructured to better achieve project objectives.

34. Discussion during the stakeholder meeting revealed that EMPower project alone would not accomplish the market introduction of SPV and CSP but could help in overcoming some of the obstacles and supplement the on-going market developments. Moreover, due to the complexities in terms of individual country policy context and conditions, it will not be feasible to bundle the market demand but the same impact could be achieved in terms of industry response if the market is defined more clearly. Hence an important component of the second phase of the project was to create a pipeline of projects that could receive financial support from donor agencies. The focus was shifted accordingly from aggregation and bundled procurement to development of toolkits and capacity building of utilities.

35. UNEP, KfW and GEF agreed to go for a competitive bidding process for consulting services for the second phase. After the BMZ's final approval of co-financing was received, KfW had to conduct a tendering for consulting services according to EU legislation which requires a formal set up of more than 6 months. The consultant contract for the Phase 2 could only be awarded in July 2008 for a period of 24 months. Hence the duration of the 2nd phase of EMPower project was accordingly extended by 4 months to conclude by July 2010.

II.C. EVALUATION OBJECTIVE, SCOPE AND METHODOLOGY

Presentation of the evaluation's purpose, evaluation criteria and key questions, evaluation timeframe, data collection and analysis instruments used, places visited, types of stakeholders interviewed, and limitations of the evaluation.

36. This terminal evaluation has two main objectives: (i) To provide evidence of results to meet accountability requirements, and (ii) To promote learning, feedback, and knowledge sharing through results and lessons learned among the main stakeholders and partners of the project (see ToRs in Annex I). The evaluation identifies lessons of operational relevance for future project formulation and implementation.

37. The evaluation focuses on 5 key questions, based on the project's intended outcomes:

    a. How successful was the project in bringing about reductions in the cost of Solar Energy Technologies, specifically SPV and CSP, by aggregating sufficient demand and increasing market volume in the participating countries.

    b. To what extent the project has succeeded in establishing a shared view on the (i) technical and economic capabilities of SETs; (ii) market potential for grid-connected SETs; (iii) framework for valuing the deployment of SET technologies; and (iv) risks involved and the required risk mitigation activities/instruments, across the project stakeholders.

    c. How successful the project has been in fostering commitment by the utilities to include RETs in their system expansion plans, and to purchase specific volumes of SETs over a specific time period. To what extent the project has achieved market aggregation by enabling utilities to form coalitions to bundle RET orders into large packages. Has the project succeeded in achieving a strong market alliance approach and to what degree?

    d. In supporting this initiative, to what extent the project has attained involvement and commitment by (i) SET supply industries; (ii) regulators and local and national governments; (iii) private and public financial institutions.

    e. How successful the project was in disseminating the findings of the feasibility studies implemented in the field and what have been the outcomes.

38. The terminal evaluation was carried out in-depth by using a participatory approach whereby key stakeholders were kept informed and consulted throughout the evaluation process. Efforts were made to adopt both quantitative and qualitative evaluation methods to determine project achievements against the project outputs, outcomes and impacts. The findings of the evaluation are based on a desk review of project documents, complemented by an e-questionnaire, direct, telephonic and internet interviews with a wide spectrum of project stakeholders, including members from project IA, EA, country lead execution partners, representatives of other relevant organizations such as government agencies, donor agencies and private RET companies, and local communities. Specific questions were asked to different categories of stakeholders for crosschecking and validation purposes.

39. Though the sites investigated by EMPower project in different countries have not yet been developed, visits were conducted in two sample countries (India and Morocco) that have made considerable progress in moving towards the development of first large-scale CSP projects. These visits allowed close interaction with many players, not only limited to those who were associated with the EMPower project but many others who are actively engaging in the development and promotion of SETs in their respective countries.

40. Though the evaluation was initially planned for completion within 2 months, it had to be extended by 3 more months because of the difficulty in getting relevant documents and establishing contacts with the various actors who participated in the project. It should be kept in mind that though the project was launched in April 2004 and was initially planned to be completed within 3 years, it was later extended by a second phase and got completed in July 2010. Furthermore, the terminal evaluation was initiated 2 years after the formal completion of the project. In 8 years, people associated with the projects have changed their jobs and/or responsibilities.

41. Since the completion of the project in July 2010, there has been no further interaction between the project management and the electric utilities and other relevant partners. Some people could not be traced and others said they were no longer involved and people replacing them were not able to respond to the questionnaire as they were not aware of or had not taken part in EMPower project. So it was quite a challenging task to trace as many people involved in the project as possible to get them interested in the evaluation process, and get their feedbacks, views and opinions to derive meaningful conclusions. It has been largely possible thanks to pro-active support from the UNEP Evaluation Office, project consultants and the follow-up assistance from the Project Management and execution team.

II. PROJECT PERFORMANCE AND IMPACT

II.A. ATTAINMENT OF OBJECTIVES AND PLANNED RESULTS

A.1. Achievement of Outputs and Activities

42. **Assessment of the planned outputs in EMPower I:** All the components/activities were carried out by the consultants except for the item 2 (informing and engaging the market) which was removed altogether from the project. The outputs were not achieved satisfactorily for various reasons. There were some initial delays in starting the project activities.

43. The project managed to interest 19 electric utilities from 12 developing countries to participate, with some of them making written requests for undertaking an assessment within their power plan of the amount and price that may be justifiable for solar electricity. SPV and CSP experts visited 17 utilities in 10 countries. In collaboration with utility counterparts, the experts made a very preliminary assessment of the likely competitive costs at which solar technologies would be cost-effective with non-solar alternatives. Also, estimates were made of the most likely market demands for solar generation over time, given the utility's demand forecasts. While SPV was found to be attractive where it was replacing diesel or fuel-based power plants, the CSP markets were more circumscribed by the need to have very high-quality solar insolation. The very preliminary studies led to the general conclusion that the prices for solar generation facilities would have to reduce, drastically in some cases, in order to be competitive with the power generation alternatives. Many utilities were discouraged by the negative commercial viability of solar power projects and were clearly not interested in proceeding further unless costs of solar projects came down significantly. The supply industry was not forthcoming in providing financial support in EMPower I.

44. Midway through the execution of EMPower I, it was acknowledged by the project executing team that in view of the limited means available, the project could not realistically claim broad influence in stimulating solar power projects. It can only make a modest attempt to quantify the opportunities to aggregate the market. Therefore there was no need for exploring a specific mechanism for the aggregation of procurement. However, market information should be aggregated and presented to industry partners.

45. During the stakeholders meeting held in Berlin in 2007, the need for reinforcement of in-country expertise at the utilities was expressed. Some felt that consultant team tended to treat the project more as bilateral donor type project that rather reinforces outreach with a developed country's expertise. It was felt capability building would be more effective through a more collaborative approach, including regionally based consultants and world-class experts.

46. Some participating utilities, which showed promise of near commercial deployment, were keen that the project assist them in conducting further studies to investigate whether they could be commercially viable and in developing SET-based capital expansion plans. Since the number of these electric utilities was limited, it was agreed that in EMPower II, the project management team should solicit new electric utilities from developing countries showing willingness to invest their time to study how SETs could fit into their capital expansion plans.

47. In view of the preliminary nature of the pre-feasibility studies conducted, no commercial deal could be expected in EMPower I. Likewise, the developing country market potential being very much less obvious due to technical, policy and financial reasons, RET industry was not in a position to confirm if RET technologies could be supplied at market clearing prices.

48. No formation of RET market aggregation mechanisms or of financing groups supporting RET investments was reported in EMPower I.

49. Acknowledging the crucial need for market information and capability building of utilities, the stakeholder meeting recommended the restructuring of component 4 and redesigning activities that focus on developing suitable toolkits for which financing was pledged from solar industry partners.

50. Based on the above, it could be concluded that activities undertaken in EMPower I did not achieve the expected outputs, mainly because the expectations were too high for the project and the time frame was inadequate. However, recognizing the important role of the project for electric utilities from developing countries, there was a general agreement to continue with EMPower II that would ensure the achievement of the project's planned outputs.

51. **Assessment of the planned outputs in EMPower II:** In spite of the initial administrative delays in finalizing the selection of consultants by a year, the EMPower II was able to complete all the planned activities in time and in satisfactory manner. New consultants hired for this phase found it quite challenging to convince electric utilities, especially those in countries with limited resources, to promote the ultimate goals of the project. However, once cooperation was formally established, work with the utility partners was quite smooth, characterized by the spirit of teamwork. Similarly, it was challenging to convince solar industry partners to participate in the project. Finally, six industry players joined the Industry Advisory Board as members and contributed financial resources needed for the elaboration of business models and lenders package tools and sharing some of the expenses of the workshops/conferences.

52. In EMPower II, contacts were re-established with all partner utilities of EMPower I. Some of these utilities did not show sufficient interest in the project, hence efforts were made to identify 26 new electric utilities worldwide as partners.

53. Experts from the Consultant team provided technical assistance to 23 utilities in 15 countries for site selection through submission of guidelines as well as remote assistance (telecommunication). They undertook visits of 75 sites along with 10 utilities from 9 countries in order to carry out detailed assessment and narrow down suitable sites for pre-feasibility studies. After thorough screening of sites, they were able to conclude 6 SPV and 6 CSP pre-feasibility studies in 10 countries in Asia, Africa, Middle East and Latin America.

54. Toolkits required for capability building of electric utilities were finalized. These toolkits included the following:

- Tool I (Technical Assessment)
- Tool II (Financial and Economic Assessment)
- Tool III (SPV Business Models and Lenders Package)
- Tool IV (Tendering and Procurement)

55. The project consultants adopted, assessed, and made changes, where necessary, to software such as Retscreen, PVsyst and Greenius for energy yield calculations.

56. The project attracted 6 solar industry players (4 CSP and 2 SPV companies) to become members of the Industry Advisory Board (IAB). These IAB members contributed actively to the overall EMPower program by identifying utility partners, providing plant and equipment cost trends needed for the feasibility studies, financing the elaboration of Tool 3, and co-financing regional policy workshops in India and Morocco.

57. Two high-level Regional Policy Workshops were organized in India (covering Asia) and Morocco (covering MENA) with active support from utility partners from India and Morocco. These regional events attracted a very wide range of stakeholders (project developers and utilities, policy makers and regulators, manufacturers and suppliers, financial institutions and donors, etc.) to share the main outcomes of the pre-feasibility studies, including the market, regulatory and financial challenges faced by the solar projects identified in the EMPower project. The participants made use of the forum to discuss the types of action needed to help kick-start the development of a large-scale solar power generation market in participating countries.

58. The project consultants also created and regularly updated EMPower homepage as an information platform of the EMPower project. Altogether 5 newsletters were prepared and distributed electronically worldwide to all interested parties.

59. The activities carried out by the team of consultants in EMPower II within a short span of 2 years are really credit-worthy. They were able to fully achieve all the planned outputs in time, meeting the expected quantity and quality. The declarations made by the participants of the regional workshops demonstrate their appreciation of the project's outputs.

A.2. Relevance

Assess if the project's objectives and implementation strategies were consistent with sub-regional environmental issues and needs.

60. The principal objective of the EMPower project was to achieve reduction of GHG emissions through the promotion of low greenhouse gas technologies, more specifically Concentrating Solar Power (CSP) and Solar Photovoltaics (SPV), among electric power utilities in emerging countries. The project's implementation strategy was to "identify and enable development of the required institutional and organizational capability necessary to identify grid connected Solar Energy Technology (SET) projects with commercial potential, aggregate market demand,

develop appropriate financing and risk sharing mechanisms and investigate innovative procurement techniques to offer the aggregated demand to the market, in a manner which allows the supply community to respond with technology priced to enable commercial transaction."

61. According to studies published in 2009 by the International Energy Agency (IEA)[5], CO_2 emissions from power generation outside the Organisation for Economic Cooperation and Development (OECD) have grown by 90% since 1990, and are on a path to double by 2030. Electricity is mostly generated from fossil fuels, causing 41% of global energy-related CO_2 emissions. The high growth in power demand in the developing world increases the so-called carbon lock-in, or the risk of practically irreversible investment in CO_2-intensive electricity generation capacity. It is therefore critical to adopt strategies to decarbonize the power sector in non-OECD countries.

Assess if the project's objectives and implementation strategies were consistent with the UNEP mandate and policies at the time of design and implementation.

62. At the time of design and implementation of the EMPower project, UNEP was pursuing the objectives set by the Agenda 21 to create capacity for sustainable development and UNFCC goals of achieving sustainable development by enhancing access to environmentally-sound technologies, know-how, practices and processes relevant to climate change. The rationale for developing EMPower project was in line with UNEP Governing Council Decisions, notably UNEP GC 16/33 pertaining to the promotion of ways and means to facilitate access to environmentally sound technologies, and UNEP GC 16/41 regarding assistance to developing countries in identifying climate change technologies and technology means. As outlined in the publication entitled "Capacity building for sustainable development: An overview of UNEP environmental capacity building activities", UNEP was actively involved in various capacity building and market transformation activities in order to create an enabling environment for public-private partnership and to enhance access to and transfer of low-carbon technologies.

Assess if the project's objectives and implementation strategies were consistent with the relevant GEF focal areas, strategic priorities and operational programme(s).

63. Reducing global climate change risks is one of the four strategic focal areas under GEF mandate. GEF promotes a broad portfolio of environmentally sound, climate-friendly technologies to achieve large GHG reductions in GEF-recipient countries in accordance with their respective national circumstances. The GEF's Operational Program 7 (OP 7) supports the development of technologies with low greenhouse gas emissions that are not yet commercial, but which show promise of becoming so in future. In 1996, the GEF's Scientific and Technical Advisory Panel (STAP) recommended high-temperature solar thermal power as one of the renewable energy technologies that had very significant cost reduction potential and scope

[5] IEA publications referred to are "Energy technology transitions for industry – Strategies for the next industrial revolution" and "Sectoral approaches in electricity – Building bridges to a safe climate."

for a high demand from countries in the world's solar belt. Concentrating solar power (CSP) was viewed as the most cost-effective option to convert solar radiation into electricity.

64. In 2003, STAP reiterated the importance of GEF promoting low greenhouse gas emitting technologies. But STAP noted two relevant facts: (1) the technologies promoted so far had been regarded as too risky, because they were large scale and capital intensive, producing power which cost more (a financial risk) and also carried higher technological risks; (2) the need to reconcile the global, long-term benefit of lower greenhouse gas emissions with sufficient local benefits, i.e. more reliable generation of electricity at affordable prices.

65. Accordingly, STAP made several recommendations, three of which are particularly meaningful in the context of EMPower project: (1) *projects should pay more attention to developing a supportive policy and regulatory environment which reduces the cost of energy services, rather than focusing on buying down the hardware cost of large, high risk, capital intensive projects*; (2) the GEF cannot and should not seek to shoulder the burden of developing these technologies on its own, but should seek to do so by developing partnerships with the private sector, and with both developed and developing countries, which may require adjustments to its operating modalities; (3) the GEF needs to make long-term strategic commitments to country and private sector partners, and thereby provide greater stability and confidence.

66. On the basis of the above, one can conclude that the project's objectives and implementation strategies were consistent with: i) Sub-regional environmental issues and needs; ii) the UNEP mandate and policies at the time of design and implementation; and iii) the relevant GEF focal areas, strategic priorities and operational programme(s).

A.3. Effectiveness

67. There is no doubt that EMPower II was able to carry out all the components and achieved the expected outputs successfully. However, it would be highly presumptuous to conclude that the project has achieved its main objective of reducing the cost of electricity generated by SETs. A careful analysis of the pre-feasibility studies shows that most projects will have significant deficits in their economic performance and would incur economic losses. In principle, if the ultimate objective is to increase the share of solar energy generation in pursuit of long-term goals such as to reduce the GHG emissions and import dependence, other incentives should be considered. *However, electric utilities in developing countries cannot take up this burden, especially in countries where heavy fossil-fuel subsidies distort energy prices, and policies that would incentivize renewable energy sources are not in place*.

68. The key performance indicators related to the immediate project results have not been achieved. Moreover, it is not clear how the monitoring and evaluation criteria considered in the logical framework reflect the achievement of the key performance indicators.

69. Engagement of electric utility to build RET installations is a bit of a "chicken or egg" dilemma. Solar electricity generation technologies need to become increasingly commercially viable through economies of scale in order to attract investment from financial institutions. But achieving commercial viability first requires the development of the first projects that need higher levels of investments. The challenges facing the development of solar projects by electric utilities are financial, technical and political. The EMPower project has developed tools to assist the electric utilities in assessing the feasibility of SPV and CSP projects. But it has not touched upon many more challenges ahead of the electric utilities that need to be addressed. *These hurdles include subsidies for dirtier fuels and technologies, lowering the solar technology costs, building local manufacturing capabilities and facilities, and successfully deploying early-stage technology*.

70. There are several essential aspects that are critical for the success of the SPV and CSP projects. *First and foremost are a strong public support and a close alignment of key public partners*. It should be mentioned here that two countries visited during the terminal evaluation have taken pro-active policy decisions to initiate solar CSP development, As can be seen in the case of both India and Morocco, mobilization of public resources is playing a decisive role in getting the projects up and running. *Along with the public support, both in terms of policy and financial engagement, significant financial and technical contributions are needed from International Financial Institutions to overcome the very high capital costs of solar technologies that have yet to achieve commercial viability*.

71. The project activities were mainly focused on conducting technical pre-feasibility studies in partnership with the electric utilities and helping to build their capabilities in assessing the economic and financial viability, developing business model and tendering and procurement of solar power projects. It has no doubt helped the utilities to have a good understanding of the different steps involved and the data needed to carry out pre-feasibility studies. But no activities were planned in the project to mobilize public support and resources that are crucial for such projects to take off the ground. The high-level regional policy workshops at the end of the project were an attempt at addressing this specific issue but buying in public support needs much more information, persuasion and building of capability than what can be achieved in such regional workshops.

72. Considering the above, it is fair to say that there is considerable more work left before the main objective, which concerns reducing the cost of electricity generated by SPV and CSP technologies by increasing the global market demand for these technologies, can be achieved.

A.4. Efficiency

73. The project was initially planned for 3 years but later extended to over 6 years for the completion of the planned activities and achieving satisfactory outputs. Some of the time delays were due to administrative reasons and could have been avoided with a little better planning. There was a huge shortfall of the expected co-funding in EMPower I. The fact that only about 55% of the GEF allocation had been engaged after 4 years of the launching of the project shows that the project was not implemented in an effective manner in EMPower I. During the same 4-year period, the project administration costs exceeded 17% of the GEF allocation; this seems high considering the fact that this percentage does not include project management costs that were separately accounted for. The big time overrun has contributed to the increase in project spending on the administration and project management costs, going much beyond the initial budget.

74. Despite several attempts, the detailed breakdown of the project cost components and financial resources could not be obtained during the terminal evaluation. *The project expenditure account and status of allotment report only referred to the GEF allocation and did not provide the itemized breakdown of the costs for the different lines of activities*. Project expenditures from the GEF allocation and for supporting organizations showed a lump-sum amount without providing the detailed activity-wise breakdown of expenditures. The EA, which was the beneficiary of this lump-sum amount as the supporting organization, shared the end-of-project audit report that also showed the same lump-sum amount without any detailed activity-wise expenditures. There was no document made available confirming the co-funding received for the project as it was directly handled by the EA. Hence it is neither possible to estimate the actual total costs nor assess whether the actual expenditures matched with the budgeted costs per component.

75. The high level of co-financing expected from solar industry and electric utilities did not materialize. Thanks to the commitment and generous co-financing of BMZ after the end of EMPower I, the project could avail sufficient funds to carry out the main activities during the last 2 years of EMPower II.

A.5. Review of Outcomes to Impacts (ROtI)

Evaluation of the achievement of results through rigorous review of project progress along the pathways from outcome to impact by identifying the sequence of conditions and factors deemed necessary for project outcomes to yield impact and assessing the current status of and future prospects for results.

76. The Review of Outcomes to Impacts (ROtI) has been conducted in three distinct stages: (1) Identifying the project's intended impacts; (2) Review of the project's logical framework; and (3) Analysis and modelling of the project's outcomes-impact pathways.

77. **Stage 1 -** Referring to the "objectives" statement in the project document, the ultimate impact of the project is to reduce the price of SETs in electric power utilities, thus helping to decarbonize the power sector and reduce GHG emissions.

GLOBAL OBJECTIVE	KEY PERFORMANCE INDICATORS
The rationale for the project is that reduced GHG emissions can be achieved due to increased market volume and reduced price of SETs in electric power utilities.	Calculated GHG emission reductions worldwide from the systematic displacement of alternative thermal power generation by RETs.

78. **Stage 2 –** The global objectives to ultimately reduce GHG emissions as well as the performance indicator are clear in the project's logical framework. Based on the electricity generated by the SETs, *it is indeed possible to calculate the reduction of GHG emissions by taking into account the emission factors of thermal power generation schemes.*

BROADER OUTCOME	KEY PERFORMANCE INDICATORS
Utilities systematically start to install RETs in their networks, often in combination with existing hydro facilities for firming up supplies, substituting for thermal power generation. Because of large increase in the demand for RETs, costs of RET installations decline substantially and make them cost competitive with thermal alternatives.	Annual increment and total of RET capacity installed or committed for construction, times estimated average RET load factors, times life expectancy of RET installations GHG emission reductions will be targeted from the project but cannot be quantified until selection.

