Final Report

Midterm Evaluation of IFC's Sustainable Energy Facility

And the IFC/GEF SME Program's loan to E+Co

International Finance Corporation

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IPA Energy + Water Economics

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ACRONYMS

ABRAVA	Brazilian Association of Refrigeration, Air Conditioning, Ventilation and Heating
AHPPER	Honduras Renewable Energy Association
BMP	Thai Biomass Power Company
CABEI	Central American Development Bank
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CFC	Chlorofluorocarbons
CGA	Conditional Grant Agreement
DASOL	Dedicated To Solar Water Heaters
DFI	Development Financial Institutions
EAC	Electricity Authority of Cambodia
EDC	Electricite Du Cambodge
EE	Energy Efficiency
EGAT	Electricity Generating Authority of Thailand
ENEE	Empresa Nacional de Energía Eléctrica
ESCO	Energy Service Company
GEF	Global Environment Facility
GHG	Greenhouse Gases
GMS	Global Monitoring System
GVEP	Global Village Energy Partnership
GWh	Gigawatt hour
HC	Hydrocarbon
HCFC	Hydrochlorofluorocarbons
HFC	Hydrofluorocarbons
IFC	International Finance Corporation
IO	Investment Officer
IPP	Independent Power Producer
LPG	Liquefied Petroleum Gases
KW	Kilowatt
kWh	Kilowatt hour
M&E	Monitoring and Evaluation
MT	Metric Ton
MW	Megawatt
MWh	Megawatt hour
PA	Practical Action
PPA	Power Purchase Agreement
PV	Photovoltaic
PVMTI	Photovoltaic Market Transformation Initiative
RE	Renewable Energy
REEF	Renewable Energy and Energy Efficiency Fund
REEEP	Renewable Energy & Energy Efficiency Partnership
S3IDF	Small Scale Sustainable Infrastructure Fund
SEF	Sustainable Energy Facility
SME	Small and Medium Enterprise
SMEP	IFC/GEF SME Programme
SME-RE	SME-REnewable Energy Ltd
SHS	Solar Home System
SWH	Solar Water Heating
TA	Technical Assistance
TBL	Triple Bottom Line
VER	Voluntary Emission Reduction

EXECUTIVE SUMMARY

This report describes the results of the midterm evaluation of the Sustainable Energy Facility (SEF) and an end of project rapid evaluation of one of the IFC/GEF Small and Medium Enterprise Programme (SMEP) components, the loan to E+Co. E+Co is the fund manager for the SEF and has also borrowed $1 million through the SMEP for on-lending. The funding for both these vehicles comes from the GEF. The SEF was established in December 2005 as a restructuring of the dormant Renewable Energy and Energy Efficiency Fund (REEF). It was designed to build on the lessons learned from REEF and other IFC small and medium enterprise (SME) level programmes such as the Solar Development Group (SDG), the SMEP, and the Photovoltaic Market Transformation Initiative (PVMTI). These SEF Peers are discussed in greater detail in Appendix 1. SEF has available $14 million for investment and $4.7 million for fund management fees and technical assistance, a total of $18.7 million.

The primary objectives of this report are to (1) present the findings of the midterm evaluation and to report on the performance of the SEF and (2) to fulfil the requirements of an end of project report for SMEP. A secondary objective of this report is to provide observations and recommendations for the design of a follow on to SEF. This evaluation concentrates on six main areas.

- SEF: Effectiveness and efficiency of the fund's structure as a mechanism for IFC to support sustainable energy SMEs.
- E+Co: Effectiveness and efficiency of the management and implementation of SEF and the SME Program's loan to E+Co.
- SEF and SME Program Portfolios: Performance and Sustainability of the SME Borrowers.
- Strategic Relevance and Enabling Environment.
- Replicability of the Model.
- Comparing the SEF vs. the IFC/GEF SME Program intervention models.

We found that the SEF was well designed, managed and implemented. Further we found that E+Co met the goals and targets of SMEP and while they have missed a few of the SEF midterm targets, this is understandable and acceptable. Moreover, it is difficult to avoid the conclusion that in the absence of the SEF or a similar analogue, penetration of clean energy in SMEs will be negatively affected and possibly decline.

As of December 31, 2008, SEF had disbursed $9.6 million to 28 SME investments which were in various stages of completion from feasibility and construction to ongoing and completed. E+Co had met most of its targets and it is understandable and acceptable that it missed a few. Section 4.1 provides a detailed analysis of E+Co's performance against the SEF targets.

SEF and its manager, E+Co, have achieved a better performance than SEF's predecessors and peers. Overall the performance of the SEF and the SMEP has been impressive. The SEF cost less to operate and leveraged more funds per dollar invested than all of its peers[1] except for the SMEP. In the case of SMEP this might well change with time as SMEP has been operating for longer. Additionally, the SEF required only $2.71 of investment per ton of CO_2 offset, the lowest of the peer group. While it is not the lowest in cost per person served, this is due to a major difference between the SEF and other programmes. The SEF is targeting businesses that need energy and is engaged in serial investing or investing multiple times in the same entity.

[1] These peers include PVMTI, REEEP, and SEIF. See table 4.3 for details on key performance statistics compared to SEF and SMEP.

Results as of Dec. 31, 2008

Indicator	SMEP	SEF
GHG emissions avoided (metric tonnes/year) directly	9,966	196,631
Hectares of land managed sustainably	11	73
Number of Entities Receiving Advisory Services	8	41
Number of Entities Receiving Financing	8	28
Number of Jobs	492	655
Number of people receiving access to improved services	87,434	344,260
Renewable energy produced (MWh) (directly)	30,997	99,112
Value of financing facilitated by Advisory Services	$7,075,378	$ 37,949,799

Major Findings

The SEF has proven to be an effective facility for SME clean energy investment and has begun to catalyse private sector investment in some sectors and markets. SEF and SMEP have allowed E+Co to prove the model, a fully integrated approach assisting clean energy SMEs at each step of the project cycle with a combination of technical assistance and funding, an approach that is closer to venture capital than vanilla lending.

All evidence suggests that in the absence of SEF-type funding, they would find it even more difficult to access funding than existing borrowers, who will at least have the benefit of E+Co's past support and a track record of repayment. It is difficult to avoid the conclusion that in the absence of the SEF or a similar analogue, penetration of clean energy in SMEs will be negatively affected and possibly decline.

- That the open nature of the Funds, **no technology specification**, allowed E+Co the maximum flexibility in supporting technologies most suitable for the environments in which they were operating.
- That the **geographic restriction** of the SEF to areas where E+Co had offices rather than new areas had a positive impact on performance and helped to reduce cost.
- That **restricting the investment instrument** is not advisable. Different instruments (debt, ordinary shares, preference shares, working capital) are needed for different financial circumstances.

- That the model of a profit seeking fund manager that provides **technical assistance** and M&E with financing requires that TA costs be covered, at least for the social good component[2].

- The reward structure for the **SEF** fund manager is asymmetric as it rewards gains but does not explicitly penalise for losses. This skews the risk to the fund manager. We understand that it is important not to constrain the fund manager unnecessarily. However, we do believe that there should be greater consideration of how to address the asymmetry.

- The CGA's technical assistance activities are broad and can be construed to pertain only to enterprises and entities involved directly in an SEF investment. We do not believe this is the intent of the designer. Given that E+Co and IFC have limited funds, the direct work they can do is only a drop in the bucket of the sector's needs in any given country. It would appear that there is very limited effort spent on educating those outside a specific investment and that TA to those not directly involved in a SEF deal is very limited or nonexistent. This may not be the case but our field visits indicated only an informal mechanism through which "outsiders" were involved.

- The current structure provides an incentive for serial investing suggesting that it reduces risk, since the Fund Manager has already carried out due diligence of the borrower and has a track record of repayment. However, it may also have some unintended outcomes. It allows the Fund Manager to reduce TA costs because with each successive serial investment, less capacity building is required. If one of the key goals is to build capacity within the sector, then this reduces the amount of TA being spread over different entities. It focuses the Fund Manager's assistance into a narrow band of companies rather than casting a wider net. It also means that fewer companies are assisted with IFC funds than might otherwise be assisted.

Major Recommendations:

SEF & SMEP are successful on many levels – financial, economic, environmental and social; the need still remains in the developing world for this kind of support and facility. The next step is to improve on the basic SEF design and replicate the model with multiple fund managers in targeted markets and with a well thought out market entry strategy to optimise the demonstration benefits in each sector and the leveraging of IFC resources and to ensure that replication to a much wider audience is supported. The SEF and E+Co models are built on the premise that working with individual enterprises can catalyze the market. It can only do that if those experiences are well presented and disseminated.

- It is important to the extent possible that the E+Co model continue to be supported and the reasoning is provided in the main report. E+Co should be one of the entities invited to participate in the next Facility since it has proven its concept and its ability to deliver. However, the absorptive capacity of E+Co is limited and the best way to increase the reach and scope is to support both E+Co and other organisations with a similar approach. Experience has shown that supporting more than one service provider can lead to innovative solutions and given the depth and breadth of market imperfections

[2] We use the term of profit seeking fund manager loosely because E+Co is a not for profit entity but it operates the fund so as to maximize returns which include social and environmental benefits and this attention carries over to the way in which it deals with SMEs and the discipline that it imparts.

confronting SMEs, this is important. Furthermore, this would place IFC in a position of being able to disseminate such innovations across the market (providing that the structure of the new Facility allows this).

- An important issue for the IFC to consider in its next generation is whether its goals are better served by strengthening many or a few. Does serial investing actual crowd out or reduce the incentive for commercial banks to become involved? Are FI transaction costs reduced and awareness raised by focusing on a few SME clean energy companies or by focusing on more? What is the exit strategy for each company? Does the Fund Manager have a clear strategy about how to strengthen the market and prepare it for FIs and how SEF will transition to the next sector? Does the Fund Manager have a market entry and exit strategy? These are a few of the areas that the next generation SEF should consider.

- Should IFC replicate the SEF in other geographic sectors? Yes, provided that it prioritises those countries according to their ability to support successful SMEs and that it or the Fund Manager has a well thought out strategy. Given the success SEF had of building off of existing E+Co operations, it may be prudent to consider expanding to areas where similar service providers have operations.

- Neither E+Co nor SEF prioritise countries and sectors so as to achieve the maximum market impact for any given IFC funding. In essence, E+Co and the SEF operate opportunistically and there appears to be no methodical way of ensuring that the low hanging fruit or the priority sectors and countries are chosen. Faced with limited funds, is the best country or sector chosen over another, weaker candidate? Is leverage best served by an opportunistic approach or a well reasoned strategy? Is TA more effective in an opportunistic approach or a well reasoned strategy? Similar arguments hold for replication. The next SEF should consider this in the fund's structure or require potential fund managers to develop a penetration strategy and plan as part of their proposal and operations.

1 INTRODUCTION

This report presents the findings of the midterm evaluation for the Sustainable Energy Facility (SEF) and an end of project rapid evaluation of one of the IFC/GEF SME (SMEP) components, the loan to E+Co. The primary objective is to present the findings of the midterm evaluation for the SEF following interviews, desk audits and case studies of 6 companies, and to report on the performance of E+Co against the Conditional Grant Agreement (CGA) Targets of the SEF. Information on E+Co's participation in the SME Programme is reviewed. A secondary objective of this report is to provide observations and recommendations for the design of a follow on SEF.

This is the third and final step of the evaluation process that began with meetings at IFC and E+Co and was followed by an in depth desk review. This, in turn, was followed by field visits to six companies (8 investments) in 5 countries funded by the SEF, one of which was also funded through the SMEP.

1.1 Final Report Organization

A detailed report on the desk audit and field work is presented as an appendix. The main body of this report concentrates on the areas specified in the IFC's Terms of reference for the evaluation. The original questions asked in the evaluation's Terms of Reference are shown in grey boxes throughout this report. The main areas addressed are:

1. Background to the SEF Design
2. Evaluating the Funding Mechanisms:
    a. Strategic Relevance and Enabling Environment
    b. Comparing the SEF and IFC/GEF SMEP Models
    c. Effectiveness and Efficiency of the Fund's Structure
3. Evaluating E+Co:
    a. Effectiveness and Efficiency in Management and Implementation
    b. E+Co Peers
4. SEF & SMEP Portfolio:
    a. Performance
    b. Sustainability
5. Replicability

1.2 Evaluation Methodology

The evaluation measured the progress of E+Co in meeting the midterm targets and the extent to which it is on track to meet end of project goals in the SEF and SMEP. Lessons learned from these two funding mechanisms, peers and predecessors are also presented for the follow on design of successor facility.

The evaluation relied heavily on desk studies conducted with information collected in interviews at the IFC in Washington and E+Co headquarters in New Jersey and an extensive literature review. The information reviewed included grant and loan agreements, investment recommendation summaries, progress reports, monitoring and evaluation (M&E) reports, mid-term reviews of predecessors, reviews and annual reports of peers for both the SEF and E+Co, E+Co financial reports, management approval letters and project implementation documents as well as a host of reports on clean energy, clean energy design, and the host country economic and energy environment. Interviews were held with IFC, E+Co and peer organisation staff.

Field visits were conducted to eight of the 28 SEF investments. These were to validate what had been learned in the desk reviews and validate the E+Co global management system (GMS) results for the triple bottom line (TBL) which includes financial, social and environmental results. It also gave the team a first hand opportunity to observe the progress and impact of investments and to understand the on-the-ground realities. Two teams of two persons each were fielded to Latin America and Asia. The evaluation teams met with E+Co, project sponsors, commercial banks, donors and development financial institutions (DFIs), government officials, customers, competitors of the borrowers and sector experts.

1.2.1 Limitations

Since this is a midterm review of the SEF, it is difficult to measure impact, sustainability and replicability in a reliable manner. Many of the impacts will only be complete years after the project is in operation as momentum gains. In part this can be explained by where in the project cycle SEF entered. If it provided funds for feasibility studies, then the project might not even have entered construction at the time of the MTR (e.g. Rio Sixe or San Martin). Likewise, it might be under construction or just commissioned so that the design output may not be reached. Similarly because the investments are so new, as are many of the SMEs, it is hard to determine whether they will weather the course of time and be sustainable. Measuring replicability is complicated by the fact that it takes time to change minds, to penetrate markets and to have an impact on business and enabling environments. Thus the team was required to make inferences from best practices and their own significant experience in the field.

2 BACKGROUND

Clean energy project finance has evolved from the early days of grants to build projects to today's SEF model, a fully integrated approach assisting clean energy SMEs at each step of the project cycle with a combination of technical assistance and funding, an approach that is closer to venture capital. At each step, each new model, lessons have been learned and incorporated into the next generation of programs. It is of interest and importance to note that the IFC was not alone in learning these lessons. Other development banks and bilateral donors have gone or are going through this process.

REEF, the Renewable Energy and Energy Efficiency Fund, was the immediate predecessor programme to SEF; the SEF design team incorporated lessons learned from REEF's failure into the SEF. When REEF was set up, the market had expectations of above market clean energy rates of return and REEF was successful in raising funds. However, it was not successful in disbursing them, with the end result that only one investment was made and E+Co was the only stakeholder to participate actively. There are three other Programme models that were running concurrently or would have been running concurrently with the SEF: the Solar Development Group (SDG[3]), the Small and Medium Enterprise Programme (SMEP), and the Photovoltaic Market Transformation Initiative (PVMTI). The lessons learned from REEF, PVMTI, SDG and SMEP[4] formed the underlying rationale for SEF: **"The IFC submits that the E+Co model could be an important step in addressing the problems faced by IFC with regards to scaling up renewables in remote locations."[5]**

The salient characteristics of these programmes are presented below in Table 2.1.

Table 2.1 IFC Clean Energy Programmes

Program	PVMTI[6]	SDG	SMEP	SEF
Goal	"Catalyze the emergence of the private sector photovoltaic market" [7]	Deliver Solar Home Services to rural households	Capacity building, access to capital and increased RE penetration, EE and biodiversity	Catalyze SME side of the sector, combining TA with investment capital
Geographic Focus	India, Kenya & Morocco	Global	Global	Latin America and Asia
Technology Focus	Solar PV	Solar PV	No	No
Amount	$30 million	$41 million	$20 million	$18 million
Start Date	1998	2001	1995	2006
Vehicle	Fund Manager Loans & Grants, Training and TA.	SDC – Private Equity Fund took minority positions & provided capital SDF – Non profit made loans, guarantees, TA Grants	On lending through various agents	Fund Manager Lending and Equity combined with TA.

[3] The SDG was closed early in 2004 due to nonperformance.
[4] See the Appendices for more detailed information on PVMTI and SDG and other SEF Peers.
[5] IFC Sustainable Energy Segregated Facility Management Approval, October 28, 2005.
[6] Information after 8 years of a ten year program.
[7] IFC (2006) Mid-term Evaluation of the Photovoltaic Market Transformation Initiative.

Some important lessons were learned from PVMTI, SDG and REEF that were incorporated in the design of the SEF:

- Don't make the facility technology specific, that is, don't limit it to one technology, such as hydro or solar PV.
- Reduce IFC's costs through outsourcing to a fund manager with a performance incentive.
- Restrict the focus to areas were the markets are ready; where enabling frameworks are in place or have begun; and where there is a tradition of entrepreneurship.
- Pure equity investments are not desirable and technical assistance can greatly enhance the chances of a successful investment.
- Investments which are not grounded in the realities of a profit motive do not usually make good candidates for IFC clean energy funding, i.e., the IFC funded investment should focus on financial profit as well as social and environmental benefits.
- An E+Co-like approach combines many of these desired characteristics into one service provider.

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3 EVALUATING THE FUNDING MECHANISM

3.1 Strategic Relevance and Enabling Environment

- ***Have SEF and the IFC/GEF SMEP Program loan been strategically relevant, both to IFC's and the GEF's strategy, as well as to local and national development priorities and organizational policies?***
- ***The SEF focused on the East Asia and Latin American markets. What challenges were encountered, and which factors (in the enabling environment, in E+Co, and in the SME borrowers) proved critical for achieving success? Do those factors still exist today and how do they affect performance?***

We find that the SEF and the IFC/GEF SMEP programmes have been relevant to IFC's and GEF's strategy and particularly in local development priorities. In some cases these programmes precede important host country policies and act as a demonstration of the need for and the impact of such policies. For example, the SME-RE biogasifiers in Cambodia took place in the absence of any renewable or rural energy policy. Now the Government and NGOs are pointing to the need for such a policy and are holding SME-RE up as an example of the potential that exists.

SME-RE has been very active not only in the business sphere but assisting donors and actively educating and lobbying the Cambodian Government.

Many of the challenges which E+Co and the SMEs faced in East Asia and Latin America are similar to those in other developing countries, such as:

- the scarcity of capital for SMEs,
- the lack of familiarity with and interest in small scale renewable energy or energy efficiency within the banking community,
- policies which favour fossil fuel based energy (such as subsidies),
- low business skill levels in SMEs,
- The lack of a coherent RE/EE policy with appropriate incentives.

Table 3.1 presents the some of the major factors impacting renewable energy and energy efficiency investments in selected SME/SEF countries[8]. Direct incentives appear first; the single largest direct disincentive, subsidies to conventional energy, appears at the bottom. A check mark indicates that the country has, for example, a Renewable Energy Target. Otherwise the country does not have the incentive or disincentive.

This also represents some of the barriers that still exist within these countries. While these factors can help explain some of investment patterns in SME clean energy, they do not explain all. For example, they do not cover the ease of doing business, access to credit, or even access to the grid.

[8] Note that the table describes the general RE/EE policy environment. During the case studies we found that there may be incentives for specific subsectors that are not replicated for all (eg in Brazil there are tax breaks specifically for SWH manufacturers).