79. The broader outcomes defined in the logical framework are also clear and can be verified by keeping track of three performance indicators: *RET installed capacity, average RET load factors and life expectancy of RET installations.* Though there is no updated/revised logical framework available for review after the project reorientation in 2007, one can however observe a change in the objectively verifiable indicator in the UNEP GEF Project Implementation Review (PIR) reports for FY 2009 and 2010 as "after reorientation in 2007, number of project information memorandums (PIMs) prepared". *It is unclear how new indicator referring to the number of PIMs (equivalent of pre-feasibility studies) prepared can ensure the broader outcome: the utilities start to install RETs in their network.*

IMMEDIATE PROJECT RESULTS	KEY PERFORMANCE INDICATORS
5 to 10 utilities commit to systematically include RETs in their system expansion plans; Utilities form procurement coalitions to bundle RET orders into large packages; RET suppliers and installers commit to future supplies at substantially reduced prices as a function of order sizes; Financiers commit to finance RET packages for individual or multiple groups of utilities at competitive market prices.	Signed contracts or letters of intent for RET installations by participating utilities; Agreements indicating the creation (or intention to create) of multi-utility RET purchase packages; Evidence of contract prices and installed RET generation capacities in comparison to previously existing market prices and quantities; Contracts or letters of intent to finance RET packages by public and/or private financial institutions.

80. Further, the immediate project outcomes are specified in the above table along with the verifiable indicators. Here too, though there is no updated or revised logical framework after the project reorientation in 2007, one observes the following changes in the objectively verifiable indicators: "(1) Signed letters of interest for RET installations by participating utilities; (2) Number of participants in 2 policy workshops, plus support expressed in workshop declarations; and (3) expressions of interest by public and/or private financial institutions to co-finance CSP/SPV projects.

81. The consultant's draft final report made available for terminal review mentions of the commitments of all utility partners to enter a formal cooperation agreement, hence *satisfying the first objectively verifiable indicator*. The same draft final report also includes the full list of the participants of the 2 policy workshops and the project website confirms the support expressed in workshop declarations, thus *satisfying the second objectively verifiable indicator*. As for the third objectively verifiable indicator, participation of public/private financial institutions in the 2 policy workshops cannot be concluded as *evidence of expressions of their interest to co-finance CSP/SPV projects at competitive market prices*.

ACTIVITIES	OUTPUT INDICATORS
1. Coalition Building – "Bringing willing partners together"	Core group of stakeholders committed to proceeding with commercial deals vis-à-vis grid connected SETs and supply industry willing to providing financial support
2. Informing and engaging the market – "Getting smart"	A set of studies that provides the process to be used to bid SETs to meet the aggregated demand of the participating utilities, thereby driving the cost of SETs down to market-competitive levels with alternative power supply technologies. This, in turn, will open further markets to solar electric technologies
3. Capability building – "Preparing for action"	5-10 utilities with SET-based capital expansion plans
4.1 Market Aggregation Techniques – "Building Global Demand"	An expanded group of 10-15 utilities willing to invest their time to study how solar electric technologies (SETs) could fit into their own capital expansion plans
4.2 Financial Strategies – "Structuring the Best Deals"	Several (1 to 5) commercial deals that validate the process and techniques developed in this project
4.3 Supply Industry Dynamics – "Assuring Cost-competitive Supply"	RET industry confirmation that RET technologies can be supplied at market clearing prices;
4.4 Innovative Procurement Techniques – "How to Aggregate and Manage Demand from Several Sources"	Formation of RET market aggregation mechanisms;
4.5 Regulatory and Policy	Formation of financing groups supporting RET investments.
5. Facilitate Initial Project Deals	
6. Project Management	

82. The above table shows the activities and output indicators as found in the initial logical framework matrix. The UNEP GEF PIR report for FY 2008 states the changes in the following three activities though there is no official document available for the terminal evaluation to prove that these changes were actually reflected in a revised logical framework:

- Output 2: informing and engaging the market – "Getting smart" dropped;
- Output 4: Market aggregation techniques, Financial strategies, Supply Industry Dynamics, Innovative Procurement Techniques, and Policy redesigned to focus on toolkits and capacity building for utilities and policy development rather than aggregation and bundled procurement;
- Output 5: Facilitate initial project deals being replaced by pre-feasibility studies and preparation of initial project deals.

83. Finally, it is unclear how the outputs from the project activities could lead to the immediate project outcomes.

84. **Stage 3 -** It is understandable that the project contexts had changed due to difficulties and challenges faced during the initial phase of the project, thus requiring adaptive management during project implementation. *It is however not clear why such changes were not systematically reflected in revised or updated logical frameworks or work plans*. By taking into account the above observations and *assuming that logical frameworks and work plans were indeed revised accordingly*, the project's outcomes-impact pathways have been carefully examined.

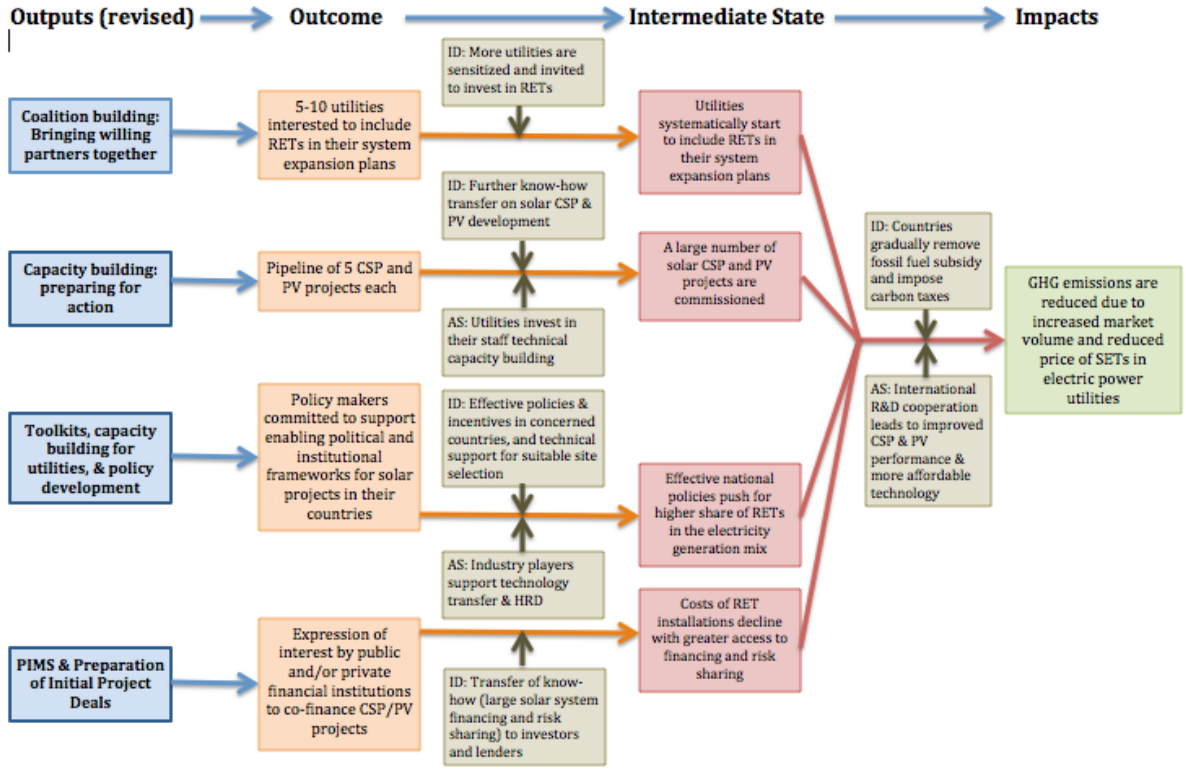
85. The PIMs done for both CSP and SPV projects show that the feed-in tariff based on 15% RoE would be in the range of Euro 0.18 to 0.28 per kWh. The investment cost estimate for project analysis is based on benchmark cost of EPC contracts for private investors, based on economic prices at the world market level and with local price corrections. Most projects analysed showed significant deficits in their economic performance and would incur economic losses. The main cause is stated as the inability of the projects to replace expensive conventional thermal peak generation and suppressed demand. The consultants conclude that *if the emerging and developing countries aim to increase the share of renewable generation in the pursuit of long-term goals, then these projects should be considered for implementation and promoted by means of incentives*.

86. The market volume of SETs can increase if electric utilities systematically start to install RETs in their network, and prices of SETs can reduce through the increase in market volume. But as *the PIMs conclude, electric utilities may not install RETs in their network in the absence of strong policy at the national level to increase the share of renewable energy generation*. These policies can be in various forms, such as regulatory policies (feed-in tariff, including premium payment, electric utility quota obligations/ Renewable Portfolio Standard (RPS)), fiscal incentives (capital subsidy, grant or rebate, investment or production tax credits, energy production payment) or public financing (public investments, loans or grants, public competitive bidding), etc.

87. The most recent annual renewable global status report of REN 21 for 2011 reports the different policy measures adopted by the countries around the world. The ones pertaining to the countries where PIMs were conducted are summarized below:

Country	Regulatory policies				Fiscal incentives				Public financing	
	Feed-in tariff (incl. premium payment)	Electric utility quota obligation/RPS	Net metering	Tradable REC	Capital subsidy, grant, or rebate	Investment or production tax credits	Reduction in sales, energy, CO_2, Vat or other taxes	Energy production payment	Public investments, loans or grants	Public competitive bidding
Algeria	☐									
Egypt					☐		☐		☐	☐
El Salvador										
India						☐	☐	☐	☐	☐
Jordan			☐				☐			
Kenya	☐							☐		
Libya										
Morocco									☐	
Philippines	☐	☐	☐		☐	☐	☐	☐	☐	☐

88. The desk-based assessment of the theory of change led to the identification of the impact pathways and specification of the impact drivers and assumptions, as summarized below:



89. Based on the above, one can conclude that:

a. Outcome rating: The project's intended outcomes were delivered, and were designed to feed into a continuous process, but with no prior allocation of responsibilities after project funding. This is mainly based on the observation that there are no visible collaborative activities to address the barriers since the official completion of the project in July 2010.

b. Rating on progress toward intermediate states: The measures designed to move towards intermediate states have started, but not produced results.

c. Impact: There is no evidence of impacts accruing within the life of the project.

90. The desk-based assessment of the project's theory of change is summarized below:

Results rating of project entitled:	**Development of a Strategic Market Intervention Approach for Grid-Connected Solar Energy Technologies (EMPower)**						
Outputs	**Outcomes**	Rating (D – A)	**Intermediary**	Rating (D – A)	**Impact**	Rating (+)	Overall
- **Coalition building: bringing willing partners together**	**5 to 10 utilities commit to systematically include RETs in their system expansion plan**	**B**	**Utilities systematically start to include RETs in their system expansion plans**	**C**	**GHG emissions are reduced due to increased market volume and reduced price of SETs in electric power utilities**		**BC**
- **Capacity building: preparing for action**	**Pipelines of 5 CSP and SPV projects each**		**A large number of solar CSP and SPV projects are commissioned**				
- **Toolkits, capacity building for utilities, and policy development**	**Policy makers committed to support enabling political and institutional frameworks for solar projects in their countries**		**Effective national policies push for higher share of RETs in the electricity generation mix**				
- **PIMs and preparation of initial project deals**	**Expression of interest by public and/or private financial institutions to co-finance CSP/SPV projects**		**Costs of RET installations decline with greater access to financing and risk sharing**				
	Justification for rating: The project's intended outcomes were delivered, and were designed to feed into a continuing process, but with no prior allocation of responsibilities after project funding		**Justification for rating:** The measures designed to move towards intermediate states have started, but have not produced results.		**Justification for rating:** There have not been any documented changes in environmental status during the project's lifetime.		

91. Accordingly, there is moderate likelihood of the project having its impact.

II.B. SUSTAINABILITY AND CATALYTIC ROLE

B.1. Sustainability

B.1.1. Socio-political sustainability

92. Within the framework of the project, two policy workshops were conducted in New Delhi and Casablanca in which the main project results were shared with policy makers, regulators, industry members, partner utilities and other interested utilities. Considering the vast number of participants and the very good presentations made during the workshop, these events were effective in: (1) sensitizing a wide variety of stakeholders about the status of the projects studied in EMPower project; (2) sharing the regulatory, market and financial challenges to be dealt with, and (3) identifying the support needed in order to achieve the ultimate goal of kick-starting the development of a large-scale solar power generation market in the participating countries. The recent policy initiatives in countries like India, Morocco and the Philippines were shared in these workshops.

93. Based on discussions held, specific suggestions were made for the different stakeholders, as follows:

    a. Policy makers and regulators to fine tune existing policies, incentive mechanisms, and regulatory frameworks, and ensure the consistency of the enabling frameworks and their long-term stability;

    b. Project developers and utilities to carry out the recommended studies and activities and ensure financial and technical sustainability, quality of various components technology selection and their optimal integration;

    c. Solar power technology manufacturers and suppliers to consider integrating locally manufactured components and initiate the development of solar power ancillary services to bring down technology costs; and

    d. International donors and financing institutions to commit to finance large scale solar power plants in cooperation with local banks in order to facilitate the diffusion of know-how in solar power plant financing, including provision of soft loans and accompanying assistance for projects.

94. Based on the above, one can conclude that the project has led to sufficient awareness, and interests among the stakeholders but there has been no incentive for them to execute, enforce and pursue the main outcomes and conclusions of the project.

B.1.2. Financial resources

95. During the preparation of PIMs, several barriers were identified. These include:

    a. Inadequate measurements of solar radiation, uncertainty about existing solar radiation data, and inadequate capacity to select optimum sites for CSP plants;

    b. Inadequate capacity to design simple and consistent policy and regulatory frameworks, including tariff setting and establishing appropriate incentives and regulations; and

    c. Absence of long-term political commitment to the development of solar power projects and lack of a track record with regard to the construction of CSP power plants.

96. The stakeholders on their own can address some of these barriers but removal of some other barriers in order to achieve eventual impact of the project would necessitate continued

financial support. *Participants of the regional workshop in Casablanca expressed interest in developing a follow-on project to address these barriers through capacity building and strengthening of policy and regulatory frameworks in the concerned countries*. Considering the fact there has not been any concrete follow-up activities initiated by the project during the last 2 years since the completion of the project, it is unlikely that the project proponents will be able to address these barriers effectively in the absence of adequate financial resources.

B.1.3. Institutional framework

97. The sustenance of the results and onward progress depends considerably on the regulatory policies formulated and the fiscal incentives extended by the national institutional stakeholders. It was evident during the policy workshops that among the participating countries, some already have strong support schemes in place or under implementation whereas others lack a consistent framework and RE targets to ensure solar power development.

98. India, for instance, has adopted the National Solar Mission in January 2010 to effectively implement the National Action Plan for Climate Change. Recognizing the fact that the cost of solar power is higher compared to other fossil alternatives, India's Solar Mission is creating favourable conditions, through rapid scale-up of capacity and technological innovation in order to drive down costs towards grid parity. Similarly, Morocco has realized its vulnerability to high-energy imports that currently account for 97 per cent of total supply. To address the twin challenges of improving energy security and promoting sustainable development, the Government of Morocco launched the Moroccan Solar Plan in 2009, set a goal to install 2,000 MW of solar power capacity by 2020 through five CSP projects, and committed to finance the cost of the Plan.

99. There is, therefore, greater scope for the project results being sustained in countries like India and Morocco whereas other countries will require more hand-holding, and technical as well as financial assistance for formulating appropriate policies and setting up pilot projects to test the proof-of-concept.

B.1.4. Environmental sustainability

100. As mentioned in paragraph 60, CO_2 emissions from power generation outside OECD have grown by 90% since 1990, and are on a path to double by 2030. Electricity is mostly generated from fossil fuels, causing 41% of global energy-related CO_2 emissions. Emerging and developing countries are becoming increasingly aware of the adverse impacts of GHG emission on their territories and their population and are starting to adopt strategies to lower the carbon intensity of their economic activities.

101. However, the actual measures that are being adopted depend very much on the economic and financial viability of promising solutions addressing global warming issues. Project outputs and outcomes are therefore focused towards sensitizing the relevant players and increasing the share of renewables at the cost of fossil fuels, thus contributing positively to reduction of GHG emissions. *There are still challenges ahead to achieve environmental sustainability, such as the much-needed policy reforms, transfer and indigenization of suitable SETs, removal of subsidies on fossil fuels, etc*.

B.2. Catalytic Role and Replication

B.2.1. Catalytic Role

102. **Catalysed behavioural changes:** During the preparation of the Project Information Memorandum (PIM), partner utilities collaborated closely with the consultants by sharing data needed for the EMPower Utility Toolkit. Utilities who were involved in this process acknowledge to have received a strong foundation on the technical and financial evaluation of utility-scale solar power projects. Though majority among them have not had the chance to use the Toolkit for studying similar projects, some have the confidence that they will be able to take up similar studies on their own.

103. The EMPower Utility Toolkit is available as an on-line global knowledge repository at the project web site and is freely downloadable. The 4-part Toolkit is quite comprehensive and should be useful for any electric utility wishing to carry out pre-feasibility of solar installations on its own.

104. **Incentives:** The opportunity given to partner utilities to conduct joint studies using the EMPower Utility Toolkit and learn from it was an incentive for the active participation of utility personnel in the development of PIM.

105. **Institutional changes**: The project has not really contributed to institutional uptake or mainstreaming of project-piloted approaches. In fact, the consultants involved in conducting PIMS had to work under considerable pressure to select sites, and conclude the study using the Toolkit within very limited time frame.

106. **Policy changes:** The consultants spent most of their time with electric utilities and dealing with technical issues related to pre-feasibility studies. Apart from the two regional workshops conducted in New Delhi and Casablanca, there was no other opportunity for the project consultants to interact with policy stakeholders and contribute to drafting or implementing any policy changes.

107. **Catalytic financing:** There has so far not been any follow-on financing from Governments, the GEF or donors for the project or any of the 10 PIMs. *In case of both India and Morocco, the two CSP projects that are in the process of development are not based on the PIMs conducted by EMPower though both CSP projects are actively supported by their respective governments and other international Financial Institutions, including KfW in the case of Morocco*.

108. **Project champions:** In most cases, there has not been any progress since the completion of the PIMs. In Morocco, the Government took the initiative to create an agency with full mandate to develop CSP project, hence the national electric utility which was an active partner of EMPower does no longer have a role to play in the development of solar power projects. *In the case of India, the private developer which collaborated with EMPower in jointly preparing the PIM acknowledged having gained considerable experience from participating in EMPower, and gaining confidence and acquiring adequate insight*. It is in the process of commissioning an even bigger CSP project than that considered for the PIM.

B.2.2. *Replication*

109. There is no doubt that the project is suitable for replication as it benefits emerging and developing countries, particularly in terms of fossil fuel price volatility, fossil energy import dependence and territorial impacts of climate change. By sharing PIMs and toolkits and organizing regional policy workshops, the project team has attempted at sensitizing all relevant stakeholders about the benefits they can accrue as well as the barriers that may

hinder the large-scale adoption of SETs by not only the electric utilities partnering in the project but also all other interested electric utilities from emerging and developing countries.

110. Solar technologies, more particularly CSPs, are relatively new for the countries considered in the EMPower project and the project economics are not favourable within the prevailing regulatory and incentive policy environment of most of the participating countries. In the absence of the identified impact drivers, it is too early to discuss about replication effects, as project's broader outcomes are likely to take much longer to be achieved. But beyond what was carried out in the project, no follow-up action seems to have been taken to confirm the approach adopted by the project for promoting replication effects. Factors that may influence replication and scaling up of project experiences are identified in the desk-based analysis of the Theory of Change of the project and are summarized in the Figure in paragraph 20.

II.C. PROCESS AFFECTING ATTAINMENT OF PROJECT RESULTS

C.1. *Preparation and Readiness*

Were the project's objectives and components clear, practicable and feasible within its timeframe?

111. The project logical framework and work plan were revised after the initially planned project duration and the overall project duration was extended much beyond what was initially planned. In hindsight, it appears that the project framework was undoubtedly over-ambitious and it would not have been possible to implement the project components within the initially planned timeframe. Moreover, the core idea of forming procurement to bundle RETs in order to increase market volume and reduce price of SETs was abandoned due to complexities in terms of individual country policy context and conditions.

112. The power development plans of the utilities are done much in advance by keeping in mind the long gestation period to expand their generation capacity. *It is also widely recognized that the cost of adopting the planned SETs are much higher than the conventional fossil-fuel fired power plants and neither electric utilities nor developers would be willing to venture into such new and unproven technologies if appropriate policy and incentive mechanisms were not in place at the national level. And even when the policies are clearly spelt out as in the case of the Government of Morocco which launched the Solar Plan in 2009 and created a dedicated Moroccan Agency for Solar Energy (MASEN) for accelerating the pace of CSP development, it took over 3 years for signing contract for the first large-scale CSP project requiring mobilization of investment in excess of USD 1 billion in October 2012*.