Table 3.1Clean Energy Incentives

	Cambodia	Philippine	Thailand	Brazil	Costa Rica	El Salvador	Honduras	Nicaragua
Incentives								
National RE Targets		✓	✓	✓				✓
Feed-in Tariff			✓	✓				
Renewable portfolio standard			✓	✓				
Capital subsidies, grants, and rebates			✓					
Investment excise or other tax credits		✓		✓			✓	
Sales tax, energy tax, or VAT reduction		✓					✓	
Net metering			✓					
Public investment, loans, or financing		✓		✓				
Public competitive bidding								
Appliance Standards		✓	✓	✓	✓	✓		✓
Efficiency labels		✓	✓	✓	✓	✓		✓
Disincentives								
Conventional Energy Subsidies		✓	✓			✓	✓	

Table 3.2 presents the World Bank's ease of doing business scores which ranks countries in 10 different categories and an overall ease of doing business ranking. This helps to explain many factors behind RE/EE investment that can't be determined from sector specific measures in Table 3.1.

Table 3.2 Ease of Doing Business Indicators (ranking out of 181 countries)

	Cambodia	Thailand	Brazil	Costa Rica	El Salvador	Honduras	Nicaragua
Ease of Doing Business Rank[9]	**135**	**13**	**125**	**117**	**72**	**133**	**107**
Starting a Business	169	44	127	123	103	146	85
Dealing with Construction Permits	147	12	108	123	121	71	134
Employing Workers	134	56	121	77	87	156	66
Registering Property	108	5	111	45	42	90	136
Getting Credit	68	68	84	59	43	28	84
Protecting Investors	70	11	70	164	113	150	88
Paying Taxes	24	82	145	152	124	137	162
Trading Across Borders	122	10	92	94	57	107	99
Enforcing Contracts	136	25	100	132	53	176	66
Closing a Business	181	46	127	98	78	115	67

Source: World Bank http://www.doingbusiness.org/EconomyRankings/

[9] This is the aggregate ranking taking into account all the other indicators.

Take Cambodia, which ranks 135 out of 181 countries and has no direct incentives for clean energy (virtually no enabling frameworks). Looking at these tables alone one is likely to conclude that the environment is not suitable for SME energy investment and probably would not have included it in the SEF. Yet the exact opposite is the case. Small businesses and rural electricity consumers are paying such high prices for conventional energy that some RE technologies are much more cost competitive. Only financing stands in the way of rapid adoption and penetration of clean energy. Similarly, in Nicaragua (107th in the World Bank ranking) only 40% of the rural population have access to electricity and for many of them a grid connection is many years away. PV systems are both cost effective and healthier than traditional fuels even without support from the government.

Simply put, all those things which fall under the enabling framework rubric are too expansive to be listed here. This is not to suggest that enabling frameworks aren't important. They are but the most appropriate way to address these is in developing a market entry strategy on a country by country basis.

The **observable success factors** that were consistent across countries were:

- the E+Co approach,
- entrepreneurs that viewed E+Co as a partner and were willing to learn,
- the availability of finance (SEF/SMEP) on reasonable terms.

3.2 Comparing the SEF and the IFC/GEF SMEP Models

Comment: It is understandable that the IFC wants to compare the SMEP and SEF since they represent too seemingly different and competing models. However, they were not in fact competing models as the SEF was built on the lessons learned from SMEP. Moreover, the reality is that direct comparison is not easy for some questions and not relevant for others for various reasons, in particular:

1. SMEP represents an earlier model in which E+Co is more restricted than in the later SEF.
2. At the same time, E+Co has grown and learned and so its performance in SEF is built partially on the lessons it learned from SMEP.
3. SMEP investments have been operating longer than SEF investments and are further in the project cycle; its first disbursement was in early 2001 compared to early 2006 for the SEF. For example, several of SEF's investments are in the feasibility stage and others are in construction, while all SMEP investments are operating.
4. SMEP was restricted in the number and size of investments it could make while SEF was not.

- ***Which IFC financial instrument is expected to achieve better results, and why? This should be partially supported by a cost/benefit analysis of each instrument (limited to several key parameters), which seeks to quantify the costs and benefits to IFC, E+Co, and to the sub-borrower.***

A priori, SEF is expected to have better results in most areas because it provides directly for technical assistance and is a more flexible investment vehicle. The investigation indicated that E+Co continued to provide technical assistance under the SMEP programme even without compensation from the IFC. SEF allows greater flexibility, with E+Co able to lend or to purchase equity. Table 3.3 presents five measures for comparative performance.

Table 3.3 Comparative Performance

	SMEP	SEF
Funds Invested (millions)	$1	$9.6
Cost Ratio	$0.08	$0.26[10]
Leverage Ratio	$7.08	$5.55
Invested Capital Per Person Served	$11.44	$19.92
Invested Capital Per Business Served	$171.35	$60.15
Invested Capital Per MTCO2	$6.27	$2.71

SMEP investments have served residential users at a lower cost, leveraged more funds than the SEF investments and cost the IFC very little to deploy (cost ratio) because there was no payment for technical assistance. At the same time, SEF investments serve businesses at a lower cost and have a lower cost per ton of CO_2 offset.

This presents a mixed performance picture and our evaluation suggests that a proper comparison can't be made because it is comparing apples with oranges. SMEP made some loans that were not allowed under SEF (two natural gas conversion investments). SMEP investments have on average been operating longer than the SEF investments and as more mature operations have achieved greater performance. Also, SEF allows for equity investments whereas SMEP did not.

- ***Virtually no technical assistance was provided with IFC/GEF SMEP Program funds, though E+Co may have provided it using other funding sources. Significant technical assistance was to be provided by SEF. Explain the rationale and impact of this feature.***

The rationale and impact of E+Co's TA delivery are discussed in Chapter 2 above. The aim is to address weaknesses in business skills in start up SMEs by providing support from experienced staff. Our case studies found that borrowers found this to be very useful, even those (such as Transsen) that were already relatively sophisticated when the loan was made. As stated previously, E+Co does not alter its service delivery model as funding sources change. E+Co provided the same type and level of service through the SMEP program as it does through the SEF. SMEP borrowers are therefore subsidised by SEF and by E+Co's other sources of finance for the TA element.

- ***Under which financial instrument did the SMEs achieve better financial results, and how was this affected by any technical assistance that E+Co provided?***

It is not possible to make a direct comparison of SME performance between the two financial instruments for reasons stated above and in greater detail in the appendices. E+Co provided the same type and level of service through the SMEP program as it does through the SEF. In practice it treats the various sources as fungible. E+Co's field staff do not know the specific

[10] The actual cost to IFC in SEF is $0.336 cents per dollar of investable funds. The $0.26 represent the cost now to E+Co and the maximum cost at which the management and technical assistance would be paid if SEF were contracted today. In reality, while the IFC did not pay E+Co for the TA costs, E+Co did incur them and from their point of view the costs for SMEP are the same.

source of the funds until after the loan is approved; borrowers in general neither know nor care where the money they are borrowing comes from.

- Compare the different financial instruments and technologies that E+Co deployed and financed under the two instruments, and explore which were most successful and why.

As far as comparing technologies, technology choice is driven by natural resource availability, competition from other energy sources, enabling frameworks and incentives, and market needs. For example, it is expected that solar would have a better chance of succeeding in Latin America than in Cambodia because (1) the average income in Latin America is much higher than Cambodia and (2) the people of Latin America are already higher on the energy ladder than those in Cambodia. E+Co does not push a specific technology nor does it deploy them.

Through SMEP E+Co offered only loans that ranged from 3 to 6 years, all but one with a grace period and all with fixed interest rate. These loans were used for capital assets and for working capital needs. SEF funds provided both loans and equity (both ordinary and preference shares). Loans ranged from 1 to 7 years, some with a grace period and all with a fixed interest rate. While most SEF loans are in US$, those for Brazil are in Reals with E+Co taking the currency risk, since it is claimed that the market demands local currency loans. Uses of SEF funds were similar to SMEP. There appear to be no significant differences between loans and performance. The differences in performance appear to be linked to differences in market factors and not financial instruments or technologies.

The evaluation team asked a different question. How suited are the financial instruments offered through the SEF to the needs of the market? Here we found that there is room for innovation. As explained elsewhere E+Co has a fairly fixed product offering that may need to be changed in light of the amount of working capital loans it is making. It should also consider loan guarantees as this would leverage IFC funds to a greater degree and strengthen local capital markets. This may require changes in the IFC terms.

- ***E+Co was compensated differently under the SEF vs. IFC/GEF SMEP Program loan. How did the differences between the two instruments affect E+Co's financing decisions towards its clients?***

E+Co's differential compensation did not affect its financing decisions with one exception: Under SMEP only loans were possible whereas under the SEF E+Co can make equity investments. Loan rates are based on the country and borrower and don't appear to differ appreciably between the two instruments.

- ***Were there any significant administrative or operational differences, for both E+Co and IFC, in managing the two instruments?***

There were several administrative and operational differences between the instruments that are worth mentioning. The first and most obvious is the difference in direct cost, i.e., fees for management, technical assistance and performance, as mentioned throughout this report. The second is that risks are different between the two instruments to both E+Co and IFC. E+Co is liable for any defaults under SMEP where as it does not have this downside risk as the fund manager in SEF. Third, in SMEP E+Co had to seek approval from the GEF country focal point and this added significant delay in disbursements. This problem was resolved in SEF. Finally, and perhaps the most significant, is that under SEF E+Co had to seek IFC approval for investments where as IFC had delegated this authority in SMEP.

- ***If IFC were going to replicate, how should it be done, in light of the lessons learned from a comparison of the two loans?***

This is discussed in section 5, Replicability.

3.3 Effectiveness and efficiency of the fund's structure

3.3.1 Fund Structure

1. ***Gauge how well SEF was structured and managed, including pointing to any design flaws, and suggesting improvements for any future facility. Aspects to review include: fund's governance, roles of the different players, fees, reporting mechanisms, knowledge management and sharing, cooperation with stakeholders, and other key elements.***

In assessing the effectiveness and efficiency of the fund's structure as a mechanism for IFC to support sustainable energy SMEs, there are several characteristics of structure to consider, from the way the deal is structured to flow to the investments that it is allowed to make. The table below (3.4) presents key characteristics of the two programmes which are important to keep in mind when addressing this question and those later that compare the IFC/GEF SMEP and SEF programmes. Appendix 1, section 4, presents a detailed discussion and review of the two programmes.