113. EMPower project was mainly technical in nature and there was not much focus on influencing policy changes needed at the national level.

Were the capacities of executing agencies properly considered when the project was designed?

114. The EMPower project was a follow-up of another project developed jointly by UNEP and KfW with support from GEF for the assessment of conjunctive SPV-Hydro opportunities. Hence it can be understood that capacities of the executing agencies were properly considered during project designing.

Was the project document clear and realistic to enable effective and efficient implementation?

115. Project document shows a project coordination and management structure, including the appointment of a project manager to serve as the Secretary to the Advisory group composed of UNEP, GEFSec, World Bank, KfW, other financial donors, and selected developing country representatives. It further states that the Advisory group will be consulted by correspondence. *In reality, no advisory group was formulated.* Based on these observations, the project document did not seem clear and realistic to enable effective and efficient implementation. It would also appear that the overall responsibility of project management was left to KfW with little role for UNEP.

116. Though it was decided to drop the component 2 during the execution of EMPower I, and decisions were taken to reorient the activities in order to meet the project goals, revised logical framework or work plan were not prepared to reflect the changes.

Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation?

117. While UNEP had the implementing role for the project, KfW was proposed as the executing agency (EA) with the possibility left open for UNEP to execute certain of the consultation processes or regional meetings. It would therefore appear that partnership arrangements were not properly identified and the roles and responsibilities were not negotiated prior to project implementation.

Were counterpart resources (funding, staff, and facilities) and enabling legislation assured? Were adequate project management arrangements in place? Were lessons from other relevant projects properly incorporated in the project design?

118. The project document provides the basis of the budget estimate, including EUR 300,000 of co-finance from the BMZ (German Ministry for Economic Co-operation and Development). Though the project was officially initiated in April 2004, the first half-yearly report made at the end of December 2004 states that KfW had not signed the project document and taken up the role of executing the project because their rules did not allow them to execute work unless they had BMZ funds approved for the work. On the other hand, the same report states that consultants had been engaged to initiate some of the project activities. It was UNOPS which took the interim responsibility of project execution without waiting for kfW to assume its role and responsibilities.

119. Moreover, the budget estimate in the Project Document refers to the expected co-funding of USD 500,000 from the solar industry for executing EMPower I; but in reality, solar industry did not contribute any co-funding to EMPower I. It would therefore seem that counterpart resources (funding, staff and facilities) were not assured prior to project implementation.

Were lessons learned and recommendations from Steering Committee meetings adequately integrated in the project approach? What factors influenced the quality-at-entry of the project design, choice of partners, allocation of financial resources etc.?

120. The Project Document only refers to an Advisory Group and not a Steering Committee. In the PIRs, there is mention of a steering committee but there is no formal document which shows the composition of the Steering Committee. Exchanges with IA and EA during the evaluation

process led to the understanding that there was a Steering Committee with representation from UNEP and KfW. Due to limited funds, this steering committee held very few meetings during the execution of both EMPower I and II. *In the PIRs, there is mention of steering committee meetings being held during the IAB kick-off meeting as well as at the Casablanca Forum but surprisingly there is no reference to such meetings in the mission reports of the Task Manager who participated in both these events*.

121. As no formal minutes of the Steering Committee meetings were made available for the terminal evaluation, there is no documentary proof that lessons learned and recommendations from Steering Committee meetings were adequately integrated in the project approach.

C.2. *Implementation Approach and Adaptive Management*

122. (a) The Project Document provides clear guidelines regarding project implementation. It mentions that a Project Advisory Group will be formed to advise the Project Manager appointed by KfW, promote buy-in to the project from the organizations involved and co-ordinate with other projects to avoid duplication and overlap. The advisory group has a significant responsibility in monitoring, reporting and evaluation. The Project Document further states that the Advisory Committee will be the channel for the contributions of the key stakeholders, notably the energy utilities and their energy sector regulators and policy-makers in the GEF recipient countries. But these do not seem to have been followed during the project implementation.

123. In PIR for the year 2006, it is reported that the output 2 (Informing and engaging the market) was removed as per latest work plan (latest project revision). There is no further explanation about this decision and there is no reference to any document to show if it was indeed the Steering Committee's decision.

124. In PIR for the year 2007, it is reported that a meeting was held in Berlin with country representatives, sponsors, solar industry and consultants, and the outcome of the meeting called for some reorientation of the activities in EMPower II to meet the project goals. The main focus of this reorientation was on toolkits and capacity building for utilities. However, there is no formal document which provides the minutes of this very important meeting, and how such decisions were made. The same PIR also refers to the Steering Committee meeting in Berlin, but the minutes of the meeting were not available.

125. However, one sees pertinent adaptation to the approaches originally proposed only after the appointment of the consultants in July 2008. The consultants have followed very closely the proposed reorientation to carry out the proposed activities. Further, the mission report of the Task Manager prepared on the basis of the first Industrial Advisory Board (IAB) held in July 2009 confirms the active role played by the IAB members and the close interaction between the IAB members and the consultants for prioritizing projects and completing the tasks within the project time frame.

126. (b) The Project Document clearly established the role and performance of the units and committees, and the project execution arrangement at all levels. However, going through the documents available, one does not get the impression that the established procedures were closely followed during project implementation. For example, no formal minutes of the meetings (direct or telephonic) were available. Similarly, half-yearly disbursement plans and half-yearly annual financial reports prepared and submitted by KfW to UNEP were not available for the terminal evaluation.

127. (c) It is difficult to comment on the effectiveness and efficiency of the project management by the EA in EMPower I because there was a delay in the EA taking up the responsibility, and

during that interim period, the execution of the project and selection of the consultants were assured by UNOPS. Moreover, the administrative delays in both EMPower I and EMPower II were beyond the control of the EA. However, the fact that the EMPower II was able to conclude all the activities and achieve the expected outputs demonstrates the quality of the consultants selected to implement the project activities.

128. (d) In the absence of any formal proof of the direction and guidance provided by the Steering Committee and IA supervision recommendations, it is not possible to assess the extent of response of project management.

129. (e) The first administrative problem was linked with the delay in the approval of co-funding from BMZ. As the participation of KfW in the project as the EA was linked with the co-funding from BMZ, the project partners could overcome this drawback thanks to the responsibility taken up by UNOPS. The second problem was the lack of expected financial contribution from the solar industry and the participating electric utilities. However, it did not really hinder the planned activities of the project because a substantial amount of GEF funds were still left unused by the end of EMPower I. One would tend to believe that EMPower II could not have been a reality without the commitment of BMZ for additional generous co-funding. Due to a combination of administrative and technical problems, it took over a year to start activities because the delay in getting approval of KfW's pledged co-financing and the need for tendering of the consulting services according to EU legislation which requires a formal set up of more than 6 months. As a result, activities of EMPower II could only start in July 2008. So the fact that all the planned activities of the project could be concluded and the expected outcomes achieved within a span of 2 years shows the effective cooperation among the project partners, and specially the role of the consultants in mobilizing the partner electric utilities to complete the PIMs within limited time.

130. (f) There was no mid-term review conducted in the project.

C.3. *Stakeholder Participation and Public Awareness*

131. (a) During the project designing stage, a meeting was held in February 2003 which consisted of representatives from IFIs, solar industry, multilateral development agencies, consultants, academic institution, etc., but there was no participation of the key stakeholders as mentioned in the Project Document: *the energy utilities and their electric sector regulators and policy makers in the GEF recipient countries*. During the implementation of the project, only the electric utilities were actively involved and not the other two stakeholders. Secondly, it was mainly the consultants who interacted with the electric utilities and there was no direct interaction between the Project Management Unit and the electric utilities. The representative of the electric utilities considered it as a good exercise to get familiarized with the way to assess to techno-economic viability of solar power projects but it did not have any tangible impact on the energy regulators and the policy makers.

132. (b) The Project Document considers that the utilities and governments are responsible for involving the public at the local level. There is no evidence of any specific action being undertaken during the course of project implementation for public awareness activities.

133. (c) Based on the contacts that could be established with the electric utilities which participated in the project, the key stakeholders have not made any progress towards planning the design and development of RET investments, technologies and installations, adopting and sharing lessons on EMPower approach. Only one electric utility participating in EMPower project is engaged in developing a CSP project though it is not a follow-up of the PIM conducted in the EMPower project.

C.4. *Country Ownership and Driven-ness*

134. (a) Based on the report of the consultants, neither did the governments assume responsibility for the project nor did they provide any support to project execution. However, all utility partners agreeing to cooperate committed themselves to contribute with human resources and some services including data and maps, local transport for the site visits. REAOL from Libya was the only electric utility which joined EMPower on commercial basis because Libya is not an eligible country for the EA.

135. (b) Since there was no formal interaction with political and institutional decision makers of the participating countries, there was no political commitment made to enforce national/sub-regional agreements promoted under the project. It should be stressed that the two sub-regional workshops in Delhi and Casablanca were organized with support from the partner electric utilities from India and Morocco and *there was no formal engagement of governments in the two events except for the invitations sent to interested stakeholders to participate in the workshops.*

136. (c) There is no evidence of government initiative to promote the participation of communities and non-governmental organizations in the project.

137. (d) There was no direct involvement or participation of governments in this project.

C.5. *Financial Planning and Management*

138. (a) In spite of several requests, half-yearly disbursement plans and half-year financial reports were not shared for the terminal evaluation. Hence it is not possible to evaluate financial planning, management and reporting aspects. However, project action sheets show 4 revisions made in the budget throughout the project.

139. In the first year, the actual cost of the project was only US$75,600 as against US$323,000, and a first revision was made in May 2005 to re-phase the unspent amount to the years 2005 and 2006. Two separate budget lines were created for sub-contracting to other co-operating agencies and for meetings/conferences (for the kick-off meeting organized by UNEP in June 2005, 14 months after the official launching of the project!).

140. In the second year, the actual cost of the project was only US$ 68,688 as against US$397,400 and a second revision was made in March 2006 to re-phase the unspent amount to the year 2006. As a result, the unspent budgets for meetings/conferences and sub-project managed by KfW were increased accordingly.

141. The third revision was made in December 2007 after the completion of EMPower I. Interestingly, no additional expenditures were recorded in 2006 but a negative amount of US$3,077.48 was allocated to the meetings/conferences. The unspent budget was re-phased to meetings/conferences in 2007, sub-project managed by KfW, and to a newly created budget line for the final project evaluation. In the same revision, the cost of the project was revised from US$ 2.01 million to US$ 2.85 million based on the commitment of BMZ to increase its contribution by EUR 700,000. Interestingly, no changes were made in the expected contributions from Industry and Utilities though no co-financing was received from them till that date.

142. A fourth and last revision was made in February 2011, only after the completion of the project in July 2010, to reflect the actual expenditures of US$27,600.82 for 2007, a negative amount of US$5,284.47 for 2008 and nil expenditure for 2009 and 2010 to the GEF Trust Fund. Interestingly, this revision shows the total budget of the project as US$1,985 million and a co-financing of US$1.01 million! No details of the annual budgets and expenditures are available

for the sub-project GFL/4866 managed by KfW, amounting to US$786,189, which does not include the engagement of the co-financing from BMZ (EUR 1 million) and industry (EUR 60,000).

143. (b) There were administrative delays related with the approval of co-funding by BMZ. Also, there were delays in tendering and recruitment of consultants for EMPower II due to the need to follow EU legislation that requires a formal set up of more than 6 months.

144. (c) The financial documents made available for the terminal evaluation did not include any co-financing details. However, there were mentions of co-financing in various reports and the numbers differed from one report to another. There was no country co-financing and the electric utilities contributed in kind (human resources, travel, documents and maps). The final report of the consultants points out that 6 solar industry players joined the IAB, by contributing EUR 10,000 each and the amount collected were used for developing one of the tools for the Toolkit and for covering some of the workshop-related expenses. PIRs mention of the co-financing received from BMZ (EUR 300,000 for EMPower I and EUR 700,000 for EMPower II). The following table is prepared on the basis of the information gathered from the reports without any official proof. Likewise, while the details of GEF funds disbursements were made available, they did not provide itemized breakdown according to the planned activities. Moreover, there are no details available regarding the manner in which the co-financing was actually used in the project.

Project Costs Table

Components/sub-components	Estimated cost at design	Actual cost	Expenditure ratio
2101 Sub-contract with UNOPS	73,000	116,950	160%
2102 Sub-project with KfW	902,000	786,189	87.2%
3301 Meeting/conferences		46,576.53	
5581 Project evaluation		25,284.67 (budget)	

Co-financing Table

Co-financing	IA financing (US$)		Government (US$)		Other* (US$)		TOTAL (US$)	
(Type/source)	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
- Grants			350,000	1 million EUR	660,000	60,000 EUR	1.1 million	1.06 million EUR

145. d) Since its inception, the project has leveraged EUR 700,000 from BMZ after the completion of EMPower I and this was timely for taking up EMPower II and achieve the expected outputs. There have not been any other additional leveraged resources, either financial or in-kind, contributed by other donors, NGOs, foundations, governments, the private sector or communities.

146. KfW was responsible for the detailed expenditure of the budget, including the co-financing received from BMZ. The statements available from UNEP and KfW only show a lump-sum amount of expenditures, without any details of the budget items for each type of activity undertaken in the project, during the project period. Without access to the detailed financial statements, the effect of any irregularities in procurement, use of financial resources and human resource management cannot be analysed.

C.6. *UNEP Supervision and Backstopping*

147. (a) Though initially planned for 3 years, the project lasted over an extended period of over 6 years. There was a change of Task Manager during the last couple of years of project execution. Based on the analysis of the reports available, the project supervision plans, inputs and processes were assessed to be inadequate. There were inconsistencies between the annual reports and the PIRs. The texts in some of the PIRs lacked clarity and did not give the right picture of the real progress made in the project. There were references to the Steering Committee in the PIRs but there is not a single document available which showed either the composition of the Steering Committee or the Minutes/Decisions of the Steering Committee.

148. During the first year, the project was executed by UNOPS. The PIR for the year 2005 did not really give a feeling of the Task Manager being fully aware of the progress made in the project. For example, the report says that "although major components of the work have not started yet, it appears that the project is on target to achieve project objectives". It mentions that "the regional meetings were converted to global meetings whereby a number of already informed utilities could come together with the interested partners and forge ahead as possible (bootstrap)". In another paragraph, it goes on to say "the UNOPS consultants proposed to attract the donor finance community prior to the developing country utilities. The project has now changed course and will broaden the consultant assistance as well as engage the developing country utilities as a priority". To continue further, in the PIR for the year 2006, one suddenly finds that the activity associated with Output 2 was removed without any proper explanation (without any mention of who decided and on what basis this activity was removed). It is not at all clear who was actually supervising plans, inputs and processes. It is also strange that there was no concern shown in any of the reports that the actual amount spent during EMPower I was only a small fraction of the initial budget for the project.

149. (b) It is quite obvious that during the implementation of EMPower I, there was not sufficient emphasis given to outcome monitoring. As a result, the outcomes did not meet the expectations of the project. However, one can note a marked improvement in the implementation of EMPower II which was being tracked and monitored more carefully thanks to closer interaction with the project consultants and the inputs from IAB members. However, one cannot understand why no budget revisions were made till several months after the completion of the project though there were variances between the budget and the actual expenditures during the period 2008-2010.

150. (c) A careful analysis of the PIR ratings shows that they were not always found to be an accurate reflection of the project realities and risks. For example, there are no ratings given to individual activities and outputs in the assessment of the Project implementation progress for EMPower I.

151. (d) The quality of documentation of project supervision activities during the earlier years was not up to expectations. There was a lack of rigour, clarity and continuity in the texts and one does not get a fair understanding of the actual status of the project and the type of supervision provided to keep the project on track.

152. The co-funding details were not carefully followed during project supervision. To take a concrete example, the co-financing of BMZ is not clearly and correctly quantified and no details were available about the manner in which the co-funding was engaged. The PIR for the year 2006 states the co-financing as USD 432,000 (USD 360,000 grant corresponding to the EUR 300,000 contribution of BMZ + USD 71,000 in kind; there is no supporting document to show on what basis these numbers were obtained). The PIR for the year 2007 reports that BMZ has approved an additional EUR 700,000 in July 2007. The PIR for the year 2008 reports the co-financing as USD 1,132,000 (USD 1,060,000 grant from BMZ; without considering the

fact that the additional contribution of BMZ was in EUR and not in USD!). Similarly, there are errors in the disbursement amounts reported in the PIRs (while the disbursement was for an amount of USD 416,950 for the years 2006 and 2007, it got reduced to USD 371,453.68 in the year 2008. None of the PIRs reported the co-financing received from the 6 members of the IAB, amounting EUR 60,000, the details of which were only to be found in the consultant's final report.

C.7. Monitoring and Evaluation

M&E Design

Quality of the project logical framework as a planning and monitoring instrument

153. According to the project document, the acceptance of the findings of the various studies and the documented commitment of the key stakeholders to both produce the solar electric systems at the necessary lower prices and to build the necessary capacity of grid-connected solar electric plants will be the primary indicators of the success of this project. Section A.5 has covered a detailed review of the logical framework and will not be repeated here.

154. Some of the activities proposed to achieve the necessary outcomes were abandoned or revised during the transition from the Phase 1 to Phase 2 of the project. However, no revised logical framework is available for the project evaluation. Moreover, there are inconsistencies in Project Implementation Review Reports (e.g. in the section corresponding to progress towards achieving project objectives, one finds reference to project reorientation in 2007 in PIR 2008-09 but not in PIR 2007-08). As no revised logical framework and work plan were made, one would tend to believe that the logical framework and work plan were not employed as an effective planning and monitoring instrument for the project.

Are the indicators specific, measurable, attainable (realistic), relevant and time-bound?

155. According to the project document, there is no specific target fixed in the logical framework. The indicators mentioned in the logical framework to assess the global objectives and broader outcomes are specific, measurable, achievable and relevant to the project objectives. The time frame to achieve them would actually depend on the impact drivers and assumptions to move from project outcomes towards project impacts.

Adequacy of baseline information

156. In the project document, there are no baselines as the targets are increment only. Hence no baseline information on performance indicators was collected and presented.

Arrangements for monitoring

157. The responsibilities for M&E activities have been clearly defined in the project document. Since there are no baselines, data sources and data collection instruments were not considered within the project implementation time frame. The frequency of various monitoring activities were specified and were adequate, though considering the relatively short time frame of the project, a quarterly evaluation of activities (similar to the quarterly

financial reporting with details of project expenses and disbursements) could have been more effective in assessing the status of progress and if necessary, propose corrective actions.

Arrangements for evaluation

158. Targets were specified for project outputs but no specific levels of achievement were mentioned for all indicators of objectives and outcomes. It appears there were no legal instruments binding project partners to fully collaborate in evaluations.

Budgeting and funding for M&E activities

159. The project documents mentioned that the project impact will be monitored through a mid-term and final evaluation, all of which will use the Project Logical Framework. There was no specific budget allocated in the initial project budget estimates for this purpose.

M&E Plan Implementation

160. As it can be observed in PIRs, the M&E system was operational and facilitated the tracking of results and progress towards project objectives. However, no advisory group was formed and there is no clear evidence of the composition and the role of the Steering Committee.

161. Annual project reports and PIRs were fairly complete but were not necessarily accurate and did not always give well-justified ratings.

162. In EMPower II, the information provided by the M&E system was used during the project to improve project performance and to adapt to changing needs. It was however not quite the case for EMPower I during which efforts seemed inadequate to adapt to the deficiencies in achieving the expected outputs.

163. There is no reference or documentary evidence of an M&E system being in place with proper training, instruments and resources for parties responsible for M&E.

164. A summary of the overall quality of the project design can be found in Annex A.6.

II.D. COMPLIMENTARITY WITH UNEP STRATEGIES AND PROGRAMMES

Linkage to UNEP's Expected Accomplishments

165. Through this project, UNEP has supported a number of emerging and developing countries to assess the opportunity to bring about substantial reduction in the cost of electricity generated from SETs, specifically SPV and CSP. This has been possible by enabling development of the required institutional and organizational capacity necessary to identify grid connected SET projects with commercial potential, conducting pre-feasibility studies, developing project Information Memorandums (PIMs), organizing regional workshops.

166. The above activities of the project make a tangible contribution to the Climate Change focal area. The EMPower project's outcomes are likely to contribute to two of the Expected Accomplishments in this focal area: (1) emerging and developing countries make sound policy, technology, and investment choices that lead to a reduction in greenhouse gas emissions and potential co-benefits, with a focus on clean and renewable energy sources, and (2) improved technologies are deployed and obsolescent technologies phased out, financed through private and public sources including the Clean Development Mechanism. Though the number of PIMs

prepared in the framework of the project are limited, the toolkit developed by the project will assist any power utility interested in assessing the technical, financial and economic pre-feasibility of SPV and CSP plants.