Table 3.4 Key Fund Characteristics

	SMEP	SEF
TA Cost to IFC	no	yes
Explicit TA combined with Funding	no	yes
Results Targets	no	yes
Investment Size Restricted	yes	no
Technology Focus	no	no
Geographic Restriction	no	yes
Investment Instrument Restricted[11]	yes	no

We found that:

1. That the open nature of the Funds, **no technology specification**, allowed E+Co the maximum flexibility in supporting technologies most suitable for the environments in which they were operating.
2. That the **geographic restriction** of the SEF to areas where E+Co had offices rather than new areas had a positive impact on performance and helped to reduce cost.

[11] SME did not explicitly restrict the choice to loans. The nature of the agreement, the repayment period and the risk involved meant that equity was not a preferred method of investing. No equity investments were made by E+Co under the SME programme.

3. That **restricting the investment instrument** is not advisable. Different instruments (debt, ordinary shares, preference shares, working capital) are needed for different financial circumstances.

4. That the structure of the SEF did not impinge on E+Co's approach to service provision and so allowed it to build on its strengths.

5. That the structure of the SEF did not impair E+Co's performance or adversely impact cost. Compared to similar IFC/GEF projects both cost and success is better.

6. That the division of authority between E+Co and IFC appears to set an appropriate balance between the Fund Manager's autonomy and the fund provider's control.

7. That the social and environmental benefits of these small scale investments partially offset the higher costs to the IFC[12].

8. That the model of a profit seeking fund manager that provides **technical assistance** and M&E with financing requires that TA costs be covered, at least for the social good component[13].

9. That the structure of fees incentivises the SEF Fund Manager to improve performance; Once E+Co repays all the money disbursed by the fund, it splits with the IFC (50:50) any additional amounts (interest, dividends, capital appreciation).

The following findings are based on our analysis of the SMEP and SEF and represent areas where additional thought should be given in the design of next generation facility. While the performance of the SEF and SMEP and E+Co has been impressive, it can improve. We found that:

10. The reward structure for the SEF fund manager is **asymmetric** as it rewards gains but does not explicitly penalise for losses. This skews the risk to the fund manager. We understand that it is important not to constrain the fund manager unnecessarily. However, we do believe that there should be greater consideration of how to address the asymmetry.

11. Several important considerations of the management approval letter did not appear in the CGA with the result that E+Co was not bound to follow them or may not have known.

For example, "E+Co would invest in enterprises that would be considered too risky by local FIs or that would require additional co financing to leverage local investment.[14]" No such requirement was in the CGA and E+Co provided funding to a SME that could have obtained commercial financing in at least once instance

Technical assistance is another area that needs to be more clearly defined and reported. The management approval letter envisions that TA would be used for "training workshops for potential entrepreneurs, marketing activities[15]" and project support. This is clearly necessary if the SEF investment is catalyze private sector

[12] The costs to IFC of SEF are higher than the larger investments it makes because it pays for technical assistance (not normally done on large loans). In addition to the monetary returns, IFC pays for and gets social and economic returns (the triple bottom line) and these offset to some extent the higher costs. We say partially because these benefits, although they have value, have not been monetized.
[13] We use the term of profit seeking fund manager loosely because E+Co is a not for profit entity but it operates the fund so as to maximize returns which include social and environmental benefits and this attention carries over to the way in which it deals with SMEs and the discipline that it imparts.
[14] Sustainable Energy Segregated Facility Management Approval letter, page 5.
[15] Management Approval Letter, Annex 3, page 15, item 4.

investment. This is the indirect route through which SEF works as described in the model in Figure 1. However, the CGA list of technical assistance activities is broader and could have many different interpretations.

There are several stated objectives of the SEF in the CGA such as: "To offer an efficient menu of support services, tools, capital, co-ordination and quality control to enterprises, specialized intermediary organizations, financial institutions and government." and "To build and grow specialized and focused intermediary organizations, regional funds and professionals providing support services and capital to SMEs supplying modern energy products and services."

It is too early in a midterm evaluation to judge the effectiveness of efforts in these areas. However, the team did not observe that much had taken place that would support these objectives and we link that to (1) targets which do not directly address these objectives, (2) the lack of explicitly detailing technical assistance and the beneficiaries thereof, and (3) possible conflicts between deepening the sector (the two objectives) and serial investing. This is a design flaw and not an execution flaw.

We recommend a tighter mapping of terms and conditions from the management approval document to the CGA or other contractual document between the IFC and the Fund Manager.

12. The CGA's technical assistance activities are broad and can be construed to pertain only to enterprises and entities involved directly in an SEF investment. We do not believe this is the intent of the designer. Given that E+Co and IFC have limited funds, the direct work they can do is only a drop in the bucket of the sector's needs in any given country. It would appear that there is very limited effort spent on educating those outside a specific investment and that TA to those not directly involved in a SEF deal is very limited or nonexistent. This may not be the case but our field visits indicated only an informal mechanism through which "outsiders" were involved.

13. The current structure provides an incentive for serial investing suggesting that it reduces risk, since the Fund Manager has already carried out due diligence of the borrower and has a track record of repayment. However, it may also have some unintended outcomes. It allows the Fund Manager to reduce TA costs because with each successive serial investment, less capacity building is required. If one of the key goals is to build capacity within the sector, then this reduces the amount of TA being spread over different entities. It focuses the Fund Manager's assistance into a narrow band of companies rather than casting a wider net. It also means that fewer companies are assisted with IFC funds than might otherwise be assisted. An important issue for the IFC to consider in its next generation is whether its goals are better served by strengthening many or a few. Does serial investing actual crowd out or reduce the incentive for commercial banks to become involved? Are FI transaction costs reduced and awareness raised by focusing on a few SME clean energy companies or by focusing on more? What is the exit strategy for each company? Does the Fund Manager have a clear strategy about how to strengthen the market and prepare it for FIs and how SEF will transition to the next sector? Does the Fund Manager have a market entry and exit strategy? These are a few of the areas that the next generation SEF should consider.

14. Neither E+Co nor SEF prioritise countries and sectors so as to achieve the maximum market impact for any given IFC funding. In essence, E+Co and the SEF operate opportunistically and there appears to be no methodical way of ensuring that the low hanging fruit or the priority sectors and countries are chosen. Faced with limited funds, is the best country or sector chosen over another, weaker

candidate? Is leverage best served by an opportunistic approach or a well reasoned strategy? Is TA more effective in an opportunistic approach or a well reasoned strategy? Similar arguments hold for replication. The next SEF should consider this in the fund's structure or require potential fund managers to develop a penetration strategy and plan as part of their proposal and operations.

15. While only two of the SEF investments appear to be "troubled", our team found some laxness in E+Co's due diligence procedures that are addressed in detail in Appendix 4.

2. Compare SEF's structure with those of the aforementioned initiatives (PVMTI, SDG, and the IFC/GEF SMEP Program) via a desk review of these facilities (background documentation will be provided)[16].

The Table 2.1 on page 7 presents key characteristics of PVMTI, SDG (SDF & SDC), SMEP and SEF.

PVMTI's program implementation is done by Impax Asset Management, a UK-based fund manager, and the IT Power consortium. Impax and IT Power form the external management team (EMT).[17] Country resident staff provides PVMTI with the necessary local presence in each of the three countries of operation.

SDC's structure and management was different from PVMTI. It has been concluded by the IFC that one of the key lessons from the experience with SDC is one that resulted not from a failure to achieve investment goals, but rather from the response to this failure. SDC management was quick to recognise that the initial investment criteria were too stringent and it worked with shareholders to revise them. Rather than making bad deals, which could have jeopardised returns and the reputations of those involved, it made no deals, resulting in little investment loss. Management was correct in taking this decision, providing a lesson on the merit of restraint. When it became apparent that the market could not produce opportunities that met the revised investment criteria, SDG was disbanded.

Technical Assistance

PVMTI provides technical assistance funding only for activities tied to individual investments. However, there was a broad consensus amongst project implementers that there is a genuine need for broader-based technical assistance, which would have resulted in greater uptake of PV solutions (due to quality of product and installation, and public perception which is also greatly effected by these aforementioned aspects). The mid-term review of the fund stated that, although PVMTI's design did not anticipate the extensive need for such broader-based technical assistance. Consequently, the programme did not provide for free standing technical assistance that is not tied to individual investments."[18]

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[16] See the Appendix on SEF peers for detailed information on peers such as PVMTI, SDC, and GEEP.

[17] IAM provides fund management and advisory services to investors and is regulated by the Financial Services Authority as an investment manager. IAM has been managing and advising EIT funds since June 1998 and is currently managing and advising funds with a total value of over USD 1.5 billion. IT Power is a leading international renewable energy and environment consultancy which specializes in renewable energy engineering and related economic, financial, commercial and environmental considerations

[18] Mid Term Review of PVMTI, August 2006, Section 3

Under the PVMTI program, technical standards have been set for compliance: In recognition of the importance of technical quality, all PV systems supplied under PVMTI must comply with a set of technical standards referred to as the "PVMTI Technical Guidelines". Rather than seek to create new technical norms, the IFC/EMT adopts state of the art standards, protocols and procedures for systems and components. This approach is intended to contribute to global acceptance of universal standards and avoids adding to the multitude of international standards for PV rural electrification applications, most of which have never been effectively applied. [19]

SDG provided little technical assistance. It has been noted that while the diversity of shareholders was difficult to manage, it also could have been used to advantage. Strategic alliances could have been developed along a number of lines. In fact, most potential investees expressed that they were equally interested in the contacts of SDG. Most solar/PV companies are SMEs, often family owned, and have grown without the benefit of technical training. The opportunity to consult with solar/PV sector experts was very attractive to SDG investees; however, this type of relationship between SDG shareholders and SDG investees did not materialize, given that SDG shareholders did not stay invested in the initiative long enough to cement relationships.[20]

3. Assess whether IFC's outsourcing of fund management has been effective and efficient in achieving IFC and GEF goals, and identify "lessons learned" from this experience.