Alignment with the Bali Strategic Plan (BSP)

167. UNEP's Bali Strategic Plan (BSP) was developed to enhance environment-related technology support and capacity building of developing countries as well as countries with economies in transition. Through this project, UNEP has provided technology support and capacity-building to developing countries as well as to countries with economies in transition based on best practices from both within and outside UNEP, including by mainstreaming technology support and capacity-building. By providing an enabling framework condition and a platform for collaboration with all relevant stakeholders, UNEP has facilitated the identification and dissemination of best practices and the fostering of entrepreneurship and partnerships. Finally, UNEP has promoted and facilitated access to and support of low-carbon technologies and corresponding know-how by making a suitable toolkit available in the public domain.

Gender

168. The main focus of the project is to reduce GHG emissions by creating a larger demand for SETs in electric power utilities in emerging and developing countries. As there is no direct link between the project design, implementation and monitoring with gender issues, the intervention is unlikely to have any differential impacts on gender equality and relationship between women and the environment.

South-south cooperation

169. The project has facilitated South-South cooperation by bringing stakeholders from emerging and developing countries in meetings and sub-regional workshops. The Utilities Findings Workshop held in Berlin in March 2007 allowed representatives from several emerging and developing countries to learn about the advance status of solar power development in some countries and to take the resolve in exploring their solar opportunities in greater detail and in finding the best opportunities that may lead to planning future solar investments in their systems. The sub-regional workshops held in New Delhi in April 2010 allowed electric power utilities and other relevant stakeholders from India and the Philippines to get a better awareness of the potential of solar power in their countries as well as the cost and value of solar power. By sharing country experiences, they could learn from each other about the policies and strategies that are conducive in establishing enabling framework conditions and accelerating the share of solar power in the national electricity generation mix. Similar benefits were reaped by stakeholders from Middle East and Northern African (MENA) countries who participated in the sub-regional forum organized in Casablanca in 2010.

170. The PIMs conducted in the emerging and developing countries from different parts of the world are available in public domain for the benefit of not only those countries that participated in the project but also other developing countries that may be interested to follow suit. By sharing history and status of solar project development in a number of countries, highlights of framework conditions for the promotion of such projects, and recommendations for project developers as well as policy makers and regulators, the project has created a basis for deeper South-South cooperation.

III. CONCLUSIONS AND RECOMMENDATIONS

III.A. Conclusions

171. The EMPower project sought to increase the market volume and lower the price of solar energy technologies so that electric utilities worldwide could deploy large scale CSP and SPV power in their power generation mix and achieve lower GHG emissions.

172. The project partnered with a wide number of electric utilities around the world and undertook visits of 75 sites in 10 countries to identify suitable locations for solar power development. After thorough screening, 12 sites were selected in 10 countries covering Asia, Africa, Middle East and Latin America. With the guidance and support from an Industry Advisory Board consisting of members from 4 CSP and 2 SPV companies, and with the active participation of the beneficiary utilities, project consultants successfully concluded pre-feasibility studies of 6 SPV and 6 CSP projects. In order to assist in capacity building of electric utilities, Toolkits were developed, consisting of modules on technical, economic and financial assessment, business models and lenders package, and tendering and procurement. All activities and achievements were shared through periodical newsletters and the EMPower homepage that was regularly updated.

173. The key results of the project were shared with a wide range of stakeholders (utilities and project developers, policy makers and regulators, manufacturers and suppliers, financial institutions and donors, etc.) in two high-level Regional Policy Workshops held in New Delhi and Casablanca. Apart from sharing the outcomes of the pre-feasibility studies and experiences from utilities and developers who had already installed large-scale solar installations, the workshop provided a forum to raise the regulatory, market and financial challenges to be dealt with, and the types of policy and support measures needed to kick-start the development of large-scale solar power generation in participating countries.

174. The project encountered administrative, co-financing and management issues and needed double the time to complete the project. During the initially planned project duration, the outcomes fell short of expectations because the approach adopted was not well targeted and satisfactory; moreover the project management team failed to closely track the performance of activities according to the work plan. However, issues were sorted out during the stakeholders meeting held at the end of the project's initial duration. Thanks to the encouraging feedback of the interested utilities and generous co-financing of BMZ/KfW, the project could be reoriented in order to meet the expected goals. With the selection of well-qualified and experienced consultants and enthusiastic electric utilities, all the activities could be completed and the outcomes achieved successfully.

175. While the project was successful in concluding all the components and achieved the expected output successfully, it failed to address one of the important recommendations of the STAP of GEF, that "*projects should pay more attention to developing a supportive policy and regulatory environment which reduces the cost of energy services rather than focusing on buying down the hardware cost of large, high-risk, capital intensive projects*". Though energy utilities and their energy sector regulators and policymakers were clearly identified during the project formulation as the key stakeholder in the implementation of grid-connected solar electricity, the project activities were mostly limited to collaborating with electric utilities, and practically no efforts were made to engage dialogue with energy sector regulators and policymakers.

176. Among the aspects that are critical for the success of the SPV and CSP projects, first and foremost are a strong public support and a close alignment of key public partners. Along with

the public support, both in terms of policy and financial engagement, significant financial and technical contributions are needed from International Financial Institutions to overcome the very high capital costs of solar technologies that have yet to achieve commercial viability

177. Two of the important barriers identified in the Casablanca workshop were the inadequate capacity to design simple and consistent policy and regulatory framework, and the absence of long-term political commitment to the development of solar power projects. Based on the recommendations of the high-level regional workshops, the project had acknowledged the need for further capacity building in countries that are to host solar power plants and that GEF support under GEF-5 should be explored. However, no further action has been taken by the project proponents over the last couple of years to make progress in this regard in order to overcome the very important barriers hindering the achievement of the intended impacts of the project.

178. The ratings of the various evaluation aspects related to project implementation are summarized in the following table.

Table of rating

Criterion	Summary Assessment	Rating
A. Attainment of project objectives and results (overall rating)		Moderately satisfactory
A. 1. Effectiveness	The main outcomes of the project have highlighted the need for making efforts to overcome the identified barriers before the project's main objective can be achieved. But no follow-up strategies have been adopted so far.	Moderately satisfactory
A. 2. Relevance	The project has pursued the objectives set by the Agenda 21 and UNFCC goals of achieving sustainable development. The project's objectives and strategies were consistent with one of the focal areas of GEF.	Satisfactory
A. 3. Efficiency	Most outputs of the project have been achieved in spite of considerable time delays and co-financing uncertainties. Budget engagement has been poor during the first 4 years. Due to delays in execution, the share of project administration and management cost was high.	Moderately unsatisfactory
B. Sustainability of Project outcomes		Moderately unlikely
B. 1. Financial	To achieve the ultimate project goal, additional funds are needed to overcome the identified barriers and will likely be found considering the interest shown by national stakeholders. But no initiative has been taken so far in this direction.	Moderately unlikely
B. 2. Socio Political	Important stakeholders were sensitized during high-level regional workshops but their ownership is low and additional handholding is needed as incentive and ensuring commitment.	Moderately unlikely
B. 3. Institutional framework and governance	Barring a handful of developing countries, the institutional, governance and regulatory framework is low to promote RETs and much more support/assistance needs to be extended.	Moderately unlikely
B. 4. Environmental	Countries are aware of their environmental compulsions but achieving environmental sustainability requires policy reforms, mobilization of finances, support of international community, removal of fossil fuel subsidies, etc.	Moderately likely

Criterion	Summary Assessment	Rating
C. Catalytic Role	The project has played a catalytic role in strengthening the capabilities of the utilities in carrying out assessment of solar power projects. However, it has not been effective in influencing institutional and policy changes or mobilizing financing needed to sustain activities.	Moderately unsatisfactory
D. Stakeholders involvement	Key stakeholders were not consulted during the project designing stage. No progress seems to have been made in adopting and sharing lessons on EMPower approach. No public awareness activities have been undertaken.	Moderately unsatisfactory
E. Country ownership / driven-ness	As governments were not involved in project formulation and its implementation, they have not made any commitment, assumed responsibility or provided support to the project.	Moderately unsatisfactory
F. Achievement of outputs and activities	Project outputs defined in the log frame have been achieved satisfactorily through the activities during project implementation.	Satisfactory
G. Preparation and readiness	The project framework was too ambitious to be completed within time and budget. Project document was not clear and not realistic enough to enable effective and efficient implementation. Partnership arrangements and roles and responsibilities were not adequately negotiated.	Moderately unsatisfactory
H. Implementation approach	The implementation mechanisms outlined in the project were not closely followed. There is no clear evidence of the structure of the steering committee and its effective role in influencing project management. Problems and constraints faced in the initial period were overcome by reorienting activities and suitable consultants.	Moderately unsatisfactory
I. Financial planning and management	The information made available is deemed inadequate for assessing the quality and effectiveness of financial planning and control of financial resources throughout project lifetime.	
J. Monitoring and Evaluation		Moderately satisfactory
H. 1. M&E Design	The logical framework had some shortcomings as there was no specific target set and it was not clear how the outputs could lead to the project goal.	Moderately satisfactory
H. 2. M&E Plan Implementation	The M&E system was less effective during EMPower I but improved following reorientation of activities in Empower II. Lack of coherence was observed at times between annual project reports and PIRs. There is no evidence of logical framework and work plan being updated.	Moderately satisfactory
H. 3. Budgeting and Funding for M&E activities	Though the project document considered mid-term and final evaluation, no separate budget line appeared in the budget for this purpose.	Moderately unsatisfactory
K. UNEP Supervision and backstopping	Deficiencies were noted in monitoring, reporting and project implementation, especially during EMPower I; moreover, no follow-up initiatives were taken with interested stakeholders to ensure that the project's ultimate purpose is achieved after the end of the project.	Moderately unsatisfactory

III.B. Lessons Learned

179. The EMPower project is unique in the sense that it is perhaps the first attempt by any organization to explore the possibility of taking action simultaneously in several countries worldwide for reducing the long-term costs of low greenhouse gas-emitting energy technologies. By working together with electricity utilities, it has tested and validated common Toolkits that can be employed to assess the technical, economic and financial viability of solar energy technologies in different continents.

Lesson 1: Involve all potential stakeholders to ensure buy-in

180. The project had identified three important beneficiaries as the major stakeholders, namely energy utilities and their energy sector regulators and policy makers. Unfortunately, all those who participated in the project formulation meeting held in February 2003 represented the supply side (intergovernmental agencies and donors, International and Bilateral Financial Institutions, solar energy industry, consultants, etc.) and none of these three potential beneficiaries were involved or consulted. Had these entities been invited to participate, it would have been much easier to identify the types of barriers that were discussed during the high-level regional workshops organized at the end of the project. Involvement of the key stakeholders would also have ensured partnership with those stakeholders who were really keen and willing to participate more actively in the project by sharing and co-financing resources in cash and in kind. It would also have ensured the development of a logical framework that is much more realistic with outcomes that are achievable.

Lesson 2: Engage in policy dialogue with relevant stakeholders to ensure larger impact

181. The project was oriented more towards buying down the hardware cost of large, high-risk, capital-intensive SPV and CSP projects for energy utilities in emerging countries. Hence the emphasis was to develop partnership with electric utilities. However, most energy utilities in developing and emerging countries are either State-owned or State-controlled. For example, they often do not have much of a say on the energy tariff which is either decided by the policy makers or energy sector regulators. As countries in developing world tend to subsidize fossil fuels, the electric utilities cannot afford to opt for renewable energy alternatives unless suitable policies are adopted to create a level-playing field or renewable energies are positively discriminated. Following the recommendations of the STAP of GEF, it would have been better if the project had collaborated more closely with public policy makers and energy sector regulators and paid "*more attention to developing a supportive policy and regulatory environment which reduces the cost of energy services rather than focusing on buying down the hardware cost of large, high-risk, capital intensive projects*".

Lesson 3: Set realistic targets and time frame for project implementation

182. The delay in project implementation was inevitable because the activities and time frame for project implementation were unrealistic for the MSP with limited resources. As highlighted the case of Morocco in paragraph 100, even when the policies are clearly spelt out and implemented, it can take a few years before the first contract can be signed for such high-investment projects employing new technologies, being commissioned for the first time with no prior experience, and requiring involvement and commitment of multiple stakeholders.

Lesson 4: Apply more rigour for the execution, monitoring and follow-up

183. Project like EMPower that are small in size but involve worldwide stakeholders require a certain rigour to make sure that they are executed as planned, following closely the activities outlined in the logical framework and the work plan. Apart from those involved in the project for its management and execution, it is always good to have the project reviewed by experts

who are not involved in its day-to-day execution but serve as catalysts to enhance the execution process by monitoring progress and advising, when necessary, on implementation problems that may emerge or on desirable modifications necessary in the work plan. Though the EMPower project clearly states that an advisory group would be created to serve the above purpose, it was never formed in reality. Even the Steering Committee referred to in various project reports does not seem to have been formally established and no records of the discussions and deliberations of the Steering Committee were available. As a result, though decisions were taken to make changes in the activities of the project, no revised versions of the logical framework, work plan or budget were documented. It is therefore no wonder that due to the lack of adequate corrective measures, the project had neither engaged the allocated budget nor achieved the expected outputs within the initially planned project duration of 3 years. During EMPower II, while the project execution team and the consultants were too busy to ensure that they achieve the expected outcomes, not much advisory support seems to have been given by UNEP to put in place an exit strategy and initiate policy dialogue with potential government policy makers for moving forward in order to overcome the identified barriers and achieve the ultimate project goal. It is therefore essential to ensure that the project implementing agency plays a more pro-active and rigorous role not only to keep track of the administrative and financial obligations of the project but also to develop timely exit strategies and policy dialogue /advocacy support for ensuring the intended impacts at a much wider level.

III.C. Recommendations

184. The following recommendations are addressed to UNEP:

185. **Recommendation 1:** Though all activities in EMPower project have been concluded and expected outputs have been achieved, the Review of Outcomes to Impacts (ROtI) analysis summarized in Paragraph 79 has identified several impact drivers to go through before the project can have the intended impacts. Considering the fact that only 2 out of the 9 countries have made some headway in commissioning solar CSP projects, It will be a pity to stop at this stage and lose all the good work done by the project. As a part of project evaluation, contact was established with the representatives of electric utilities which collaborated in developing PIM, and they are eager to learn if they can get further assistance to realize those projects which face several barriers identified during the high-level regional workshops. UNEP could therefore contemplate re-establishing relationship at the earliest with those countries and organizations which had expressed interest in developing a follow-on project to address the barriers that were identified during the high-level regional workshops and propose capacity building and strengthening of policy and regulatory frameworks in the concerned countries. Keeping in mind the need for technology transfer, the proposal could also include components that support building technical capacity of all steps along the value chain in order to create the local competence to absorb and indigenize international solar technologies.

186. **Recommendation 2:** The web site for EMPower I was created by the consultants engaged in the beginning of the project. Once new consultants were hired, the website maintained by the first consultants was no longer available. As a result, there is not much record of all that had been carried in EMPower I. Now that the project is over for more than two years, there is a risk that the consultants who developed and managed the web site of EMPower II may close it and the wealth of information and the Toolkits available in this website may no longer be available to other interested project developers or energy utilities in future. It is therefore suggested that UNEP finds a way to take over the management of the web site immediately and update it with the latest developments in the field around the world.

ANNEXES

1. **The Evaluation Terms of Reference**
2. **The Evaluation Framework (second part of the inception report)**
3. **Evaluation program, containing names of locations visited and the names (or functions) of people met**
4. **Bibliography**
5. **Summary of co-finance information and a statement of project expenditure by activity**
6. **The review of project design (summary of the inception report)**
7. **Comments and responses to the draft final report**
8. **Brief CV of the consultant**

A.1 THE EVALUATION TERMS OF REFERENCE

Terminal Evaluation of the Project "Development of a Strategic Market Intervention Approach for Grid-Connected Solar Energy Technologies (EMPower)"

GF/2328-2722-4767/4866

I. PROJECT BACKGROUND AND OVERVIEW

A. PROJECT GENERAL INFORMATION[6]

Table 1. Project Summary

GEF project ID:	1599	**IMIS number:**	GF/2328-2722-4767[7] GF/2328-2722-4866[8]
Focal Area(s):	Climate Change	**GEF OP #:**	OP 7: Reducing the Long-Term Costs of Low Greenhouse Gas-Emitting Energy Technologies.
GEF Strategic Priority/Objective:	5	**GEF approval date:**	14 Nov 2003
Approval date:	April 2004	**First Disbursement:**	July 2004
Actual start date:	July 2004	**Planned duration:**	36
Intended completion date:	Initial phase - March 2007; Second stage/refinanced subproject - March 2010	**Actual completion date:**	Refinanced second stage completed - July 2010
Project Type:	MSP	**GEF Allocation*:**	US$ 0.975m
PDF GEF cost:	0.025M	**PDF co-financing*:**	0.010M
Expected MSP/FSP Co-financing:	EUR 1.010 M	**Total Cost*:**	2.010M
Mid-term review/eval. (planned date):	-	**Terminal Evaluation (actual date):**	May 2012
Mid-term review/eval. (actual date):	-	**No. of revisions:**	GFL/4767 Rev 3 GFL/4866 Rev 2
Date of last Steering Committee meeting:	Last Steering Committee 19-21 March 2007; Industry Advisory Board (IAB) Kick-off Meeting 1 July 2009; Casablanca Forum 15-16 June 2010	**Date of last Revision*:**	18 Dec 2007
Disbursement as of 30 June 2010:	GFL/4767: US$ 116,950; GFL/4866 : US$762,693		
Total co-financing realized as of 30 June 2010:	EUR 1,000,000[9] by German Ministry for Development Cooperation (BMZ)	**Leveraged financing:**	

[6] Source: UNEP GEF Project Implementation Report (PIR) Fiscal Year 10 (1 July 2009 to 30 June 2010)

[7] EMPower phase I completed in June 2007

[8] Refinanced EMPower phase II completed in July 2010

B. PROJECT RATIONALE

1. The rationale behind the project "Development of a Strategic Market Intervention Approach for Grid-Connected Solar Energy Technologies" is that ***reduced GHG emissions can be achieved due to increased market volume and reduced price of Solar Energy Technologies (SETs) in electric power utilities***. Although the Strategic Priorities of the GEF were not in place when the project was designed, it was closely aligned with the strategic objective of Operational Program 7 (OP7) i.e. "Reducing the Long-Term Costs of Low Greenhouse Gas-Emitting Energy Technologies".

2. The project (also referred to as "EMPower" - acronym for "***E***nable and ***M***otivate sustainable ***Power***"), is an initiative by German Ministry for Development Cooperation (BMZ) and UNEP which supports utilities around the world in identifying solar applications and in determining both the potential demand and the cost at which solar-based electricity would be cost competitive with other generation sources. The project is designed to disseminate large-scale solar technologies, namely Concentrating Solar Power (CSP[10]) and Photovoltaic (PV[11]) Power, in emerging and developing countries. The project is also intended to support utilities around the world to identify opportunities for introducing large scale CSP and PV power in their power generation mix. For this purpose, the project is supposed to provide assistance to interested utilities around the world in identifying suitable sites and technologies for PV power and CSP projects and determining the potential demand and cost at which such projects would be competitive with other power generation options.

3. Targeted at utilities, policy makers and regulators in both developing and developed countries, as well as the financial community and technology suppliers, EMPower is a staged program of stakeholder engagement, education and action, laying the foundation for subsequent collaborative market development of large, utility-sector commercial markets for SET. The project aims to support utilities in countries around the world in identifying opportunities for large scale solar power generation and to determine the cost and value of solar power in their power systems; and in so doing the project is expected to increase global demand for PV and CSP technology and thus reduce cost of solar power generation. EMPower offers utilities from participating countries a special toolkit for facilitating their solar project development activities: the EMPower Utility Toolkit "Large Scale Solar Power". Furthermore, EMPower programme provides utilities with the opportunity to:

- Receive assistance for project development of large scale solar power projects based on PV or CSP and elaboration of the respective project pre-feasibility study;
- Gain support for presentation of key project characteristics to potential investors;
- Access the solar industry's latest developments and knowledge support via the EMPower Industry Advisory Board (IAB);
- Participate in workshops with policy makers, regulators, industry members, sponsors and other utilities to exchange about activities and results of the EMPower Programme.

[9] EUR 300,000 for phase I and EUR 700,000 for phase II

[10] CSP applications are thermal power plants powered by low or high shares of solar energy (Clean Energy + Medium to large manageable facilities feeding the grid), more specifically by Direct Normal Irradiation.

[11] A photovoltaic (PV) power plant generates electricity using the sun's energy by means of solar panels (or PV modules), which convert the solar irradiation into direct current (DC).

C. PROJECT OBJECTIVES AND COMPONENTS[12]

4. According to the project document, the goal of EMPower project is to bring about dramatic reductions in the cost of electricity generated from SETs, specifically PV and CSP, by aggregating sufficient demand.