We find that the management of SEF is efficient compared to other IFC and donor/DFI SME, Energy and Green Funds based on the overall cost to IFC. This includes the TA component.

The total cost to IFC in the form of management and technical assistance fees is $4.7 million or about $0.33 per dollar invested. Based on the performance of E+Co as shown in their annual reports, operating costs have been reduced from $1.66 per dollar invested at the time of the SEF design to $0.26 cents per dollar invested in 2008[21]. This compares favourably to SMEP, PVMTI and the Renewable Energy & Energy Efficiency Partnership (REEEP) which cost $0.95, $0.84 and $1.52 per dollar invested. (See Appendix 3 for a discussion on REEEP and other SEF Peers.)

We find that E+Co's historical time and cost accounting procedures did not allow for the separate assessment of TA and management costs. Thus, while E+Co has exhibited significant reductions in cost per dollar invested since 2005, there is no way to determine how much of this reduction is in the area of TA or management. Beginning in 2008, E+Co instituted a new time keeping procedure and should in the future be able to separate costs between these two functions.

We also find that the SEF management fee and performance fee is out of line with those of similar fund managers and that there is a best practice rate structure for management fees and performance incentives that the IFC should consider.

[19] http://www.pvmti.com/pv_technology_technical_guidelines/pv_technology_technical_guidelines.htm
[20] IFC (2007), Selling Solar, Case Studies 3
[21] There are several factors behind this dramatic decline and they are discussed in this report and in Appendix 1. Most notably there are economies of scale in fund management and increase the available capital and increased transaction size tend to drive down unit cost. Also, as serial investing increases the cost of due diligence and EDS per dollar invested decline as well.

For example, Triodos EIS Green Fund[22] has an initial fee of 5%, an annual fee of 2.5% and an incentive fee of 20% based on the fund's net performance. Similarly, the Virgin Climate Change Fund has a 1.75% and a 20% incentive fee and the Da Vinci Green Falcon Fund charges a 2% and a 20% incentive fee. **We recommend shifting to a best practice range for management fees**. At the same time, E+Co will have to be treated as a Fund Manager with all the rights and responsibilities of said manager. This means that IFC will need to relinquish control of the day-to-day investment choices.

[22] This fund invests in renewable energy, energy efficiency, low carbon products and waste recycling and reduction companies.

4 EVALUATING E+CO

4.1 Effectiveness and Efficiency in Management & Implementation

B. E+Co: Effectiveness and efficiency of the management and implementation of SEF and the SMEP Programme's loan to E+Co. Two of E+Co's stated objectives to which SEF was expected to contribute were:

"To offer an efficient menu of support services, tools, capital, co-ordination and quality control to enterprises, specialized intermediary organizations, financial institutions and government."

"To build and grow specialized and focused intermediary organizations, regional funds and professionals providing support services and capital to SMEs supplying modern energy products and services"

Assess the outputs, outcomes, and impacts achieved by SEF thus far (as detailed in clause 4.3 of the Conditional Grant Agreement between E+Co and IFC), and comment on whether SEF is likely to achieve its targets by its completion. Identify additional indicators, if any, that SEF should be tracking. Prepare a similar assessment of the results achieved by the IFC/GEF SMEP Program's loan to E+Co.

Finding: There are the explicitly mentioned targets set forth in section 4.3 of the CGA and, of course, the target of repayment to the IFC. E+Co has met most, but not all, of the targets set forth in CGA section 4.3. However, we find that this variance is understandable. By completion of SEF, we expect that E+Co will meet all but one of its targets. The one target it is unlikely to meet is the number of customers served. We find, for reasons discussed below, that this should not be a significant issue.

SMEP had only disbursement as a target without outcome or other performance measures. However, we do report on the SMEP's portfolio performance. It had two financial control measures:

Maintain an unrestricted net assets to SMEP debt ratio of 1.5:1;
Maintain a minimum total net assets to total debt of 1.25:1.

E+Co has met its obligations under SMEP.

Table 4.1 below presents the quantifiable targets and actual performance for the SEF alone. SMEP had no such requirements. By end of 2008, E+Co has exceeded all but two of the financial targets – funds disbursed and average days outstanding for growth capital. Disbursements were 14.3% below target; there have been no write-offs and reserves for SEF funded investments; write-offs or renegotiations for E+Co as a whole were 6.4%; but only 71% of the portfolio was less than 60 days outstanding as compared with the target of 75%.

Had the evaluation taken place at the end of 2007 (the original date of the midterm review), then E+Co would have met the target for disbursement. We consider this variance normal and justified. The difference between the target and actual can be accounted for by one main reason: There is a lag between E+Co's investment committee approval and disbursement to SMEs. Currently that lag is 110 days.

- During 2009, $700,000 more has been disbursed and the IFC has approved disbursal of the remaining balance in 2009.

Table 4.1 CGA Targets and Performance

Criteria	Target	Actual
SEF Portfolio Targets		
Funds Disbursed in millions	$ 11.2	$ 9.6
Write-offs & Reserves (%)	<5%	0
First Year Investments Less than 60 Average Days Outstanding	>75%	83%
Number of People Receiving Clean Energy (Millions)	7.50	4.78
E+Co Portfolio Targets		
Growth Capital 60 Days Outstanding	< 75%	71%
Investments written-off or renegotiated	<10%	6.40%

The number of people receiving clean energy fell short of the target by 36%. While this is a significant difference, we find it understandable and acceptable. There are several primary factors behind this variation.

- There is a lag effect as already discussed above. There is another lag between disbursement and construction and between construction to operation. For example Sesecapa and Rio Tuba are in construction. Some of the projects approved and disbursed have not yet begun using the capital.

- Some of SEF's projects are for feasibility studies that would not yet be funded by another investors such as San Martin (5.42 MW), La Orilla (1.86 MW), Rio Sixe (2 MW), Pasuquin (14 MW) hydro projects.

- The target is narrowly defined to only residential customers. E+Co investments serve not only residential users (defined here as people receiving clean energy) but also other users such as schools, clinics, businesses and government offices. For example, 253,265 other such customers are now receiving clean energy or a little more that 5 million customers in total. These customers themselves serve many residential users, so expanding the definition to include residential users benefiting indirectly as a result of the loan would increase the achievement substantially. It would only require an average of 10 residential customers per clinic or other facility for E+Co to reach the SEF target, a very conservative assumption.

- The longer a project is operating, the greater are the results such as customers, tons of CO_2 reduced, and capital leveraged.

- E+Co is learning from its experience in managing SEF: with this new knowledge and experience it would no doubt have prepared a different projection/target.

- The final reason lies in E+Co's strategy – serial lending and working capital loans. E+Co has a strategy of reinvesting in the same companies. If the serial investment does not add capacity, then it is unlikely that many new customers are added. The investment may be cost reduction oriented rather than for output. Similarly with working capital loans unless this results in an expansion of output and that expansion is tracked, then it is certainly less expansionary than investing in a start up or in major expansion.

Finding: Although E+Co has met or will meet the targets specified in section 4.3, we did not observe evidence that the two SEF objectives are either adequately addressed by the CGA targets or in performance so far. Those objectives are:

"To offer an efficient menu of support services, tools, capital, co-ordination and quality control to enterprises, specialized intermediary organizations, financial institutions and government."

"To build and grow specialized and focused intermediary organizations, regional funds and professionals providing support services and capital to SMEs supplying modern energy products and services".

We observed these objectives being addressed and met with regard to entities involved directly in SEF investments but not those outside, those whose participation at a later stage would be crucial to replication and closing the gap. This is not as much an operational issue as it is a design consideration and so is addressed in greater detail in that section.

Measuring the SEF/SMEP Contribution – A Methodological Comment

Rarely are the E+Co projects funded solely by one investor. To be sure, E+Co may enter where it is the first and sole outside investor but as the SME investment progresses, it will require other investors to mature. With multiple investors how are benefits allocated? E+Co takes the view that all benefits of the investment are allocated to E+Co and it in turn then allocates all to SMEP and to SEF. So, for example, it counted the same benefits to IFC for the SMEP investment in La Esperanza and it did to IFC for the SEF investment in La Esperanza. In effect it was double counting benefits. We deal with this by allocating benefits between SMEP and SEF on the basis of relative investment. If SEF contributes 80% of the IFC investment, then it is allocated 80% of the benefits and SMEP is allocated 20 percent. We did the same for the other SMEP investment, Seesa.

E+Co allocates all benefits to its investors even when there are later outside investors. The rationale for this is that E+Co funding is necessary to draw in the other capital; without E+Co's capital, no one else will invest. In as much as this is correct, we accept that E+Co and its investors then deserve the credit for the accompanying benefits and we have used this method when determining benefits. We found investments where this was the case such as La Esperanza, A&P Lubricants, SME-Re and Tecnosol. We also found circumstance where this was not the case such as Transsen or Thailand Biomass Power Company. The latter instances appear to be growth investment, or investment in an ongoing concern where the money is not used for a separate identifiable project with discrete outputs. The impact was compounded by E+Co's practice in M&E. For example, E+Co's investment in working capital of a company does not qualify it to take advantage of any previous benefits generated but its M&E system will record it that way. Benefits are then reported for the incremental investment as if it were pivotal to all the previous and expected benefits. We adjusted for this as much as possible. (See section 4.2.1 for more on the M&E system and Appendix 2 for greater detail.

- ***Comment on how well E+Co has followed and implemented the principles laid out in the SEF Contingent Grant Agreement and the IFC/GEF SMEP Program Loan Agreement.***

Finding: E+Co has followed the principles and policies laid out in the CGA. It includes items such as types of investments, the split between early stage and growth investments, submission and approval of investment recommendations, disbursement, environmental training and considerations and reporting. Similarly we find that E+Co has followed the principles set forth in the SMEP loan agreement.