5. The ultimate objective of EMPower is the reduction in the cost of electricity generated by solar Photovoltaics (PV) and Concentrated Solar Power (CSP) technologies, by increasing the global market demand for those technologies. The objective of the EMPower Program was expected to be achieved by "supporting utilities in countries around the world by helping them to identify solar applications and to determine both the potential demand and the cost at which solar would be cost competitive relative to other generation sources".

6. The EMPower project was supposed to identify and enable development of the required institutional and organizational capability necessary to identify grid-connected SET projects with commercial potential with the help of workshops and utility toolkits and conduct pre-prefeasibility studies to develop a project pipeline of at least 5 CSP and 5 PV projects for short- and medium term implementation.

7. The broad project outcome was that utilities would systematically begin to install RETs in their networks, often in combination with existing hydro facilities for firming up supplies, substituting for thermal power generation; subsequently and because of a large increase in the demand for RETs, the cost of RET installations would then decline substantially and make them cost competitive with thermal alternatives. These commercially sustainable, market driven transactions would be accomplished with a minimum of subsidies and would be part of a process to open large aggregated markets for SETs.

8. The EMPower project was implemented in two phases; EMPower I which started in 2004 consisted of the following planned components and planned outputs:

Table 2. EMPower Phase I Components and Planned Outputs[13]

Component / Activities	Planned Outputs
1 Coalition Building – "Bringing willing partners together" 2 Informing and engaging the market – "Getting smart" 3 Capability building - "Preparing for action" 4.1 Market Aggregation Techniques - "Building Global Demand" 4.2 Financial Strategies - "Structuring the Best Deals" 4.3 Supply Industry Dynamics – "Assuring Cost-competitive Supply" 4.4 Innovative Procurement Techniques – "How to Aggregate and Manage Demand from Several Sources"	Core group of stakeholders committed to proceeding with commercial deals vis-à-vis grid connected SETs and supply industry willing to providing e financial support A set of studies that provides the process to be used to bid SETs to meet the aggregated demand of the participating utilities, thereby driving the cost of SETs down to market-competitive levels with alternative power supply technologies. This, in turn, will open further markets to solar electric technologies 5-10 utilities with SET-based capital expansion plans An expanded group of 10-15 utilities willing to invest their time to study how solar electric technologies (SETs) could fit into their own capital expansion plans

[12] Source: extracted from the Project Document and PIR FY 10 (1 July 2009 – 30 June 2010)

[13] Source: Project Document

Component / Activities	Planned Outputs
4.5 Regulatory and Policy Framework – "How to Facilitate the Deals" 5 Facilitate Initial Project Deals 6 Project Management	Several (1 to 5) commercial deals that validate the process and techniques developed in this project RET industry confirmation that RET technologies can be supplied at market clearing prices Formation of RET market aggregation mechanisms Formation of financing groups supporting RET investments

9. Following the project revision in 2007, the expected project outputs were reoriented in order to accelerate the achievement of the project objectives, and also so that specific investment opportunities would be targeted in the final phase[14]. The revised project was called EMPower Phase II, even though it was not a second phase in the true sense. EMPower Phase II is not a follow-up project to the EMPower Phase I but a revision of the original EMPower project.

10. Table 3 below presents the planned outputs and results in EMPower II.

Table 3. EMPower Phase II Expected Outputs[15]

	Outputs/Services
1	Re-establish cooperation with partner utilities. Identification and invitation of new utilities.
2	Site identification and investigation to prepare at least 5 pre-feasibility studies each for PV and CSP applications
3	Preparation of utility Toolkits for business models, risk analysis, and marketing strategies
4	Provision and use of software
5	Cooperation with solar industries through the Industry Advisory Board
6	Organization and realisation of Regional Policy workshop I
7	Organization and realisation of Regional Policy workshop II
8	Preparation of project pipeline (at least 5 pre-feasibility studies each for PV and CSP projects)
9	Update of EMPower homepage
10	Quarterly newsletters and press releases
11	Other public relations activities
12	Project Management and Accounting
13	Reporting and coordination with the Executing Agency

[14] UNEP/GEF Project Document Revision December 2007

[15] Source: Half Yearly Progress Reports for 1 July - 31 December 2008 and 1 January - 30 June 2009

D. EXECUTING ARRANGEMENTS

11. UNEP and KfW Development Bank cooperatively implemented and executed this project together with UNOPS and other executing partners. UNEP was the project's Implementing Agency (IA) with the responsibility for project management, overview, monitoring and liaison with GEF. The Executing Agency (EA) was the KfW Development Bank with financing from the German Ministry for Economic Cooperation and Development (BMZ) and UNEP/GEF.

12. The Project Management Unit consisted of KfW staff and a consultant hired to coordinate the project and its administrative functions.

13. The Project Advisory Group was composed of UNEP, GEFSec, World Bank, KfW, other financial donors, selected developing country representatives and a separate industry representatives' panel. The Advisory Group was supposed to advise the Project Manager, promote buy-in to the project from the organizations involved, co-ordinate with other projects to avoid duplication and overlap, and suggest corrective actions as necessary. A Project Manager appointed at KfW acted as Secretary for the Advisory Group and was responsible for managing all aspects of project execution including facilitation of in-country activities, and dissemination of results and progress.

14. Key stakeholders in the implementation of grid-connected solar electrics included energy utilities and their energy sector regulators and policy-makers in the GEF recipient countries. Solar electric manufacturers and power plant project developers were also to be considered in the implementation of this project. The contributions of the key stakeholders were to be obtained via the Advisory Committee. The role of the key project partners (i.e. industry and utilities) was to promote the goals of EMPower especially for CSP where the number of countries with appropriate resource is quite limited.

15. Finally the investment community was essential to provide and/or syndicate the needed debt and equity for these power plants. Utilities and governments were supposed to be responsible for involving the public at the local level.

16. UNEP was to review the process and its outcomes. The acceptance of the findings of the various studies and the documented commitment of the key stakeholders to both produce the solar electric systems at the necessary lower prices and to build the necessary capacity of grid–connected solar electric plants comprised the primary indicators of the success of this project. The outputs and outcomes were supposed to be reported on by the project execution team and the outcomes reviewed upon project completion by an independent evaluation.

E. PROJECT COST AND FINANCING

17. Table 4 below presents a summary of expected financing sources for the project as presented in the Project Document, including a summary of the expected costs per component and financing sources.

18. The GEF provided US$ 0.975M of external financing to the project and an additional US$ 0.025M for PDF cost (Project Development Fund). The project is therefore in the Medium-Size Project category.

19. The project was expected to mobilize another EUR 1.010 M in co-financing from project partners, including BMZ, Industry Partners and Utilities or Independent Power Producers (IPP) companies, for a total project cost of US$ 2.010M. A breakdown of the financing is presented in Table 4 below.

20. The project's final Project Implementation Review (PIR) for the fiscal year 2010 reports that by 30 June 2010, the project had effectively disbursed US$ 879,643 of the GEF grant to UNEP - close to 88 percent. The same report shows that the project had mobilized a total of EUR 1,000,000 in co-financing as of 30 June 2010 by BMZ (EUR 300,000 for phase I and EUR 700,000 for phase II).

Table 4. Estimated project costs per component and financing source

Activity	Description	GEF	Co-funds	Total
	PDF/A	$25	10	$35
1	Coalition Building	$96	10	$106
2	Informing and Engaging the Market	$93	150	$243
3	Capability Building	$180	150	$330
4.1	Market Aggregation Techniques Study	$36	100	$136
4.2	Financial Strategies Study	$50	112	$162
4.3	Supply Industry Dynamics	$47	50	$97
4.4	Innovative Procurement Techniques Study	$150	108	$258
4.5	Regulatory and Policy Framework Study	$108	108	$216
5	Facilitate and Monitor Initial Project Deals	$120	102	$222
6	Coordination	$120	120	$240
	Total	**1,000**	**1,010**	**2,010**

Source: Project Document April 2004.

F. PROJECT IMPLEMENTATION ISSUES

21. The project began in 2004 and was to have been completed in 36 months. As the interest from utility partners in EMPower phase I was deemed insufficient, new partners needed to be identified and approached, and a reorientation of outputs was effected in 2007[16].

22. Subsequently, KfW initiated a "second phase" (which was actually a revision of the original project) with additional co-financing pledged from BMZ/KfW, private solar industry partners, and participating utilities, in order to meet the project's objectives and produce the outputs.

23. After BMZ's final approval of EUR 700,000 to co-finance the second stage, KfW conducted the tendering of the consulting services according to EU legislation which requires a formal set up of more than 6 months. As UNEP funds were transferred only in December, this further delayed the project and the Consultant contract for stage II could only be awarded in July 2008. The new consulting firm was Lahmeyer International of Germany, which was mandated to complete the second phase of the project by July 2010.[17] According to the progress report of 1 January - 30 June 2009, re-establishment of cooperation with EMPower phase I utilities turned out to be extremely time intensive.

24. According to the terminal report[18] prepared for phase of the EMPower project, lack of multi-lingual solar experts was also an issue in EMPower I especially as it meant that certain utilities could not be visited due to language barriers.

25. According to the Mission Report of June 2010, contacts were re-established with all utility partners of EMPower phase I - except the ones who did not belong to the list of eligible countries. EMPower project,

[16] Source: Half Yearly Progress Report (1January – 30 June 2010)
[17] Source: UNEP GEF PIR FY 08 (1 July 2007 to 30 June 2008)
[18] Terminal Report for EMPower Program Phase 1, March 2007

which began in 2004, can be considered as physically completed. Activities pertaining to (i) development of initial project portfolios (5-10 PV and 5-10 CSP projects); and (ii) development of an analysis toolkit to (a) help define the value of PV and CSP for utilities, (b) identify potential business models for utilities, (c) explore the impact of utility demand on solar cost reduction strategies, and (d) carry out risk analysis, have been completed and two regional meetings (one in New Delhi and one in Casablanca) have been held.

26. To date, EMPower is cooperating with about 20 utility partners in the world's Sunbelt through preparation of feasibility studies for CSP and/or PV plants, in cooperation with major solar industries and with the help of a practice-oriented utility toolkit which may help utilities to design large-scale solar projects.

27. No mid-term Evaluation was conducted during project life, but a mid-term review has been undertaken.

II. TERMS OF REFERENCE FOR THE EVALUATION

A. OBJECTIVE AND SCOPE OF THE EVALUATION

28. In line with the UNEP Evaluation Policy[19], the UNEP Evaluation Manual[20] and the Guidelines for GEF Agencies in Conducting Terminal Evaluations[21], the terminal evaluation of the Project "Development of a Strategic Market Intervention Approach for Grid-Connected Solar Energy Technologies (EMPower)" is to be undertaken at the end 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.

29. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP, BMZ/KfW, governments, international and national executing agencies, the GEF and their partners. Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation. It will focus on the following sets of **key questions,** based on the project's intended outcomes, which may be expanded by the evaluator as deemed appropriate:

(a) Overall, how successful was the project in bringing about reductions in the cost of Solar Energy Technologies, specifically PV and CSP, by aggregating sufficient demand and increasing market volume in the participating countries?

(b) To what extent has the project succeeded in establishing a shared view on the (a) technical and economic capabilities of SETs, (b) market potential for grid-connected SETs, (c) framework for valuing the deployment of SET technologies, and (d) risks involved and the required risk mitigation activities/ instruments, across the project stakeholders?

(c) How successful has the project been in fostering commitment by the utilities to include RETs in their system expansion plans, and to purchase specific volumes of SETs over a specific time period? To what extent has the project achieved market aggregation by enabling utilities to form coalitions to bundle Renewable Energy Technology (RET) orders into large packages? Has project been successful in achieving a strong market-alliance approach and to what degree?

(d) To what extent has the project attained involvement and commitment by (a) SET supply industries, (b) regulators and local and national governments, (c) private and public financial institutions, in supporting this initiative?

(e) How successful was the project in disseminating the findings of the feasibility studies implemented in the field and what have been the outcomes?

B. OVERALL APPROACH AND METHODS

30. The terminal evaluation of the EMPower project will be conducted by an independent consultant under the overall responsibility and management of the UNEP Evaluation Office (Nairobi), in consultation with the UNEP GEF Coordination Office (Nairobi) and the UNEP Task Manager at UNEP/DTIE.

[19] http://www.unep.org/eou/StandardsPolicyandPractices/UNEPEvaluationPolicy/tabid/3050/language/en-US/Default.aspx
[20] http://www.unep.org/eou/StandardsPolicyandPractices/UNEPEvaluationManual/tabid/2314/language/en-US/Default.aspx
[21] http://www.thegef.org/gef/sites/thegef.org/files/documents/TE_guidelines7-31.pdf

31. It 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 to determine project achievements against the expected outputs, outcomes and impacts.

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

(a) A **desk review** of project documents[22] including, but not limited to:

- Relevant background documentation, inter alia UNEP and GEF policies, strategies and programmes pertaining to climate change and low GHG technologies;
- Project design documents; Annual Work Plans and Budgets or equivalent, revisions to the logical framework and project financing;
- Project reports such as progress and financial reports; stakeholder/ steering committee meeting minutes; annual Project Implementation Reviews and relevant correspondence; Mid-term Review report for EMPower Phase I; etc.
- Documentation related to project outputs such as: policy, capacity building workshops, databases and websites, toolkits, reports, investments in SETs, (pre)feasibility studies, etc.

(b) **Interviews**[23] with:

- Project management and execution support (Lahmeyer International, KfW Development Bank);
- UNEP Task Manager (Paris) and Fund Management Officer (Nairobi);
- Country lead execution partners and other relevant partners (particularly utility and industry partners);
- Relevant staff of GEF Secretariat;
- Representatives of other relevant organisations (such as government agencies, donor agencies, private RET companies);
- Local communities.

(c) **Country visits.** The independent consultant will visit a sample of two countries where the project implemented projects/pre-feasibility studies[24] and where a number of project stakeholders will be present, to include Morocco and India.

C. KEY EVALUATION PRINCIPLES

33. 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) to the extent possible, and when verification was not possible, the single source will be mentioned[25]. Analysis leading to evaluative judgements should always be clearly spelled out.

34. The evaluation will assess the project with respect to **a minimum set of evaluation criteria** grouped in four categories: (1) Attainment of objectives and planned results, which comprises the assessment of outputs achieved, relevance, effectiveness and efficiency and the review of outcomes towards impacts; (2)

[22] Documents to be provided by the UNEP/DTIE are listed in Annex 6.
[23] Face-to-face or through any other appropriate means of communication
[24] Latin America, MENA, Africa and Asia
[25] Individuals should not be mentioned by name if anonymity needs to be preserved.

Sustainability and catalytic role, which focuses on financial, socio-political, institutional and ecological factors conditioning sustainability of project outcomes, and also assesses efforts and achievements in terms of replication and up-scaling of project lessons and good practices; (3) Processes affecting attainment of project results, which covers project preparation and readiness, implementation approach and management, stakeholder participation and public awareness, country ownership/driven-ness, project finance, UNEP supervision and backstopping, and project monitoring and evaluation systems; and (4) Complementarity with the UNEP strategies and programmes. The consultant can propose other evaluation criteria as deemed appropriate.

35. **Ratings**. All evaluation criteria will be rated on a six-point scale. However, complementarity of the project with the UNEP strategies and programmes is not rated. Annex 3 provides detailed guidance on how the different criteria should be rated and how ratings should be aggregated for the different evaluation criterion categories.

36. In attempting to attribute any outcomes and impacts to the project, 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 and trends in relation to the intended project outcomes and impacts. This 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 and trends 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.

37. As this is a terminal evaluation, particular attention should be given to learning from the experience. Therefore, **the "why?" question** should be at front of the consultant's mind all through the evaluation exercise. This means that the consultant needs 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, i.e. of processes affecting attainment of project results (criteria under category 3). This should provide the basis for the lessons that can be drawn from the project. In fact, the usefulness of the evaluation will be determined to a large extent by the capacity of the consultants to explain "why things happened" as they happened and are likely to evolve in this or that direction, which goes well beyond the mere assessment of "where things stand" today.

D. EVALUATION CRITERIA

1. ATTAINMENT OF OBJECTIVES AND PLANNED RESULTS

38. The evaluation should assess the relevance of the project's objectives and the extent to which these were effectively and efficiently achieved or are expected to be achieved.

(a) ***Achievement of Outputs and Activities:*** Assess, for each component, the project's success in producing the programmed outputs as presented in Table A1.1 (Annex 1), both in quantity and quality, as well as their usefulness and timeliness. Briefly explain the degree of success of the project in achieving its different outputs, cross-referencing as needed to more detailed explanations provided under Section 3 (which covers the processes affecting attainment of project objectives). The achievements under the national projects will receive particular attention.

(b) ***Relevance*****:** Assess, in retrospect, whether the project's objectives and implementation strategies were consistent with: i) Sub-regional environmental issues and needs; ii) the UNEP mandate and policies at the time of design and implementation; and iii) the relevant GEF focal areas, strategic priorities and operational programme(s).

(c) ***Effectiveness:*** Assess to what extent the project has achieved its main objective of reducing the cost of electricity generated by solar Photovoltaics (PV) and Concentrated Solar Power (CSP) technologies, by increasing the global market demand for those technologies and its components/activities and outputs as presented in Table 2 and 3 above. To measure

achievement, use as much as appropriate the indicators for achievement proposed in the Logical Framework Matrix (Logical framework) of the project, adding other relevant indicators as appropriate. Briefly explain what factors affected the project's success in achieving its objectives, cross-referencing as needed to more detailed explanations provided under Section 3.

(d) ***Efficiency*:** Assess the cost-effectiveness and timeliness of project execution. Describe any cost- or time-saving measures put in place in attempting to bring the project to a successful conclusion within its programmed budget and (extended) time. Analyse how delays, if any, have affected project execution, costs and effectiveness. Wherever possible, compare the cost and time over results ratios of the project with that of other similar projects. 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.

(e) ***Review of Outcomes to Impacts (ROtI)*:** Reconstruct the logical pathways from project outputs over achieved objectives towards impacts, taking into account performance and impact drivers, assumptions and the roles and capacities of key actors and stakeholders, using the methodology presented in the GEF Evaluation Office's ROtI Practitioner's Handbook[26] (summarized in Annex 7 of the TORs). Assess to what extent the project has to date contributed, and is likely in the future to further contribute to changes in stakeholder behaviour as regards to: i) the strengthening of the enabling policy and institutional environment for cross-sectoral prevention and management of IAS; ii) awareness and information on risks, iii) prevention and management of priority invasive alien species, and the likelihood of those leading to changes in the natural resource base and benefits derived from the environment regarding: the conservation of globally significant eco-systems, species and genetic diversity.

2. SUSTAINABILITY AND CATALYTIC ROLE

39. **Sustainability** is understood as the probability of continued long-term project-derived results and impacts after the external project funding and assistance ends. The evaluation will identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of benefits. Some of these factors might be direct results of the project while others will include contextual circumstances or developments that are not under control of the project but that may condition sustainability of benefits. The evaluation should ascertain to what extent follow-up work has been initiated and how project results will be sustained and enhanced over time. Application of the ROtI method will assist in the evaluation of sustainability.

40. Four aspects of sustainability will be addressed:

(a) ***Socio-political sustainability.*** Are there any social or political factors that may influence positively or negatively the sustenance of project results and progress towards impacts? Is the level of ownership by the main national and regional stakeholders sufficient to allow for the project results to be sustained? Are there sufficient government and stakeholder awareness, interests, commitment and incentives to execute, enforce and pursue the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project?

[26] http://www.thegef.org/gef/sites/thegef.org/files/documents/Impact_Eval-Review_of_Outcomes_to_Impacts-RotI_handbook.pdf

(b) ***Financial resources.*** To what extent are the continuation of project results and the eventual impact of the project dependent on continued financial support? What is the likelihood that adequate financial resources[27] will be or will become available to implement the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project? Are there any financial risks that may jeopardize sustenance of project results and onward progress towards impact?

(c) ***Institutional framework.*** To what extent is the sustenance of the results and onward progress towards impact dependent on issues relating to institutional frameworks and governance? How robust are the institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. required to sustaining project results and to lead those to impact on human behaviour and environmental resources?

(d) ***Environmental sustainability.*** Are there any environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher level results that are likely to affect the environment, which, in turn, might affect sustainability of project benefits?

41. **Catalytic Role and Replication**. The ***catalytic role*** of GEF-funded interventions is embodied in their approach of supporting the creation of an enabling environment and of investing in pilot activities which are innovative and showing how new approaches can work. UNEP and the GEF also aim to support activities that upscale new approaches to a national, regional or global level, with a view to achieve sustainable global environmental benefits. The evaluation will assess the catalytic role played by this project, namely to what extent the project has:

(a) *catalyzed behavioural changes* in terms of use and application by the relevant stakeholders of: i) technologies and approaches show-cased by the demonstration projects; ii) strategic programmes and plans developed; and iii) assessment, monitoring and management systems established at a national and sub-regional level;

(b) provided *incentives* (social, economic, market based, competencies etc.) to contribute to catalyzing changes in stakeholder behaviour;

(c) contributed to *institutional changes.* An important aspect of the catalytic role of the project is its contribution to institutional uptake or mainstreaming of project-piloted approaches in the regional and national demonstration projects;

(d) contributed to *policy changes* (on paper and in implementation of policy);

(e) contributed to sustained follow-on financing (*catalytic financing*) from Governments, the GEF or other donors;

(f) created opportunities for particular individuals or institutions ("*champions*") to catalyze change (without which the project would not have achieved all of its results).