- ***Assess SEF's operating costs and performance with (a) E+Co's benchmarks (see Annex A); (b) the performance of E+Co's total portfolio (i.e. SEF-financed plus non-SEF-financed); (c) and the performance of PVMTI (as described in its independent evaluation) and any other funds about whom information is publicly available.***

The final CGA target is: "Proving the model of combined specialised services and technical assistance (TA) leading to seed capital, leading to growth capital for energy enterprises, using cost ratios and capital leverage results." This would require comparison against the performance of other funding models as well as comparison of SEF against internal non-SEF E+Co performance. Many of the performance measures are not available for entities outside the IFC and so we will review these results against other E+Co funds as shown in Table 4.2. Existing data do allow comparison of E+Co leverage ratios across E+Co investments and a simple trend in E+Co costs per dollar invested from 2004 through 2008. At the time that the SEF was designed, E+Co's cost per dollar invested was $2.21[23]. By the end of 2008, that had fallen dramatically to $0.26 per dollar invested.

Table 4.2 Performance Measures as of December 2008

Performance Measure	SEF[24]	SMEP	Other E+Co	E+Co Total
Capital Disbursed in US $ millions	$6.8	$1.00	$17.59	$25.41
Capital Mobilised from Third Parties in Millions	$37.95	$7.085	$182.25	$227.27
Leverage Ratio	5.55	7.08	10.36	8.94
Total Customers Served	450,708	108,770	4,346,426	5,036,925
Capital Per Customer Served	$15.14	$9.19	$4.05	$5.04

The performance measures will be biased downward in the SEF because it has been operating for less time than SMEP and most of the other E+Co portfolio and for the reasons mentioned above. To partially adjust for this, we look at the results only for those projects that were operating in 2008.

SEF investments mobilised an additional $37.9 million against the investment of $6.8 million (operating investments only). For every dollar of SEF funds invested, $5.56 was generated

[23] This is the IFC estimate which was corrected by E+Co to remove some contractually mandated activities such as training, study tours and awareness. The E+Co estimate was $1.60 per dollar invested.
[24] Data presented is only for companies with current operations as this avoids some of the problems presented above. Companies that are not yet operating or for which the SEF money has not yet been spent will not show customers or sales that can be accounted to the SEF.

from other investors so far. This compares to $7.08 for SMEP projects, $10.36 for non-SEF/SMEP E+Co investments and $8.94 for the entire E+Co portfolio. One reason that accounts for the lower leverage ratios of SEF and SMEP is the relatively short lifespan of these projects (see discussion above). This still compares favourable to the PVMTI with a leverage ratio of $0.66 or the Small Enterprise Investment Fund with $1.69 leveraged for every dollar from the MIF.

Another measure of efficiency is the cost per customer served. Both SEF and SMEP had significantly higher costs per customer served. Aside from the reasons given above that SEF and SMEP will have fewer customers now than the rest of the E+Co portfolio, there is one other factor that will account for a lot of this difference: Many of E+Co's investments in Africa, 44% of its entire portfolio, are in smaller, less costly applications such as solar water heaters, solar cookers and LPG. These are lower on the energy ladder than electricity or biogas. Thus, the cost of serving a customer is lower because the energy consumed is not of the same calibre as the SEF/SMEP investments; they are lower down on the energy ladder.

Table 4.3 Cost Analysis

	PVMTI[25]	**SDF**	**REEEP**	**SEIF**[26]	**SMEP**	**SEF**
Cost Ratio[27]	$0.84	$0.95	$1.52			$0.26[28]
Leverage Ratio[29]	0.66			1.69	7.08	5.55
Invested Capital Per Person[30]	$63.28				$11.44	$19.92
Invested Capital Per MTCO2	$172.66				$6.27	$2.71

- ***Review how E+Co has performed and evolved over the last 3 years, comparing it to its peers, and assessing its contribution to its industry. Aspects to evaluate include: products and services offered, including their pricing and delivery mechanisms; targeted clients (geography, sector, size, etc.); the fund managers' sources of capital; involvement in and contribution to the sustainable-fund-manager industry, and suggestions for how to increase E+Co's effectiveness vis-à-vis the second objective noted above.***

4.1.1 E+Co Peers

There are a great many actors in the arena of providing assistance in renewable energy and energy efficiency but very few that focus on SMEs. There are DFIs like the World Bank, ADB, EBRD and the IADB that make project loans to support technical assistance, policy reform and pilot projects. They also establish funding facilities in host countries to finance clean energy. Bilateral donors have similar programs with

[25] Source PVMTI Midterm evaluation, August 2006.
[26] The Small Enterprise Investment Fund leveraged $294 million on the MIF investment of $173 million.
[27] Ratio of operating costs to invested capital. For example, for every dollar of funds invested, it costs E+Co $0.26 in salaries, rent, and other standard operating costs.
[28] The actual cost to IFC in SEF is $0.336 cents per dollar of investable funds. The $0.26 represent the cost now to E+Co and the maximum cost at which the management and technical assistance would be paid if SEF were contracted today.
[29] Capital raised from third parties per dollar of capital invested by the programme or entity.
[30] The capital invested from the fund (e.g., IFC) per residential customer served by the programme or entity.

the exception that many of them are grant funded. They seek to address enabling framework problems, public awareness, demonstration projects and capacity building. Green funds and carbon offset buyers (such as Atmosfair) and even project developers are there and do in some small way cherry pick SME clean energy projects. There are specialised consultants such as IT Power, PA Consultants, and Energy, Economy & Environment but they offer their services to fit a donor's model and do not invest themselves. There are even NGOs like the Small Scale Sustainable Infrastructure Fund (S3IDF) and Practical Action. As we found in Latin America, there are also microfinance organisations that provide loans for small RE investments; however, these operate more like commercial banks, stepping in to the market once it is proven rather than taking a pioneering role like E+Co.

The E+Co model is unique[31] and we could identify no direct comparators. In order not to restrict the search for peers unduly, we focused on the three key defining elements of E+Co:

- It only works in the SME energy sphere in developing countries.
- It has a model of service delivery that combines technical assistance, finance and M&E.
- It funds only opportunities that generate a profit, although this may be below normal market rates.

We found no exact peers but one very close match and a second runner up: S3IDF and Practical Action are the closest organisations that we could identify. Both S3IDF and Practical Action work in energy in the SME sphere providing technical assistance and funding. Practical Action works in several other areas including agriculture, water and sanitation, shelter, transportation, Information and Communication Technology (ICT) and disaster relief. S3IDF is involved in a small way in ICT and transportation. Practical Action has no set requirement of TA and finance. It will do either. S3IDF combines both in its service delivery. Practical Action has no explicit requirement that a profit be generated by the SME entity. S3IDF does and given its "Social Merchant Bank" strategy operates in much the same way as E+Co.

[31] See the Appendix for a detailed description of E+Co and its operation.

Table 4.4 compares E+Co with these two organizations in the key areas relevant to IFC and GEF.

Table 4.4 Comparison of E+Co & Close Peers

	E+Co	S3IDF	PA
Profit oriented Investment Model	✓	✓	✗
TA only with Financing	✓	✓	✗
Loan Guarantees[32]	✗	✓	✗
Exclusively ProPoor Focused[33]	?	✓	✓
Operates Along the Supply Chain	✓	✓	✗
Clean Energy Only	✓	✗	✗
Creates Local Institutions	✓	✓	✗

4.1.2 E+Co Performance over the Past Three Years

Human Capital: E+Co has transitioned to a new CEO; hired key staff in finance and investments; and strengthened the role and number of M&E officers.

Products: E+Co's success lies partly in doing a few things and doing them well before it considers something else. Its operating instructions require no more than one innovation at a time. This means that it uses tried and tested technology, products and services with which its staff quickly become familiar.

E+Co offers convertibles and loans which range on average from 1 year to 7 years, some with a grace period. The interest rate is determined on a country-by-country basis and is usually around the market rate. The range of interest on E+Co's active investments is as low of 5% in Africa to a high of 16% in Brazil. Collateral requirements are generally less than a commercial bank would require, although they still cover at least 100% of the loan amount.

E+Co also invests in equity but is careful in this regard given its early history where equity financing was a much larger share of the portfolio and where E+Co did not have clear exit strategy. The team can see a positive change that began since E+Co began with the SEF in the area of equity investments. For example, it has been taking equity positions in Asia with a put option and a clear rate of return, 15 percent.

Services: E+Co offers a range of Enterprise Development Services including:

a. Market assessment and segmentation
b. Business Plan Development
c. Risk identification and mitigation
d. Financial modeling
e. Organisational/Ownership structuring
f. Creation of Legal Agreements, Regulatory/Central Bank compliance
g. Adherence to business plan, monitoring of cash flow

[32] E+Co has provided two loan guarantees in its history, both in Africa.
[33] Some of E+Co investments are at the poor level but others, like W2E or Transsen, target middle class customers and businesses.

h. Operational problem resolution
i. Book keeping and accounting
j. Securing next stage financing
k. Monitoring and Evaluation of financial, social and environmental returns
l. E+Co staff provide technical input in terms of technology choice and operating characteristics in some cases
m. Financial management.

These services appear to be of more importance to seed investments rather than in more mature markets. Moreover, the amount and value of these services appear to decline with serial investment. There appeared to be no appreciable change in the type of services E+Co offers over the last three years.

Table 4.5 E+Co Financial Performance 2005-2008

	2008	2005	% Change
Selected Income Statement Items			
Selected Revenue			
Program revenues	$ 1,304,264	$ 112,800	1056%
Unrestricted interest, dividends and gains	$ 1,215,985	$ 543,473	124%
Revenue from donors and supporters	$ 5,403,719	$2,825,013	91%
Total Unrestricted Revenue and Support	$ 7,633,523	$3,481,786	119%
Selected Operating Expenses:			
Staff and Professional Services	$ 3,972,591	$2,231,857	78%
Rent, utilities, other office expenses	$ 463,189	$ 324,616	43%
Total Operating Expenses	$ 6,630,445	$3,206,470	107%
Increase in Unrestricted Net Assets before Loan and Investment Activity	$ 1,003,078	$ 275,316	264%
Selected Balance Sheet Items			
Assets			
Investments in Enterprises (net of reserves and allowances)	$18,851,799	$5,112,684	269%
Other Assets	$12,643,397	10,553,723	20%
Total Assets	$31,495,196	15,666,407	101%
Liabilities			
Loans Payable	$10,510,282	$3,460,635	204%
Managed Account Payable	$ 9,145,804	$ 411,176	2124%
Liabilities	$20,240,800	$4,185,145	384%
Net Assets	$11,254,396	11,481,262	-2%
Total Liabilities & Net Assets	$31,495,196	15,666,407	101%

Financial Growth: E+Co growth since signing the SEF CGA (12/05) has been impressive in many ways. Table 4.5 presents selected financial statistics from E+Co for the periods ending 12/31/05 and 12/31/08.