[27] Those resources can be from multiple sources, such as the public and private sectors, income generating activities, other development projects etc.

42. ***Replication***, in the context of GEF projects, is defined as lessons and experiences coming out of the project that are replicated (experiences are repeated and lessons applied in different geographic areas) or scaled up (experiences are repeated and lessons applied in the same geographic area but on a much larger scale and funded by other sources). The evaluation will assess the approach adopted by the project to promote replication effects and evaluate to what extent actual replication has already occurred or is likely to occur in the near future. What are the factors that may influence replication and scaling up of project experiences and lessons?

3. PROCESSES AFFECTING ATTAINMENT OF PROJECT RESULTS

43. **Preparation and Readiness**. Were the project's objectives and components clear, practicable and feasible within its timeframe? Were the capacities of executing agencies properly considered when the project was designed? Was the project document clear and realistic to enable effective and efficient implementation? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were counterpart resources (funding, staff, and facilities) and enabling legislation assured? Were adequate project management arrangements in place? Were lessons from other relevant projects properly incorporated in the project design? Were lessons learned and recommendations from Steering Committee meetings adequately integrated in the project approach? What factors influenced the quality-at-entry of the project design, choice of partners, allocation of financial resources etc.?

44. **Implementation Approach and Adaptive Management**. This includes an analysis of approaches used by the project, its management framework, the project's adaptation to changing conditions (adaptive management), the performance of the implementation arrangements and partnerships, relevance of changes in project design, and overall performance of project management. The evaluation will:

(a) Ascertain to what extent the project implementation mechanisms outlined in the project document have been followed and were effective in delivering project outputs and outcomes. Were pertinent adaptations made to the approaches originally proposed?

(b) Assess the role and performance of the units and committees established and the project execution arrangements at all levels;

(c) Evaluate the effectiveness and efficiency of project management by the EA and how well the management was able to adapt to changes during the life of the project;

(d) Assess the extent to which project management responded to direction and guidance provided by the Steering Committee and IA supervision recommendations;

(e) Identify administrative, operational and/or technical problems and constraints that influenced the effective implementation of the project, and how the project partners tried to overcome these problems;

(f) Assess the extent to which mid-term review recommendations were followed in a timely manner.

45. **Stakeholder[28] Participation and Public Awareness**. The term stakeholder should be considered in the broadest sense, encompassing project partners, government institutions, private interest groups, local communities etc. The assessment will look at three related and often overlapping processes: (1) information dissemination between stakeholders, (2) consultation between stakeholders, and (3) active engagement of stakeholders in project decision making and activities. The evaluation will specifically assess:

(a) the approach(es) used to identify and engage stakeholders in project design and implementation. What were the strengths and weaknesses of these approaches with respect to the project's objectives and the stakeholders' motivations and capacities? What was the achieved degree and effectiveness of collaboration and interactions between the various project partners and stakeholders during the course of implementation of the project?

(b) the degree and effectiveness of any public awareness activities that were undertaken during the course of implementation of the project; or that are built into the assessment methods so that public awareness can be raised at the time the assessments will be conducted;

(c) how the results of the project (strategic programmes and plans, monitoring and management systems, pre-feasibility studies, toolkits, national/sub-regional agreements etc.) engaged key stakeholders in planning the design and development of RET investments, technologies and installations, adopting and sharing lessons on EMPower approach.

46. The ROtI analysis should assist the consultants in identifying the key stakeholders and their respective roles, capabilities and motivations in each step of the causal pathway from: activities, to achievement of outputs and objectives, to impact.

47. **Country Ownership and Driven-ness.** The evaluation will assess the performance of the Governments of the countries involved in the project, namely:

(a) how the Governments have assumed responsibility for the project and provided adequate support to project execution, including the degree of cooperation received from the various contact institutions in the countries involved in the project and the timeliness of provision of counter-part funding to project activities;

(b) to what extent the political and institutional framework of the participating countries has been conducive to project performance. Look, in particular, at the extent of the political commitment to enforce national/sub-regional agreements promoted under the project;

(c) to what extent the Governments have promoted the participation of communities and their non-governmental organisations in the project; and

(d) how responsive the Governments were to KfW coordination and guidance, to UNEP supervision and mid-term review recommendations.

48. **Financial Planning and Management**. Evaluation of financial planning requires assessment of the quality and effectiveness of financial planning and control of financial resources throughout the project's

[28] Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake in the outcome of the project. The term also applies to those potentially adversely affected by the project.

lifetime. The assessment will look at actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing. The evaluation will:

(a) Verify the application of proper standards (clarity, transparency, audit etc.) and timeliness of financial planning, management and reporting to ensure that sufficient and timely financial resources were available to the project and its partners;

(b) Assess other administrative processes such as recruitment of staff, procurement of goods and services (including consultants), preparation and negotiation of cooperation agreements etc. to the extent that these might have influenced project performance;

(c) Present to what extent co-financing has materialized as expected at project approval (see Table 1). Report country co-financing to the project overall, and to support project activities at the national level in particular. The evaluation will provide a breakdown of final actual costs and co-financing for the different project components (see tables in Annex 4).

(d) Describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective. Leveraged resources are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, parastatals, the private sector or communities.

49. Analyse the effects on project performance of any irregularities in procurement, use of financial resources and human resource management, and the measures taken by the EA or IA to prevent such irregularities in the future. Assess whether the measures taken were adequate.

50. **UNEP Supervision and Backstopping.** The purpose of supervision is to verify the quality and timeliness of project execution in terms of finances, administration and achievement of outputs and outcomes, in order to identify and recommend ways to deal with problems which arise during project execution. Such problems may be related to project management but may also involve technical/institutional substantive issues in which UNEP has a major contribution to make. The evaluators should assess the effectiveness of supervision and administrative and financial support provided by UNEP including:

(a) The adequacy of project supervision plans, inputs and processes;

(b) The emphasis given to outcome monitoring (results-based project management);

(c) The realism and candour of project reporting and ratings (i.e. are PIR ratings an accurate reflection of the project realities and risks);

(d) The quality of documentation of project supervision activities; and

(e) Financial, administrative and other fiduciary aspects of project implementation supervision.

51. **Monitoring and Evaluation**. The evaluation will include an assessment of the quality, application and effectiveness of project monitoring and evaluation plans and tools, including an assessment of risk

management based on the assumptions and risks identified in the project document. The evaluation will assess how information generated by the M&E system during project implementation was used to adapt and improve project execution, achievement of outcomes and ensuring sustainability. M&E is assessed on three levels:

(a) ***M&E Design*.** Projects should have sound M&E plans to monitor results and track progress towards achieving project objectives. An M&E plan should include a baseline (including data, methodology, etc.), SMART[29] indicators and data analysis systems, and evaluation studies at specific times to assess results. The time frame for various M&E activities and standards for outputs should have been specified. The evaluators should use the following questions to help assess the M&E design aspects:

- Quality of the project logical framework as a planning and monitoring instrument; analyse/compare logical framework in Project Document, revised logical framework if any and logical framework used in Project Implementation Review reports to report progress towards achieving project objectives;
- SMART-ness of indicators: Are there specific indicators in the logical framework for each of the project objectives? Are the indicators measurable, attainable (realistic) and relevant to the objectives? Are the indicators time-bound?
- Adequacy of baseline information: To what extent has baseline information on performance indicators been collected and presented in a clear manner? Was the methodology for the baseline data collection explicit and reliable?
- Arrangements for monitoring: Have the responsibilities for M&E activities been clearly defined? Were the data sources and data collection instruments appropriate? Was the frequency of various monitoring activities specified and adequate? In how far were project users involved in monitoring?
- Arrangements for evaluation: Have specific targets been specified for project outputs? Has the desired level of achievement been specified for all indicators of objectives and outcomes? Were there adequate provisions in the legal instruments binding project partners to fully collaborate in evaluations?
- Budgeting and funding for M&E activities: Determine whether support for M&E was budgeted adequately and was funded in a timely fashion during implementation.

(b) ***M&E Plan Implementation*.** The evaluation will verify that:

- the M&E system was operational and facilitated timely tracking of results and progress towards projects objectives throughout the project implementation period;
- annual project reports and Progress Implementation Review (PIR) reports were complete, accurate and with well justified ratings;
- the information provided by the M&E system was used during the project to improve project performance and to adapt to changing needs;
- projects had an M&E system in place with proper training, instruments and resources for parties responsible for M&E.

[29] **S**pecific, **M**easurable, **A**chievable, **R**elevant, and **T**ime-bound

4. COMPLEMENTARITIES WITH UNEP STRATEGIES AND PROGRAMMES

52. UNEP aims to undertake GEF funded projects that are aligned with its own strategies. The evaluation should present a brief narrative on the following issues:

(a) ***Linkage to UNEP's Expected Accomplishments***. The UNEP MTS specifies desired results in six thematic focal areas. The desired results are termed Expected Accomplishments. Using the completed ROtI analysis, the evaluation should comment on whether the project makes a tangible contribution to any of the Expected Accomplishments specified in the UNEP MTS. The magnitude and extent of any contributions and the causal linkages should be fully described. Whilst it is recognised that UNEP GEF projects designed prior to the production of the UNEP Medium Term Strategy (MTS)[30]would not necessarily be aligned with the Expected Accomplishments articulated in those documents, complementarities may still exist.

(b) ***Alignment with the Bali Strategic Plan (BSP)***[31]. The outcomes and achievements of the project should be briefly discussed in relation to the objectives of the UNEP BSP.

(c) ***Gender*****.** Ascertain 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. Assess whether the intervention is likely to have any lasting differential impacts on gender equality and the relationship between women and the environment. To what extent do unresolved gender inequalities affect sustainability of project benefits?

(d) *South-South Cooperation.* This is regarded as the exchange of resources, technology, and knowledge between developing countries. Briefly describe any aspects of the project that could be considered as examples of South-South Cooperation.

E. THE CONSULTANT

53. For this evaluation, one independent consultant will be hired, from at least one of the project's participating countries or sub-regions.

54. S/He will preferably have expertise and experience (at least **ten years** long), in the following fields:

(a) **Renewable energy** technologies (particularly solar energy),

(b) **Large-scale power generation industry** and **power markets**,

(c) **Evaluation** of international development projects (preferably GEF funded projects).

55. The consultant's education background would be in **energy management** coupled with post-graduate level qualifications in a **business- or economics**- related field.

[30] http://www.unep.org/PDF/FinalMTSGCSS-X-8.pdf
[31] http://www.unep.org/GC/GC23/documents/GC23-6-add-1.pdf

56. The consultant will be responsible for collecting and analysing project data, and drafting the evaluation report.

57. The consultant will work under the overall responsibility of the UNEP Evaluation Office and s/he will consult with the Evaluation Office on any procedural and methodological matters related to the evaluation. It is, however, the consultant's individual responsibility to arrange for any other logistical matters related to the assignment. S/He will liaise with the UNEP Task Manager based in Paris France and the Project EA (in KfW, Germany) who will provide full support on any logistical issue, allowing the consultant to conduct the evaluation as independently as possible.

58. The consultant to the Evaluation Office that s/he has not been associated with the design and implementation of the project in any way which may jeopardize his/her independence and impartiality towards project achievements and project partner performance.

59. By undersigning the service contract with UNEP/UNON, the consultant certifies that s/he has not been associated with the design and implementation of the project in any way which may jeopardize his/her independence and impartiality towards project achievements and project partner performance. In addition, s/he certifies that s/he will not have any future interest in cooperating with the project's executing or implementing units within six months after the completion of his/her contract.

F. EVALUATION DELIVERABLES AND REVIEW PROCEDURES

60. The Team Leader will prepare an **inception report** containing a thorough review of the project design quality and the evaluation framework. The review of design quality will cover the following aspects:

- Project relevance (see paragraph 38(b));
- A desk-based Theory of Change of the project (see Annex 7 - ROtI analysis);
- Sustainability consideration (see paragraphs 39-40) and measures planned to promote replication and up-scaling (see paragraph 42);
- Preparation and readiness (see paragraph 43);
- Financial planning (see paragraphs 48-49);
- M&E design (see paragraph 51(a));
- Complementarities with UNEP strategies and programmes (see paragraph 52);
- Using the above, complete and assessment of the overall quality of the project design (see Annex 8)

The evaluation framework will present in further detail the evaluation questions under each criterion with their respective indicators and data sources. In addition it will present the evaluation methodologies, detailed division of roles and responsibilities in the evaluation team, revised logistics and work plan.

The inception report will be submitted for review by the Evaluation Office according to the tentative evaluations schedule in paragraphs 72-73 and **before** the Consultant conducts any field visits.

61. **The main evaluation report** should be brief (no longer than 35 pages – excluding the executive summary and annexes), to the point and written in plain English. The report will follow the annotated Table of Contents outlined in Annex 2. It must explain the purpose of the evaluation, exactly what was evaluated and the methods used (with their limitations). The report will present evidence-based and balanced findings, consequent conclusions, lessons and recommendations, which will be cross-referenced to each other. The report should be presented in a way that makes the information accessible and comprehensible. Any dissident views in response to evaluation findings will be appended in footnote or annex as appropriate.

62. **Report summary**. The Consultant will prepare a 15-slide presentation summarizing the key findings, lessons learned and recommendations of the evaluation. The purpose of this presentation is to engage the main project partners in a discussion on the evaluation results.

63. **Review of the draft evaluation report**. The Team Leader will submit the zero draft report according to the tentative schedule in paragraphs 72-73 to the UNEP EO and revise the draft following the comments and suggestions made by the EO. The EO will then share the first draft report with the UNEP Task Manager in the Division of Technology, Industry and Economics (DTIE) (Paris) and the UNEP GEF Coordination Office (Nairobi). The UNEP Task Manager will forward the first draft report to the other project stakeholders, in particular KfW, Industry Advisory Board (IAB) and participating utilities, Lahmeyer International for review and comments. Stakeholders may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions.

64. Comments would be expected within two weeks after the draft report has been shared. Any comments or responses to the draft report will be sent to the UNEP EO for collation. The EO will provide the comments to the Consultant for consideration in preparing the final draft report. The Consultant will submit the final draft report no later than 10 days after receipt of stakeholder comments. The Team Leader will prepare a **response to comments** that contradict the findings of the evaluation team and could therefore not be accommodated in the final report. This response will be shared by the EO with the interested stakeholders to ensure full transparency.

65. Consultations will be held between the consultants, EO staff, UNEP/GEF, UNEP/DTIE and key members of the project execution team. These consultations will seek feedback on the proposed recommendations and lessons.

66. **Submission of the final Terminal Evaluation report**. The final report shall be submitted by Email to:

Segbedzi Norgbey, Head
UNEP Evaluation Office
P.O. Box 30552-00100
Nairobi, Kenya
Tel.: (+254-20) 762 3387
Email: segbedzi.norgbey@unep.org

67. The Head of Evaluation will share the report with the following persons:

Sylvie Lemmet, Director
UNEP/DTIE
P.O. Box 30552-00100
Nairobi, Kenya
Email : sylvie.lemett@unep.org

Maryam Niamir-Fuller, Director
UNEP/GEF Coordination Office
P.O. Box 30552-00100
Nairobi, Kenya
Tel: (+254-20) 762 4686
Email: maryam.niamir-fuller@unep.org

68. The final evaluation report will be published on the UNEP Evaluation Office web-site www.unep.org/eou and may be printed in hard copy. Subsequently, the report will be sent to the GEF Office of Evaluation for their review, appraisal and inclusion on the GEF website.

69. As per usual practice, the UNEP EO will prepare a **quality assessment** of the zero draft and final draft report, which is a tool for providing structured feedback to the evaluation consultant. The quality of the report will be assessed and rated against both GEF and UNEP criteria as presented in Annex 5.

70. The UNEP Evaluation Office will also prepare a **commentary** on the final evaluation report, which presents the EO ratings of the project based on a careful review of the evidence collated by the evaluation team and the internal consistency of the report. These ratings are the final ratings that the UNEP Evaluation Office will submit to the GEF Office of Evaluation.

G. RESOURCES AND SCHEDULE OF THE EVALUATION

71. This Terminal Evaluation will be undertaken by one independent evaluation consultant contracted by the UNEP Evaluation Office. The consultant will work under the overall responsibility of the UNEP Evaluation Office and s/he will consult with the EO on any procedural and methodological matters related to the evaluation. It is, however, the consultant's individual responsibility to arrange for their travel, obtain documentary evidence, meetings with stakeholders, field visits, and any other logistical matters related to their assignment. The UNEP Task Manager and EA will provide support in the form of introductions, meetings, for the country visits when necessary, allowing the consultants to conduct the evaluation as efficiently and independently as possible.

72. The **Consultant** will be hired for 1.4 months (28 days) of work to be carried out from July to August 2012. Most of the sites investigated under EMPower have not yet been further developed. The consultant will however carry out a visit to Ouarzazate in Morocco which is the first project that shall now be developed with support of many bi- and multilateral donors, and also to India, for meetings with relevant project stakeholders. Other consultations will be done via telephone/internet communication.

73. The tentative schedule is presented in the Table below:

Table 5: Tentative timeline and itinerary

Activity	**Date**
Start of contract	02.07.2012
Inception report to UNEP EO	06.07.2012
3 days field work to Ouarzazate Morocco plus 2 days travel	16 - 20.07.2012
2 days field work to Rajasthan India plus 2 days travel	23 - 26.07.2012
Zero draft report to UNEP EO	03.08.2012
First draft report to UNEP EO	10.08.2012
Collated comments by UNEP EO sent to consultant	24.08.2012
Final report and response to comments to UNEP EO	28.08.2012
End of contract	31.08.2012

H. SCHEDULE OF PAYMENT

Fee Only Contract

74. The consultant will be hired under an individual Special Service Agreement (SSA) which is NOT inclusive of all expenses such as airfares, in-country travel, accommodation, incidental and terminal expenses. Air tickets will be paid separately by UNEP and 75% of the DSA for each authorised travel mission will be paid up front. Local in-country travel and communication costs will be reimbursed on the production of acceptable receipts. Terminal expenses and residual DSA entitlements (25%) will be paid after mission completion.

75. The Consultant will receive 40% of the his/her fee upon acceptance of a draft report deemed complete and of acceptable quality by the EO. The remainder will be paid upon satisfactory completion of the work.

76. In case the consultant is not able to provide the deliverables in accordance with these TORs, in line with the expected quality standards by the UNEP Evaluation Office, payment may be withheld at the discretion of the Head of the Evaluation Office until the consultants have improved the deliverables to meet UNEP's quality standards.

77. If the consultant fails to submit a satisfactory final product to UNEP in a timely manner, i.e. within one month after 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.