Total Revenue has grown by 119% from $3.48 million to $7.63 million, driven mainly by a $2.6 million increase in revenue from donors and supporters. At the same time operating expenses have increased 107% with the result that net income has risen to $1.0 million, a 264% increase.

Sources of Capital: E+Co has been actively seeking additional funding from other sources and is negotiating facilities with several DFIs that may provide multiyear funding totalling nearly $30 million, once closed. Additionally, E+Co has begun to reach out to new sources of funds through its People and Planet bonds which have raised about $5 million. The success of E+Co's efforts is being rewarded with a larger and more diversified base of funding.

Recognition: E+Co directly and indirectly through its investments have been recognized for their contribution and performance. E+Co received two prestigious awards in the last two years; It was recognized by The Financial Times with the Sustainable Investor of the Year award in 2008 and runner up in 2009, and by Duke University's Fuqua School of Business with the Case Award for Enterprising Social Innovation. The CASE Award recognizes outstanding individuals, organizations, or companies whose innovations blend methods from the worlds of business and philanthropy to create sustainable social value that has the potential for large-scale impact.

Many of the projects supported by E+Co (and the IFC) have received awards. For example, in June of this year, Empresa de Comunicaciones, SA (ECAMI), from Nicaragua was honoured by winning an Ashden Award prize for a pioneering sustainable energy project. The Ashden Awards have become an internationally recognized yardstick for excellence in the field of sustainable energy through a rigorous judging process. La Esperanza received the 2007 Clean Energy Award. The World Clean Energy Awards recognize achievement and innovation in the integrated use of energy efficiency and renewable energy.

"E+Co's due diligence analysis is usually dead on" (Waldo Moncada, CABEI)

"E+Co has high quality due diligence, which is very important. They do very good work" (Abdul Karim, CABEI)

4.1.3 SME Support Network

"To build and grow specialized and focused intermediary organizations, regional funds and professionals providing support services and capital to SMEs supplying modern energy products and services"

The TORs call for the team to provide suggestions for how to increase E+Co's effectiveness vis-à-vis the above objective. E+Co is beginning to make progress in this area. It has established SME-RE and SME-RE is now looking outside of E+Co for capital. E+Co is part of the Asian Development Bank's Energy For All Programme as a key advisor. Finally, E+Co is beginning to look at setting up an Asia Fund on a for profit basis. Things are moving. But how to increase their effectiveness? First and foremost IFC might consider focusing their clean energy support to banks in countries where the SEF and E+Co are operating. This will leverage both E+Co's efforts and IFC's funding. The banks in those countries would participate early learning the industry and then fund any growth opportunities. This would leave SEF money for more seed investment, thereby creating a pipeline for the banks that are being supported through the other IFC instrument.

Another avenue is to consider IFC contributing to a regional fund along with the ADB and bilateral donors and having this fund support financial institutions in countries where SEF II will operate.

4.1.4 SEF and SMEP Impact on E+Co

- ***Assess SEF's and the SMEP Program loan's impact on E+Co, and how their repayment to IFC will likely affect E+Co.***

Both the SMEP and the SEF have had a significant and positive impact on E+Co. According to E+Co, the major impact that the SMEP and SEF have had is that they allowed E+Co to prove their model on a much wider scale with fewer constraints than their previous funding instruments. This is supported by our findings. The IFC funded investments are on the whole yielding very positive results. In turn, this has resulted in E+Co being able to access a wider audience (sources) for funding. We see another area that we believe was an important contribution of the SEF.

The SEF placed some conditions on E+Co, such as the substantial reduction in operating costs per dollar invested, and E+Co has delivered. It is difficult to determine how much of this would have happened anyway under E+Co's own initiative. However, it is clear that the performance targets in the CGA have required E+Co to focus on its operating efficiency and this in turn has benefited the rest of E+Co's operations.

We have reviewed E+Co's financial management and control practices and find that repayment will not cause any unanticipated burden. E+Co has been bringing down write-offs: write-offs as a % of prewrite-off principal balance; this has declined from over 5% when SEF was signed to about 1% by the end of 2008. At year end 2008 10.6% of the entire portfolio was characterised "at risk" and three of those at risk investments are fully expected to make payment because they are receiving commercial funding. This would lower the at risk investments to 6.8% of the portfolio. Many of the at risk investments were made before SEF, and before E+Co had instituted a tighter investment policy and procedures.

4.2 SEF & SMEP Portfolio: Performance & Sustainability[34]

B. SEF and SMEP Program Portfolios: Performance and Sustainability of the SMEP Borrowers. Another of E+Co's stated objectives, to which SEF and the IFC/GEF SMEP Program were expected to contribute, was:

"To build and grow SMEs as effective channels of distribution of modern energy products and services to un-served and under-served households, businesses and communities in developing countries."

- ***How have the SMEs performed financially, socially, and environmentally? This assessment should also enable the Consultant to comment on the reliability of E+Co's M&E system. Actually avoided GHG emissions need to be calculated only for the SMEs included in the case studies.***
- ***How have the SMEs changed since SEF's and/or the IFC/GEF SMEP Program's intervention? What aspects of the change can be attributed to these interventions vs. to other forces?***
- ***The SEF was designed to address a (perceived or believed) market gap in financing and advisory services for sustainable energy SMEs. What alternative sources of financing and technical assistance were available to the SMEs, if any, and at what price? Why did the SMEs choose E+Co? Are there instances where E+Co's intervention and/or the SMEs it financed have affected this market gap? Are new sources of financing available now?***
- ***What kinds of technical assistance did SEF and the IFC/GEF SMEP Program offer? Did and do the assisted SMEs have additional needs that are critical to their success but that E+Co lacked or lacks the resources to meet?***
- ***How will the SME continue to grow once the SEF and IFC/GEF SMEP Program support end? Will E+Co's exit from its investment negatively affect the SME's growth plan?***
- ***Are the environmental and financial benefits created by and for E+Co and the SME borrowers likely to continue post-loans for the investee companies and for E+Co?***
- ***How have the SMEs performed financially, socially, and environmentally?***

Based on our analysis of the M&E system, progress reports and case studies, we adjusted the Triple Bottom Line results and they are presented for the two programmes in Table 4.6.

Table 4.6 Socio-Economic Performance Indicators for SMEP and SEF portfolios, as of Dec. 31, 2008

Indicator	SMEP	SEF
GHG emissions avoided (metric tonnes/year) directly	9,966	196,631
Hectares of land managed sustainably	11	73
Number of Entities Receiving Advisory Services	8	41
Number of Entities Receiving Financing	8	28
Number of Jobs	492	655

[34] This section draws extensively from the Case Studies. See Appendix 2 for greater detail and supporting data and analyses.

Number of people receiving access to improved services	87,434	344,260
Cumulate Renewable energy produced (MWh) (directly)	30,997	99,112
Value of financing facilitated by Advisory Services	$7,075,378	$ 37,949,799

The case studies validate the general results from the GMS in terms of the direction of benefits – strongly positive. Performance in the area of social and environmental benefits was harder to measure than financial benefits because less attention is spent by E+Co on verifying these and because of the problems discussed above. We believe that many of these benefits are undercounted.

4.2.1 E+Co's Monitoring and Evaluation System

To measure E+Co's and SEF's impact, the team had to rely on the M&E system and this section briefly presents our findings. Given the importance of M&E, it is discussed in other sections of this report and in greater detail in Appendix 1 and 2. The first visit to E+Co's offices and our desk reviews provided an understanding of the M&E system, GMS, and the results in the form of the Triple Bottom Line (TBL) that E+Co uses in its efforts to obtain funding. The field visits provided the team with an opportunity to validate the M&E system and to assess its performance. The team did extensive audit and analysis of the M&E system and our main findings are:

- **That the social and environmental benefits are reasonably well estimated.**

Our experience with the case studies indicates that the environmental characteristics of the technology are well known and correctly represented in the GMS. For example, a 10 MW hydro project operating at 80% will produce 70,080 mWh of electricity; if this is displacing diesel or residual fuel oil, then carbon equivalents per ton of fuel is well known[35]. The entrepreneur will have a reasonably good idea about the number of people employed. Likewise, they have a very good handle on the number of households to be served and similar information.

Our experience with the case studies indicated that on average they have undercounted the total environmental benefits of the project; where there have been errors; they are due either to lax observation of procedures, the use of regional or global averages for estimation, or inadvertent errors in aggregation.

- **That the GMS performs well for the intended purpose.**

E+Co uses the GMS "for reporting to current supporters, engaging new donors and investors and, more importantly, documenting the linkage between clean energy and global development goals".[36] Since the goals are high level, the GMS is more indicative; its strengths are in assessing the direction of the TBL rather than the precise quantities. The exception is financial information.

[35] Even if these are derived from averages in another country or region, the differences between the carbon content of one diesel fuel over another are not usually significant.
[36] E+Co's Monitoring and Evaluation Data Collection and Assessment Methodology, page 3.

- **That while the GMS estimates project level benefits well, it does not do a good job of allocating the benefits across different sources of funds in the same project.**

When E+Co invests in a project developer, like SME-REnewable Energy Ltd (SME-RE), each investment is a different project and from what can be observed, it has not comingled funds from different sources. Thus, it is easy to track the benefit attributable to any given source of funds.