A.2 THE EVALUATION FRAMEWORK

A.2.1. The evaluation questions under each criterion with their respective indicators and data sources

Evaluation questions under each criterion (with reference to the ToR)		Stakeholder(s) to interview	Indicator	Data sources
1.	**Attainment of objectives and planned results**			
1.1.	***Achievement of outputs and activities***			
1.1.1	Coalition building	TM and PMU	logframe	Reports
1.1.2	Informing and engaging the market	Dropped		
1.1.3	Capability building	All stakeholders	Revised logframe	Reports
1.1.4	Toolkits, capacity building for utilities, and policy development	All stakeholders	Revised logframe	Reports
1.1.5	PIMs and preparation of initial project deals	Consultants, partner utilities	Revised logframe	Reports and site visits
1.1.6	Project management	PMU		Reports
1.2	***Relevance***			
1.2.1	Sub-regional environmental issues and needs	TM and PMU	Country policy initiatives	Web search
1.2.2	The UNEP mandate and policies at the time of design and implementation	TM	UNEP activities	UNEP website
1.2.3	Relevant GEF focal areas, strategic priorities and operational programme(s)	TM	One of the GEF focal areas	GEF official documents
1.3	***Effectiveness***			
1.3.1	Indicators for achievements (logframe)	TM and PMU	logframe	Reports
1.3.2	Other relevant indicators	TM and PMU		
1.3.3	Factors affecting the project's success in achieving its objectives	TM, PMU and IAB members		Reports, policy workshops
1.4	***Efficiency***			
1.4.1	Cost-effectiveness of project execution	TM and PMU	Project Document	Financial reports
1.4.2	Timeliness of project execution	TM and PMU	Project Document	Revised Work Plan
1.4.3	How have delays affected project execution, costs and effectiveness	TM and PMU	Project Document	Reports
1.4.4	Efforts by to build upon pre-existing institutions, agreements, and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects to improve project efficiency	TM and PMU		
1.e	***Review of outcomes to Impacts (ROtI)***			
1.e.1	Performance and impact drivers	All stakeholders	Project Document	Reports
1.e.2	Assumptions	TM and PMU	Project Document	Reports
1.e.3	Roles and capacities of key actors and stakeholders		Project Document	Reports
1.e.4	Project contribution in changing stakeholder behavior with regard to:			
	- strengthening the enabling policy and institutional environment	All stakeholders	Project Document	Reports
	- awareness and information on risks	All stakeholders	Project Document	Reports
	- conservation of globally significant eco-systems	All stakeholders	Project Document	Reports
2.	**Sustainability and catalytic role**			
2.1.	***Sustainability***			
2.1.1.	Socio-political sustainability			
	- *Social or political factors that may*	TM, PMU and Country	logframe	Utilities, web search

Evaluation questions under each criterion (with reference to the ToR)		Stakeholder(s) to interview	Indicator	Data sources
	influence positively or negatively the sustenance of project results and progress towards impacts	stakeholders		
	- Level of ownership by main national and regional stakeholders to sustain the project results	TM, PMU and Country stakeholders	Projects in pipeline	Agreement documents
	- Government and stakeholder awareness, interests, commitment and incentives to execute, influence and pursue the programmes, plans, agreements and monitoring systems, etc.	TM, PMU and country stakeholders	Projects in pipeline	Agreement documents
2.1.2.	Financial resources			
	- Dependence of the continuation of project results and the eventual project impact on continued financial support	TM and PMU	Activities after project completion	Documented evidence
	- Likelihood of adequate financial resources becoming available to implement the programmes, plans, agreements, monitoring systems, etc.	TM, PMU and IAB members		Signed agreements
	- Financial risks that may jeopardize sustenance of project results and onward progress towards impacts	TM, PMU and IAB members	Policy changes	Web search
2.1.3.	Institutional framework			
	- Dependence of the sustenance of results and onward progress towards impacts on issues related to institutional frameworks and governance	TM and PMU	Signed agreement or legal framework	Agreements
	- Robustness of governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks to sustain project results and to lead those to impact on human behavior and environmental resources	TM and PMU	Signed agreement or legal framework	Agreements
2.1.4.	Environmental sustainability			
	- Environmental factors that can influence the future flow of project benefits	All stakeholders	National agreements	Reference documents
	- Project outputs or higher level results that are likely to affect the environment, which, in turn, may affect sustainability of project benefits	All stakeholders	National agreements	Reference documents
2.2.	***Catalytic role and replication***			
2.2.1.	Project's contribution in catalyzing behavioral changes			
	- Use and application by the stakeholders of technologies and approaches show-cased by the demonstration projects	Utilities and developers	Changes in generation plans	Annual reports
	- Use and application by the stakeholders of strategic programmes and plans developed	Utilities and developers	Changes in generation plans	Annual reports
	- Use and application by the stakeholders of assessment, monitoring and management systems established at a national and sub-regional level	Utilities and developers	Changes in generation plans	Annual reports
2.2.2.	Project's contribution in providing incentives			
	- Incentives (social, economic, market based, competencies, etc.) to contribute to catalyzing changes in stakeholder behavior	Utilities, developers and IAB members	Changes in generation plans	Annual reports

Evaluation questions under each criterion (with reference to the ToR)		Stakeholder(s) to interview	Indicator	Data sources
2.2.3.	Project's contribution to institutional changes			
	- Contribution to institutional uptake or mainstreaming of project-piloted approaches in the regional and national demonstration projects	Institutional stakeholders	National energy sector documents	Documents in public domain
2.2.4.	Project's contribution to policy changes			
	- Contribution to policy changes (in paper and in implementation of policy)	Institutional stakeholders	National energy sector documents	Documents in public domain
2.2.4.	Project's contribution to sustained follow-on financing			
	- Catalytic role in financing from governments, the GEF or other donors	*TM, PMU and IAB members*	*Donor annual reports*	*Documents in public domain*
2.2.4.	Project's contribution in creating champion			
	- Opportunity created for particular individuals or institutions to catalyze change	*National stakeholders*	*Official documents*	*Relevant documents or references made available*
2.3	***Replication***			
2.3.1	Approach adopted to promote replication effects	TM, PMU	Increase in PIMs and projects in pipeline	Documents and reports
2.3.2	Evaluate the actual replication occurred or likely to occur in the near future	All stakeholders	Increase in PIMs and projects in pipeline	Documents and reports
2.3.3	Factors that may influence replication and scaling of project experiences and lessons	All stakeholders	Country level initiatives	Relevant documents or references made available
3.	**Processes affecting attainment of project results**			
3.1.	***Preparedness and readiness***			
3.1.1	Were project's objectives and components clear, practicable and feasible within its timeframe?	TM and PMU	Logframe	Reports
3.1.2	Were capacities of executing agencies properly considered when the project was designed?		logframe	Reports
3.1.3	Was the project document clear and realistic to enable effective and efficient implementation?	PMU	logframe	Reports
3.1.4	Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation?	TM and PMU	Signed agreements	Relevant documents, minutes of meetings
3.1.5	Were counterpart resources (funding, staff, facilities) and enabling legislation assured?	All stakeholders	Financial statement	Financial reports
3.1.6	Were adequate project management arrangements in place?	TM and PMU		Progress reports
3.1.7	Were lessons from other relevant projects properly incorporated in the project design?	TM and PMU		Project document
3.1.8	What factors influenced the quality-at-entry of the project design, choice of partners and allocation of financial resources, etc.?	TM and PMU	Project Document	Project Document
3.2.	***Implementation approach and adaptive management***			
3.2.1	Approach(es) used to identify and engage stakeholders in project design and implementation			

Evaluation questions under each criterion (with reference to the ToR)		Stakeholder(s) to interview	Indicator	Data sources
	- Strengths and weaknesses of these approaches with respect to the project's objectives and the stakeholders' motivations and capacities	*TM, PMU and consultants*	*Change in logframe and work plan*	*Reports*
	Achieved degree and effectiveness of collaboration and interactions between the various project partners and stakeholders during the course of project implementation	*All stakeholders*	*Changes in logframes and work plan*	*Reports*
3.2.2	Degree and effectiveness of public awareness activities undertaken during the course of implementation of the project or built into the assessment methods so that public awareness can be raised at the time of assessment	All stakeholders	Project outcomes	Reports and signed agreements
3.2.3	Project results engaging key stakeholders in planning the design and development of RET investment, technologies and installations, adopting and sharing lessons on EMPower approach	All stakeholders	Project outcomes	Reports and signed documents
3.3	***Country ownership and Driven-ness***			
3.3.1	Have governments assumed responsibility for the project and provided adequate support to project execution, including the cooperation received from various contact institutions in the countries	TM, PMU and national partners	National SET development plans	Information available in public domain
3.3.2	The timeliness of provision of counter-part funding to project activities	TM and PMU	Impacts on project execution	Budget revisions and financial plans
3.3.3	The extent to which the political and institutional framework of the participating countries has been conducive to project performance (political commitment to enforce agreements promoted under the project)	TM and PMU	Signed agreements	Documentary evidence of agreements signed
3.3.4	The extent to which the Governments have promoted the participation of communities and their NGOs in the project	TM, PMU and national stakeholders	Involvement of communities and NGOs	Documentary evidence
3.3.5	Responsiveness of the Governments towards the KfW coordination and guidance, to UNEP supervision and mid-term review recommendations	TM, PMU and consultants	Letter of support	Documentary evidence
3.4	***Financial planning and management***			
3.4.1	Standard (clarity, transparency, audit, etc.) and timeliness of financial planning, management and reporting to ensure that sufficient and timely financial resources were available to the project and its partners	TM and PMU	Financial reports	Review of financial reports and internal memos
3.4.2	Influence of other administrative processes (staff recruitment, procurement of goods and services, preparation and negotiation of cooperation agreements, etc.) on project performance	TM and PMU	Revised logframe and work plan	Reports
3.4.3	The extent to which co-financing has materialized as expected at project approval	TM and PMU	Comparison of budget with financial reports	Project Document and financial reports
3.4.4	Co-financing to the overall project, and to	All stakeholders	Co-financed activities	Documented agreement

Evaluation questions under each criterion (with reference to the ToR)		Stakeholder(s) to interview	Indicator	Data sources
	support project activities at the national level			or exchanges of mails
3.4.5	Breakdown of final actual costs and co-financing for the different project components	TM and PMU	Financial reports	Budget revisions and financial plans
3.4.6	Resources (financial, in-kind) leveraged by the project since inception and their contribution to the project's ultimate objectives	All stakeholders	Activities not financed by the project	Documentary evidence
3.4.7	Effect of any irregularities in procurement, use of financial resources and human resource management on project performance (and measures taken by EA or IA to prevent such irregularities in future.	TM and PMU	Technical and financial reports	Documents and reports
3.5	***UNEP supervision and backstopping***			
3.5.1	Adequacy of project supervision plans, inputs and processes	PMU	Project delays	Reports
3.5.2	The emphasis given to outcome monitoring (result-based project management)		Half-yearly reports, final report and PIRs	Reports
3.5.3	The realism and candor of project reporting and ratings		PIRs	
3.5.4	The quality of documentations of project supervision activities		Half-yearly reports, final reports, PIR and mission reports	Reports
3.5.5	Financial, administrative and other fiduciary aspects of project implementation supervision		Half-yearly final reports and audit reports	Reports
3.6	***Monitoring and evaluation***			
3.6.1	M&E design			
	- Analysis of logframe in project document, revised logframe (if any), and logframe used in PIR reports to report progress towards achieving project objectives	*TM and PMU*	*logframe and revised logframes*	*PIRs*
	- Are the indicators for the project objectives specific, measurable, attainable (realistic) and relevant to the objectives? Are they time-bound?	*TM and PMU*	*Work plan and revised work plan*	*PIRs*
	- Was the baseline information on performance indicators collected and presented in a clear manner?	*TM and PMU*	*No baseline information*	
	- Was the methodology for the baseline data collection explicit and reliable?	*TM and PMU*	*No baseline information*	
3.6.2	Arrangement for monitoring			
	- Have the responsibilities for M&E activities been clearly defined?	TM and PMU	Project Document	Reports
	- Were the data sources and data collection instruments appropriate?	TM and PMU	Project Document	Reports
	- Was the frequency of various monitoring activities specified and adequate?	TM and PMU	Project Document	Reports
	- Were the project users involved in monitoring?	TM, PMU, utilities and developers	Project Document	Reports
3.6.3	Arrangement for evaluation			
	- Have specific targets been specified for project outputs?	*TM and PMU*	*Logframe and revised logframe*	*PIRs*
	- Has the desired level of achievements been specified for all indicators of	*TM and PMU*	*Logframe and revised logframes*	*PIRs*

Evaluation questions under each criterion (with reference to the ToR)		**Stakeholder(s) to interview**	**Indicator**	**Data sources**
	objectives and outcomes?			
	- Were there adequate provisions in the legal instruments binding project partners to fully collaborate in evaluations?	*TM, PMU and project partners*	*Signed agreements*	*Documentary evidence*
	- Whether support for M&E activities was budgeted adequately and funded in a timely fashion during implementation	*TM and PMU*	*Initial and revised budgets*	*Project document and financial reports*
3.6.4	M&E plan implementation			
	- Was the M&E operational and facilitated timely tracking of results and progress towards projects objectives throughout the project implementation period?	*TM and PMU*	*Reports as stated in M&E section of Project Document*	*Reports*
	- Were annual project reports and PIRs complete, accurate and with well justified ratings?	*TM and PMU*	*Analysis of the PIRs*	*PIRs*
	- Was the information provided by the M&E system used during the project to improve project performance and to adapt to changing needs?	*TM and PMU*	*Revised logframes and work plans*	*Reports*
	- Was an M&E system in place in the project with proper training, instruments and resources for parties responsible for M&E	*TM and PMU*		
4.	**Complementarities with UNEP strategies and programmes**			
4.1	***Linkage to UNEP's expected accomplishments***			
4.1.1	Does the project make a tangible contribution to any of the Expected Accomplishments specified in UNEP MTS	TM	PIRs	Documents available in public domain
	- Describe magnitude and extent of any contributions and the causal linkages	TM	PIRs	Documents available in public domain
4.1.2	Outcomes and achievements of the project in relationship to the objectives of the UNEP BSP	TM	PIRs	Documents available in public domain
4.1.3	To what extent project design, implementation and monitoring have taken into consideration gender issues			
4.1.4	Aspects of the project that could be considered as examples of South-South Cooperation	All stakeholders	Workshop declarations	Workshop documents

A.2.2. The evaluation methodologies

The methodology to be followed for the terminal evaluation is described below:

1. Review all the documents made available by the UNEP Evaluation Office and the documents available on Project Website and prepare the inception report
2. Review the Project Document
3. Review of the monitoring and progress reports prepared during the implementation of the project (as listed in Project Document):
   a. Half-yearly progress reports prepared by the Project Management Unit (PMU) following Standard UNEP Progress Report Format
   b. Yearly Project Implementation Review (PIR) reports prepared by UNEP Task Manager (TM) following GEFSEC format
   c. Consolidated Annual Summary Progress Reports prepared by the PMU following the UNEP Progress Report model
   d. Annual Financial Reports prepared by the PMU
   e. Quarterly Financial Reports, including details of project expenses and disbursements, prepared by PMU following standardized UNEP format as given in project document
   f. Annual Financial Audits of Accounts for Project Management and Expenditures
4. Review the half-yearly Progress Reports prepared by UNEP/DTIE and submitted to UNEP/DGEF Coordination using the format given in Annex 4 of Project Document
5. Review the Final Report prepared by UNEP/DTIE and submitted to UNEP/DGEF Coordination using the format given in Annex 5 of Project Document
6. Field visit and meeting with some of the stakeholders in India and Morocco
7. Interview (face-to-face or through telephone or internet) with relevant stakeholders (UNEP TM, PMU, Consultants, partner utilities, others) to validate the assumptions and gather/cross-check information/data sources/ evidences necessary for a through review of the main evaluation criteria grouped in four categories:
   a. Attainment of objectives and planned results
   b. Sustainability and catalytic role
   c. Processes affecting attainment of project results, and
   d. Complementarity with the UNEP strategies and programmes
8. Consult other documents available on UNEP and GEF web site or any other sources to have a better grasp of all aspects related to the development of SETs in emerging and developing countries around the world.

A.3 EVALUATION PROGRAM, CONTAINING THE NAMES OF LOCATIONS VISITED AND THE NAMES (OR FUNCTIONS) OF PEOPLE MET

A.3.1. Mission to India

Date	Time	Activity	Contact Person	Position	Contact details
6/8/12	09h15	Flight from Chennai to Mumbai (9W464)			
	11h15	Arrival at Mumbai			
	Afternoon	Meeting at Reliance Power office	Mr. Sachin S. Patel	VP & Business Head, Solar	Reliance Power, Dhirubhai Ambani Knowledge City (DAKC), I Block, South Wing, 1 Floor, Thane Belapur Road, Opposite Kopar Khairane Railway Station, Navi Mumbai - 400709, T: +91-22-303 86841, F: +91-22-303 86899, Cell: +91 7498257591
7/8/12	10h55	Flight from Mumbai to Jodhpur (9W315)			
	12h25	Arrival at Jodhpur			
	Afternoon	Travel to Reliance CSP project site	Mr. Abrar Ahad	Head Group Corporate Affairs (Rajasthan)	D-69, Sardar Patel Marg, C-Scheme, Jaipur, Rajasthan 302001, T:+91-141-3031489, F:+91-141-3031503, F:+91-141-3031503, Abrar.Ahad@relianceada.com, www.relianceada.com, H:+91-9350512764; +91-9309005007; F: +91-22-303 86899, Cell: +91-9530457927, RSVP Sachin @ +91-7498257591
8/8/12	12h15	Flight from Jodhpur to Delhi (S2-3632)			
	13h45	Arrival at Delhi			
	Afternoon	Meeting at Lahmeyer Int. India office	Mr. Ashish K. Pande	Manager - Business Develop	Lahmeyer International (India) Pvt. Ltd., INTEC House, Plot No. 37, Institutional Area, Sector 44, Gurgaon - 122 002, Tel: 0124 4698 500 (EPABX), Fax: 0124 4698 585; Cell : +91 99712-22130, E-mail: akpandey@lahmeyer.in
9/8/12	Morning	Meeting at KfW office	Mr. Binitesh Kumar	Project Office - Energy	KfW Office New Delhi, 21, Jor Bagh, N.Delhi, 21, Jor Bagh, N.Delhi, Tel: (+91-11) 24641202; Fax: 2464-1203
	Afternoon	Meeting at the BEE, Ministry of Power	Mr. Robert Angiolet	Senior Adviser to the Director-General	Sewa Bhawan, R.K. Puram, New Delhi
	17h15	Flight from Delhi to Chennai (AI 42)			
	20h00	Arrival at Chennai			

Date	Organization	Name	Position	E-mail address
6/8/12	Reliance Power	Mr. Sachin Patel	Addl. VP & Business Head, Solar Energy	sachin.s.patel@relianceada.com
		Mr. Anurag P. Sharma		
7/8/12	Reliance Power	Mr. Abrar Ahad	Head, Group Corporate Affairs	Abrar.Ahad@relianceada.com
		Mr. B. Udaya Shankar	Chief Project Director - Solar project	udaya.shankar@relianceada.com
		Mr. Hem Raj Sharma	Vice President, Project Director - Solar	hem.ra.sharma@relianceada.com
9/8/12	Lahmeyer Int.	Mr. Ashish Kumar Pandey	Manager - Business Development	akpandey@lahmeyer.in
		Mr. Anirudh Gupta	Deputy General Manager - Renewable Energy	agupta@lahmeyer.in
10/8/12	KfW	Mr. Binitesh Gupta	Project Officer	kumar.binitesh@kfw.de
	DEG	Mr. Armin Albert	Director, DEG Office New Delhi	at@deginvest.de
	BEE/MoP	Mr. Robert Angioletti	Senior Adviser to the D.G, Bureau of EE	rangioletti@beenet.in

A.3.2. Mission to Morocco

Date	Time	Activity	Contact Person	Position	Contact details
28/09/2012	00h05	Flight from Bangkok to Paris (TG930)			
	07h05	Arrival in Paris CDG 1			
	10h-12h	Meeting at UNEP Office	Mr. Edu Hassing	Project Manager	UNEP/DTIE, 15 rue Milan, Metro Madeleine, Paris
30/09/2012	15h25	Flight from Paris to Casablanca (AF2497)			
	16h30	Arrival in Casablanca			
1/10/12	Morning	Meeting with UNEP Morocco cc	Ms. Myriem Touhami	Project Manager	Tel:+212 6 61 36 95 14
	11h30	Meeting at ONE office	Mr. Abdellah Griech	Director of Hydro and Renewables	65, rue Othman Ben Affane, 20000 Casablanca, Tel: 05 22 66 80 80 05; Fax: 05 22 22 00 38
		Travel from Casablanca to Rabat by train			
2/10/12	09h30	Meeting with ONE	Mr. Elmassaoui		Café Cupidon, rue Moulay Ismail
	11h	Meeting at KfW office	Mr. Jan Schilling & Mr. Abderrazzaq Khaoua	Charge Project Manager	Bureau de KfW, 2, Avenue Tour Hassan, 10020 Rabat, Tel: +212 537 737318; Fax:+212 537 709315
	14h30	Meeting with GIZ	Ms. Katharina Hay	Technical Adviser	PEREN Programme, Ministry of Energy, Mines, Water and Environment, Rue Abou Marouane Esaadi, Agdal, Rabat
3/10/12	11h30	Meeting with MASEN	Mr. Ilias Hamdouch	Charge de Mission	Avenue El Araar, Imm. Annexe CMR 3ème étage, Hay Ryad, Rabat, +212 661 185 125
	13h00	Meeting with IFC	Ms. Joumana COBEIN	Principal Country Officer	7 rue Rabbi Ben Abdellah, Soussi, Rabat, Tel: + 212 37 65 24 79; Fax: + 212 37 65 28 93; E-mail: JCobein@ifc.org
	13h00	Meeting with World Bank	Mme Silvia Pariente-David	Senior Energy Specialist, Middle East and Nort African Region	7 rue Rabbi Ben Abdellah, Soussi, Rabat, Tel: + 212 37 63 60 50; Fax: + 212 37 63 60 51; E-mail: sparentedavid@worldbank.org
	14h30	Meeting with ADEREE	Mme Sonia Mezzour and Mr. Abdelali Dakkina	Secretary General	ADEREE, MEMEE, 5th Floor, BP 6208, Rabat, Tel: +212 05 37 77 95 35; Fax: +212 05 37 68 39 87; e-mail: s.bounfour@aderee.ma
4/10/12	10h00	Meeting at KfW office	Mr. Jan Schilling	Chief Project Manager	
	15h30	Meeting with MEMEE	Mme. Zohra Ettaik	Deputy of EE and RE Department	Ministry of Energy, Mines, Water and Environment (MEMEE), 4th Floor, BP 6208, Rabat, Tel: +212 05 37 77 95 35; Fax: +212 05 37 68 39 87; e-mail: s.bounfour@aderee.ma
5/10/12	09h00	Meeting with ADEME	Mr. Bernard Cornut	Conseiller Resident de Jumelage	ADEREE, MEMEE, 5th Floor, BP 6208, Rabat, Tel: +212 05 37 77 95 35; Fax: +212 05 37 68 39 87; e-mail: s.bounfour@aderee.ma
	12h00	Travel from Rabat to Casablanca airport			
	15h10	Flight from Casablanca to Paris (AF2497)			
	20h10	Arrival in Paris CDG 2E			
7/10/12	21h40	Flight from Paris to Bangkok (TG933)			
	13h55	Arrival in Bangkok			

Date	Organization	Name	Position	E-mail Address
28/09	UNEP	Mr. Edu Hassing	Task Manager, EMPower Project	Edu.Hassing@unep.org
1/10/12	UNEP	Ms. Myriem Touhami	Project Manager/MENA egion, UNEP	myriem.touhami@unep.org
	ONE	Mr. Abdellah Griech	Director of Hydro and RE, ONE	
2/10/12	ONE	Mr. A. Elmoussaoui	Manager of Renewable Energy, ONE	a.elmoussaoui@one.ma
	KfW	Mr. Jan Schilling	Principal Project Manager, KfW Morocco	jan.schilling@kfw.de
	KfW	Mr. Abderrazzaq Khaoua	Project Manager, KfW Morocco	abderrazzaq.khaoua@kfw.de
	GIZ	Ms. Katharina Hay	Technical Adviser, PEREN Project	katharina.hay@giz.de
3/10/12	MASEN	Mr. Illias Hamdouch	Expert, MASEN	hamdouch@masen.ma
	IFC	Ms. Joumana Cobein	Head, MENA Department, IFC	jcobein@ifc.org
	World Bank	Ms. Sylvia Pariente-David	Senior Energy Specialist, MENA Region	spariente@worldbank.org
	ADERE	Ms. Sonia Mezzour	Secretary-General, ADERE	s.bounfour@adere.ma
	ADERE	Mr. Aziz Ejmila	Adviser to Secretary-General, ADERE	a.ejmila@yahoo.fr
4/10/12	KfW	Mr. Jan Schilling	Principal Project Manager, KfW Morocco	jan.schilling@kfw.de
	Min. of Energy	Ms. Zohra Ettaik	Deputy of EE and RE Dept., MEMEE	z.ettaik@mem.gov.ma
5/10/12	ADEME	Bernard Cornut	Resident Adviser, Twinning Project, ADERE	bernard.cornut@ademe.fr

A.4 BIBLIOGRAPHY

Category	Reference	Date
Project Document	Project No. GFL/2328 – 2722 – 4767 PMS: GF/4040 – 04 -10	29 April 2004
Project Revision Document (Project Action Sheets)	Project No. GF/2328 – 2722 – 4767 / Rev.01 PMS: GF/4040 – 04 -10 / Rev.01	31 May 2005
	Project No. GFL/2328 – 2722 – 4767 / Rev.02 PMS: GF/4040 – 04 -10 / Rev.02	7 March 2006
	Project No. GFL/2328 – 2722 – 4767 / Rev.3 PMS: GF/4040 – 04 -10 / Rev.3	18 December 2008
	Completion Revision to Project Document Project No. GFL/2328 – 2722 – 4767 / Rev.4 PMS: GF/4040 – 04 -10	7 February 2011
Supervision Mission Reports	Report of mission to Berlin	30 June-2 July 2009
	Report of mission to Casablanca, Morocco	14-17 June 2010
Half-Yearly Progress Reports	Phase I - Half-Yearly Progress Report 1	April-December 2004
	Phase I - Half-Yearly Progress Report 2	January-June 2005
	Phase I - Half-Yearly Progress Report 3	July-December 2005
	Phase I - Half-Yearly Progress Report 4	January-June 2006
	Phase I - Half-Yearly Progress Report 5	July-December 2006
	Phase I - Half-Yearly Progress Report 6	January-June 2006
	Phase I - Terminal Report	March 2007
	Phase II - Half Yearly Progress Report 1	July-December 2008
	Phase II - Half Yearly Progress Report 2	January-June 2009
	Phase II - Half Yearly Progress Report 3	July-December 2009
	Phase II - Half Yearly Progress Report 4	January-June 2010
	Phase II - Draft Final Report	July 2010
Annual Project Implementation Reports (PIRs)	UNEP GEF PIR FY 05	???
	UNEP GEF PIR FY 06	???
	UNEP GEF PIR FY 07	???
	UNEP GEF PIR FY 08	July 2007-June 2008
	UNEP GEF PIR FY 09	July 2008-June 2009
	UNEP GEF PIR FY 10	July 2009-June 2010
Financial Statement	Financial Statement as at 31 December 2004	
	Status of allotment report-Fiscal Year 2005	
	Status of allotment report-Fiscal Year 2006	
	Status of allotment report-Fiscal Year 2007	

Financial Statement	Status of allotment report-Fiscal Year 2008	
Financial Statement	Financial Statement as at 31 December 2009	
EMPower Newsletter	Phase II – Newsletter 1	January-April 2009
	Phase II – Newsletter 2	May-July 2009
	Phase II – Newsletter 3	August-December 2009
	Phase II – Newsletter 4	January-March 2010
	Phase II – Newsletter 5	April-June 2010
Project Information Memorandum	100 MWel CSP Plant with 8 Full Load Hours Thermal Storage, Nââma, Algeria	June 2010
	100 MW CSP Plant, Kom Ombo, Egypt	June 2010
	100 MWp CSP Plant, Loharki II, Rajasthan, India	June 2010
	50 MWp CSP Plant with 8h Thermal Storage Ma'an, Kingdom of Jordan	June 2010
	50 MWp CSP Plant with 6 Hours Thermal Storage, Sabha, Libya	June 2010
	50 MWp CSP Plant with 12 hours Storage Ouarzazate, Morocco	June 2010
	100 MWp Solar PV Plant – Kom Ombo & 1.9 MWp Solar PV Plant – Farafra, Egypt	June 2010
	5 MWp PV Project Pipeline - Guajoyo 15 de Septembre, El Salvador	June 2010
	25 MWp Solar PV Plant – Chandan, Rajasthan, India	June 2010
	5 MWp Solar PV Plant, Magadi Soda, Kenya	June 2010
	MWp Solar PV Plant – Shahat & 10 MW Solar PV Plant – Ghadamis, Libya	June 2010
	1 MWp Solar PV, Kiharon Site, Cagayan de Oro City, Philippines	June 2010
EMPower Utility Toolkit for Large Scale Solar Power	Tool I – Technical Assessment Part A: Site Identification Part B: CSP Plants Part C: PV Plants Part D: Yield Assessment CSP Plants Part E: Yield Assessment PV Plants	 June 2010 June 2010 June 2010 June 2010 June 2010
	Tool II – Financial & Economic Assessment Part A: Demand and Supply Analysis Guideline Part B: Financial Analysis Guideline Part C: Economic Analysis Guideline	June 2010 June 2010 June 2010 June 2010
	Tool III – Business Model and Lenders Package for PV Projects	June 2010
	Tool IV – Tendering and Procurement	

	Part A: Procurement Guidelines CSP Part B: Procurement Guideline PV	June 2010 July 2010
Workshop Documentation	Delhi Forum - EMPower Workshop Brochure - Workshop Agenda - Conference Presentations - New Delhi EMPower Declaration - List of Participants - Photo Documentation	
	Casablanca Forum - Agenda - Casablanca Conference Report - Conference Presentations - List of Participants	
Industry Advisory Board	Membership Declaration Membership Contact Details IAB Statutes: 01 July 2009 ???	
EMPower Homepage	Phase II: http://www.empower-ph2.com/	

Other Documents:

1. International Energy Agency, IEA (2009), Energy technology transitions for industry – Strategies for the next industrial revolution, OECD Publication
2. International Energy Agency, IEA (2009), Sectoral approaches in electricity – Building bridges to a safe climate, OECD Publication
3. Scientific and Technical Advisory Panel to the Global Environment Facility, (2004), Reducing the long term costs of low greenhouse gas-emitting energy technologies
4. United Nations Environment Programme, Medium-term Strategy 2010–2013, Environment for Development (accessed from www.unep.org/PDF/FinalMTSGCSS-X-8.pdf
5. United Nations Environment Programme (2004), Bali Strategic Plan for Technology Support and Capacity-building (accessed from www.unep.org/GC/GC23/documents/GC23-6-add-1.pdf
6. World Bank (2011), Project appraisal document on a proposed loan in the amount of US$200 million and proposed clean technology fund loan in the amount of US$97 million to the Moroccan Agency for Solar Energy (MASEN) with the guarantee of Kingdom of Morocco for the Ouarzazate I concentrated solar power plant project, Sustainable Development Department, Middle East and North Africa Region, World Bank, Report No. 64663_MA.

A.5 SUMMARY CO-FINANCE INFORMATION AND A STATEMENT OF PROJECT EXPENDITURE

Components/sub-components	Estimated cost at design	Actual cost	Expenditure ratio
2101 Sub-contract with UNOPS	73,000	116,950	160%
2102 Sub-project with KfW	902,000	786,189	87.2%
3301 Meeting/conferences		46,576.53	
5581 Project evaluation		25,284.67 (budget)	

Co-financing Table

Co-financing	IA financing (US$)		Government (US$)		Other* (US$)		TOTAL (US$)	
(Type/source)	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
- Grants			350,000	1 million EUR	660,000	60,000 EUR	1.1 million	1.06 million EUR

A.6 THE REVIEW OF PROJECT DESIGN (SUMMARY OF THE INCEPTION REPORT)

ASSESSMENT OF THE OVERALL QUALITY OF PROJECT DESIGN

Relevance		**Evaluation Comments**	**Prodoc reference**
Are the intended results likely to contribute to UNEPs Expected Accomplishments and programmatic objectives?		HL	
Does the project form a coherent part of a UNEP-approved programme framework?		HL	
Is there complementarity with other UNEP projects, planned and ongoing, including those implemented under the GEF?			
Are the project's objectives and implementation strategies consistent with:	i) Sub-regional environmental issues and needs?	HL	
	ii) the UNEP mandate and policies at the time of design and implementation?	HL	Section 2, Part 1, 16
	iii) the relevant GEF focal areas, strategic priorities and operational programme(s)? (if appropriate)	HL	Section 2, Part 1, 5
	iv) Stakeholder priorities and needs?	HL	Section 2, Part 1, 7
Overall rating for Relevance		HL	
Intended Results and Causality			
Are the objectives realistic?		S	Section 2, Part 1, 9
Are the causal pathways from project outputs [goods and services] through outcomes [changes in stakeholder behavior] towards impacts clearly and convincingly described? Is there a clearly presented Theory of Change or intervention logic for the project?		MU	Project rationale, objectives & activities
Is the timeframe realistic? What is the likelihood that the anticipated project outcomes can be achieved within the stated duration of the project?		MU	Annex 1
Are the activities designed within the project likely to produce their intended results		S	
Are activities appropriate to produce outputs?		MS	
Are activities appropriate to drive change along the intended causal pathway(s)		MS	
Are impact drivers, assumptions and the roles and capacities of key actors and stakeholders clearly described for each key causal pathway?		MU	
Overall rating for Intended Results and causality		MU	
Efficiency			
Are any cost- or time-saving measures proposed to bring the project to a successful conclusion within its programmed budget and timeframe?			
Does the project intend 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?			
Overall rating for Efficiency			
Sustainability / Replication and Catalytic effects			
Does the project design present a strategy / approach to sustaining outcomes / benefits?		ML	Activities
Does the design identify the social or political factors that may influence positively or negatively the sustenance of project results and progress towards impacts? Does the design foresee sufficient activities to promote government and stakeholder awareness, interests, commitment and incentives to execute, enforce and pursue the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project?		ML	
If funding is required to sustain project outcomes and benefits, does the design propose adequate measures / mechanisms to secure this funding?		ML	
Are there any financial risks that may jeopardize sustenance of project results and onward progress towards impact?		MU	
Does the project design adequately describe the institutional frameworks, governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. required to sustain project results?		MU	
Does the project design identify environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher level results that are likely to affect the environment, which, in turn, might affect sustainability of project benefits?		MU	
Does the project design foresee adequate measures to catalyze behavioral changes in terms of use and application by the relevant stakeholders of (e.g.):	i) technologies and approaches show-cased by the demonstration projects;	ML	
	ii) strategic programmes and plans developed	ML	
	iii) assessment, monitoring and management systems established at a national and sub-regional level	ML	

Does the project design foresee adequate measures to contribute to institutional changes? [An important aspect of the catalytic role of the project is its contribution to institutional uptake or mainstreaming of project-piloted approaches in any regional or national demonstration projects]	MU	
Does the project design foresee adequate measures to contribute to policy changes (on paper and in implementation of policy)?	MU	
Does the project design foresee adequate measures to contribute to sustain follow-on financing (catalytic financing) from Governments, the GEF or other donors?	U	
Does the project design foresee adequate measures to create opportunities for particular individuals or institutions ("champions") to catalyze change (without which the project would not achieve all of its results)?	ML	
Are the planned activities likely to generate the level of ownership by the main national and regional stakeholders necessary to allow for the project results to be sustained?	MU	
Overall rating for Sustainability / Replication and Catalytic effects	MU	
Risk identification and Social Safeguards	MS	
Are critical risks appropriately addressed?	MU	
Are assumptions properly specified as factors affecting achievement of project results that are beyond the control of the project?	MU	
Are potentially negative environmental, economic and social impacts of projects identified		
Overall rating for Risk identification and Social Safeguards	MU	
Governance and Supervision Arrangements	MS	
Is the project governance model comprehensive, clear and appropriate?	MS	
Are roles and responsibilities clearly defined?	MS	
Are supervision / oversight arrangements clear and appropriate?	MS	
Overall rating for Governance and Supervision Arrangements	MS	
Management, Execution and Partnership Arrangements	MS	
Have the capacities of partner been adequately assessed?	MS	
Are the execution arrangements clear?	MS	
Are the roles and responsibilities of internal and external partners properly specified?	MS	
Overall rating for Management, Execution and Partnership Arrangements	MS	
Financial Planning / budgeting	MU	
Are there any obvious deficiencies in the budgets / financial planning	MU	
Cost effectiveness of proposed resource utilization as described in project budgets and viability in respect of resource mobilization potential	MU	
Financial and administrative arrangements including flows of funds are clearly described	MU	
Overall rating for Financial Planning / budgeting	MU	
Monitoring		
Does the logical framework: • capture the key elements in the Theory of Change for the project? • have 'SMART' indicators for outcomes and objectives? • have appropriate 'means of verification' • adequately identify assumptions	 MU MS MU MU	
Are the milestones and performance indicators appropriate and sufficient to foster management towards outcomes and higher level objectives?	MU	
Is there baseline information in relation to key performance indicators?		
Has the method for the baseline data collection been explained?		
Has the desired level of achievement (targets) been specified for indicators of Outcomes and are targets based on a reasoned estimate of baseline?		
Has the time frame for monitoring activities been specified?	HS	
Are the organizational arrangements for project level progress monitoring clearly specified	HS	
Has a budget been allocated for monitoring project progress in implementation against outputs and outcomes?	U	
Overall, is the approach to monitoring progress and performance within the project adequate?	S	
Overall rating for Monitoring	S	
Evaluation		
Is there an adequate plan for evaluation?	MS	
Has the time frame for Evaluation activities been specified?	MU	
Is there an explicit budget provision for mid-term review and terminal evaluation?	U	
Is the budget sufficient?		
Overall rating for Evaluation	MU	

A.7 REMARKS AND RESPONSES TO THE DRAFT FINAL REPORT

Remarks of KfW	Report Section	Evaluator's Response
Remark 1: Supportive policy and regulatory environments cannot be developed in a vacuum - hence, pilot projects are very important to reduce technology costs and allow policy makers to understand the specificities and challenges of the solar markets. Given the limited budget spread across numerous countries we considered the project to be very ambitious and hence suggested from the very beginning to realign the focus of the project towards targeted pre-feasibility studies carried out with industry partners rather than broad-band policy support.	Page 4, Para. 18: ..."project should pay more attention to developing a supportive policy and regulatory environment..."	While pilot projects are important to reduce technology costs, the high-risk and capital-intensive nature of large-scale solar power projects is such that it cannot be developed without the involvement of national policy and decision makers. As long as solar projects have not achieved grid parity, a power utility will not venture into a solar power project without appropriate policy environment allowing the financial risks to be covered through suitable policy measures (e.g. compensation from public funds, upward revision of electricity tariff, etc.). Such policy measures can only come with the active involvement and support of national policy makers, as witnessed in those countries that have so far developed large-scale solar power projects. It is therefore not a question of "targeting pre-feasibility studies carried out with industry partners rather than broad-band policy support" but "targeting pre-feasibility studies carried out with industry partners and broad-base policy support", as stressed by the STAP of GEF.
Remark 2: We are not aware of UNOPs having been involved in project execution in implementation of any stage of the project.	Page 7, Para. 30	If KfW was really not aware of the involvement of UNOPS in project execution prior to KfW's official participation in the project, then there was indeed a serious communication gap and lack of coordination among project partners. It would mean that the IA did not brief the EA about the project status and did not share the project documents and reports and/or KfW did not attempt to get an understanding of the project status by going through the progress report and the PIR that were prepared prior to KfW taking over the responsibility of executing the project.
Remark 3: An Advisory Group was created and held regular meetings. Members of the Advisory Group were 10 Industry Representatives alongside UNEP-GEF and KfW on behalf of BMZ.	Page 25, Para. 115	The advisory group that KfW refers to is actually the Industry Advisory Board (IAB) which had the first meeting only in July 2009 during EMPower II. Paragraph 115 refers to the Advisory group composed of UNEP, GEFSec, World Bank, KfW, other financial donors, and selected developing country representatives. The purpose of the advisory group as outlined in the Project Document is very different from the role of the IAB.
Remark 4: The option for UNEP to execute certain consultation processes or regional meetings was always open and KfW would have been delighted to share the honorius burden of arranging pilot projects and regional workshops.	Page 25, Para. 117	The remark has been noted and no further action is needed.

Remark 5: A steering committee consisting of UNEP-GEF and KfW on behalf of BMZ was created and meetings were held alongside the Advisory Group Meetings.	Page 25, Para. 120	The TE does not refute KfW's claim of the creation of a steering committee and meetings being held alongside the (Industrial) Advisory Group Meetings. It just states the fact that in spite of making requests, no formal document was shared by EA and IA to confirm when the steering committee was formed and who were the members of the team, and to share the minutes of any of the steering committee meetings. KfW's claim of steering committee meetings being held alongside the IAB meetings would imply that no steering committee meetings were held prior to July 2009.
Remark 6: KfW re-submitted disbursement plans and all due financial reports to UNEP HQ and to DTIE several times.	Page 26, Para. 126	The TE report does not refute KfW's claim of having (re-?)submitted disbursement plans and all due financial reports. It just states the fact that in spite of making requests, half-yearly disbursement plans and half-yearly annual financial reports prepared and submitted by KfW to UNEP were not made available for the TE by KfW, UNEP HQ and DTIE.
Remark 7: KfW submitted detailed expenditure reports strictly following the previously agreed format.	Page 29, Para. 146	The TE report does not refute KfW's claim of having submitted detailed expenditure reports strictly following the previously agreed format. It just states the fact that in spite of making requests, detailed expenditure reports submitted by KfW to UNEP were not made available for the TE by KfW, UNEP HQ and DTIE.
Remark 8: We agree with the recommendation as we still observe large amounts of hits and receive many request to access to the EMPower website. http://www.empower-ph2.com	Page 38, Para. 186	The remark has been noted and no further action is needed.

A.8 BRIEF CV OF THE CONSULTANT

Dr. Brahmanand Mohanty has both his master and doctoral degrees in the energy field. As the regional adviser for Asia for the French Environment and Energy Management Agency (ADEME) for over 2 decades, he has established institutional partnerships with several national energy and environment agencies for sharing experience, providing advisory services and capacity building in the areas of energy and resource management in industrial and commercial sectors. He has also been associated with the School of Environment, Resources and Development of the Asian Institute of Technology since 1986 as a faculty member, teaching subjects related to energy efficiency and management in the building and industry sectors. He devotes a part of his time to interact with NGOs and learn from challenges of access to energy in developing countries and sustainable energy and low carbon issues in the context of urban planning and development.

Dr. Mohanty has undertaken short- and medium-term energy-related consultancy assignments for bilateral and multilateral funding agencies in about a dozen countries to provide technical assistance. Agencies for which he has carried out consultancy work include the Asian Development Bank (ADB), the World Bank (WB) and the International Financial Corporation (IFC), the European Commission (EC), United Nations organizations (UN ESCAP, UN-DESA, UNDP, UNEP, UN-HABITAT, UNFCCC and UNIDO), GIZ and DANIDA.