This is often not the case when E+Co invests in stand-alone projects (e.g., La Esperanza) or in equipment sales (e.g., Tecnosol). In the case of both cases, there are methodological issues and E+Co procedural issues. In La Esperanza, for example, the SMEP funding was to leverage other funding that was necessary to construct Phase I. Subsequent investment by others dwarfed E+Co's initial funding and provided the funds for the construction of the dam. One of the methodological issues is how to allocate the benefits between SMEP and the other investors? Is it on the basis of relative investment? What if the importance of the investment was greater than its relative financial amount? If E+Co had not supported La Esperanza in the early stages and remained with it, there is a strong likelihood that the project would not have moved forward.

SEF funding was primarily to augment supply during the dry season to increase efficiency after the main project had been completed and was operational. How then should benefits be allocated?

E+Co practice has been to allocate all the benefits to each funding source. The current approach is not unreasonable under the circumstances; although there will always be cases where it clearly overstates the benefit from the E+Co support, most of the time it will be impossible or at least very costly to identify the specific social and environmental benefits arising from a particular loan, and in general it provides a reasonable approximation for the E+Co's purposes.

- **That there are a number of small fixes that can significantly improve the GMS and make it both a more reliable reporting system and a better tool.**

The first step in auditing the process was to review the M&E data and reports for all SEF and SMEP investments. The team looked at consistency in application of definitions and procedures and at thoroughness. As a result, several areas of low cost-no cost improvements were identified.

1. Use of global or regional averages for result estimation is neither necessary nor accurate.

In many instances E+Co uses outputs of the project to estimate other results such as using energy produced to determine carbon offsets or energy produced to determine the number of households supplied. It does this often with regional coefficients. For example, in Thailand two investments sold electricity to the national utility. To estimate the number of households served, the annual electricity produced was divided by the average household consumption for Asia. These results in 3,693 households served. On the other hand, if the average for Thailand is used (and it is readily available), then the number of households served rises to 9,716, an increase of over 260 percent.

Another example is the use of 5 persons per household to estimate number of people served. For any given country, this can lead to significant misreporting. For example, average household size in Thailand is 3.4. Moreover, there is no assurance that the distribution of results and countries in the E+Co portfolio is representative of the set of countries used to determine average household size. Thus there is no way to know whether the E+Co results will overstate, understate or be representative of the expected results. Both average electricity consumption and average household size are readily available (e.g. from the World Bank website and from national statistics) for most, if not all, countries and there is no reason for E+Co not to use the more accurate information.

2. Define the terms in both the Entrepreneurs Handbook and in the E+Co's Monitoring and Evaluation Data Collection and Assessment Methodology Manual.

The team found numerous examples where a lack of definition can and does lead to ambiguous reporting and data input. For example, it does not define "productive use", a category of purpose of the project. In different circles this can mean either energy for end-use such as electricity or energy used in income generation.

3. In the field, the M&E officers are not thorough or consistent in their reporting and data validation.

Examples include:

In the progress report and baseline report for Thai Biomass Power Company, the entrepreneur or the M&E officer reported the number of customers as 1, the utility, and to the question of who are the energy customers reported "households". The Manual indicates that this should be adjusted (energy sold divided by average household consumption to yield the number of customers). This was not done. ***It was caught back at E+Co HQ and the number of customers adjusted according to the manual.***

Tecnosol reports both households and other customers. However, only household customers are picked up in the total submitted to HQ for compilation in the GMS. Two problems exist here. First, the survey asks for "# of customers or households served to date". Without clear instructions many SMEs report one or the other here but not both. Later in the text some put in the customers they did not include in the question above. So the survey needs to be corrected with either two questions: (1) Number of households and (2) number of other customers served. Or, if only the number of total customers is important, the question should read total number of customers served. Second, the M&E officer did not pick up the problem and report it in such as manner that both sets can be counted. ***E+Co HQ did not correct this problem, so Tecnosol GMS results do not include the other customers.***

The Tecnosol baseline report indicates that the number of employees at baseline, prior to disbursement, is 60 and the progress report from the same electronic file indicates that the number is 12. The problem is that the baseline report is for Tecnosol III but the progress report is for Tecnosol II and III. There are a host of concerns here such as consistency and comingling of results when reporting on individual investments by donor is required.

4. There are inconsistencies in the application of policy with regard to data reporting.

Tecnosol and La Esperanza are examples of projects where E+Co has had multiple investments from different donors. For most donors, the accurate allocation of project outcomes to their investment is important. Tecnosol III has a baseline but it is prior to Tecnosol II. La Esperanza has the following statement in the baseline report: "Since this is our third investment in this enterprise, our latest progress report provides the baseline data." The progress report then states that the baseline data is not available.

4.2.2 Change and Attribution to SEF's intervention

How have the SMEs changed since SEF's intervention? What aspects of the change can be attributed to SEF's intervention vs. to other forces?

> "When we got into trouble E+Co found solutions… they didn't give up on us when things got tough" (Ron Turner, La Esperanza)

Based on our sample of six businesses and 8 investments, it can conclusively be said that all these have shown professional maturation; most have improved financially and are beyond where they were expected to be; two businesses have grown but are facing serious challenges; and significant socio-economic benefits have been generated. The following changes are directly attributable to E+Co's technical assistance and, therefore, to SEF/SMEP:

- some of the SMEs now understand how to approach financial institutions and complete the loan application process. This has traditionally been one of the challenges facing SMEs seeking funding. Now with both the knowledge of business methods and prior funding history (through the SEF), SME should be better able to move outside the E+Co/SEF sphere and directly seek commercial finance.
- the SMEs understand the importance and value of carbon credits and those with large enough offset streams are beginning to financially benefit.
- some of the SME sponsors were financially and commercially savvy before E+Co assisted them but many were not. Some SMEs are now trained in financial projections, cash flow management and similar skills through the SEF loan application process. This is not done through formal training but usually the one-on-one interaction between the Investment Officer and the entrepreneur.
- the social and environmental benefits are greater than when IFC funds were first injected into the SMEs.

4.2.3 Alternatives to SEF Financing

The SEF was designed to address a (perceived or believed) market gap in financing and advisory services for sustainable energy SMEs. What alternative sources of financing and technical assistance were available to the SMEs, if any, and at what price? Why did the SMEs choose E+Co? Are there instances where SEF's intervention and/or the SMEs it financed have affected this market gap? Are new sources of financing available now?

> "Local banks have liquidity but are not financing renewable energy" (Elsia Paz, AHPPER).

As discussed earlier, there are two ways in which SEF seeks to close the gap. One is to directly finance SMEs. It is doing this and from what can be seen in the mid term evaluation is doing so successfully. However, with limited funds, the SEF can only address a small portion of this gap directly and so the second way is by example and by working with other entrepreneurs, banks, NGOs and other stakeholders not directly involved in an SEF transaction to catalyze the market. The next generation of SEF needs to more directly address this in the terms of reference. It needs to spell out precisely how this will be achieved, what tools will be used and how this is influenced by serial investing and growth versus seed investing.

The SEF facility bridges this gap. E+Co's developmental mandate and its knowledge of RE and EE technologies has greatly helped educate its clients. This is especially evident in Cambodia where the SME-RE program has created a market for rice husk gasification and power generation. Rice mills, rural electrification companies, ice factories, brick kilns have all adopted a new technology despite the significant investment it requires. Significant diesel fuel savings have been achieved and SMEs have an opportunity to invest savings to enhance productivity and improve quality. These benefits would not have occurred without the SEF funds and E+Co's management of these funds.

Conversely, while SEF financing has not on the whole crowded out investments, it has the potential to "crowd in" additional financing from the local financial markets through its awareness programs and its demonstrated (and profitable) success in extending financing to customers who would not ordinarily qualify for financing. Thus SEF financing helps to address the market failure and stimulate local financing in the long term. Nevertheless, in the short to medium term, it remains necessary to continue extending financing facilities such as SEF.

There are instances where SEF's intervention and/or the SMEs it financed have changed the market for SME RE/EE loans. SEF provides capital where none would otherwise have been available; by doing so it has invested in 28 clean energy projects that would not otherwise have received the funding and other support. The SEF model seeks to bring SMEs to the point where they are eligible for commercial financing. For example, Tecnosol in Nicaragua has outgrown E+Co's ability to provide financing and is going back to the private sector for additional funds. This was the only "graduation" among the case studies. Transsen does not need to graduate.

However, we believe that there is another success story that is attributable to SEF. According to E+Co senior management, SEF was crucial to E+Co. It allowed the company to prove the concept and to attract other funding; it kept E+Co operations going. Indirectly through E+Co's continued success, the SEF proves models, concepts and creates demonstration projects that lure commercial financing. The Asia regional office has a strategy that is beginning to pay off and in which it is using SEF funds. E+Co invests in a sector and at each step invites banks and other investors to participate. They don't at first but they do learn about the sector. At some point, the concept is "proven" and new capital enters the market; Investors find that commercial capital is preferable to E+Co and E+Co exits. E+Co did this with the first cassava gasifier and three gasifiers later, it exited that market and commercial financing took over.

4.2.4 SEF Technical Assistance

> What kinds of technical assistance did SEF offer? Did and do the SMEs that SEF assisted have additional needs that are critical to their success but that E+Co lacked or lacks the resources to meet?

The CGA stipulated that the following technical assistance was expected to:

1. Build capacity of entrepreneurs at local level
2. Provide targeted support services to entrepreneurs and enterprise opportunities
3. Update, improve, translate and distribute Energy Entrepreneur toolkits
4. Engage third party expertise to assist enterprise
5. Prepare business and investment plans and proposal
6. Source co-investment
7. Provide services to achieve growth and replication
8. Document and communicate experiences and best practices.

E+Co has offered primarily direct support to enterprises that it is investing in business plans, co-investment, business skills and rudimentary technology advice.

E+Co's technical assistance has been important in making SMEs aware of environmentally friendly technologies that also present good financial opportunities. This is especially evident in Cambodia where the SME-RE in partnership with E+Co was successful in creating a market for biomass gasifier-based power generation. SEF funds were instrumental is helping SME-RE to evaluate various gasifier technologies and manufacturers, and select a suitable supplier. SME-RE continues to provide training to its customers. E+Co has assisted its clients in financial management and reporting. Conversely E+Co's technical assistance to case study SMEs in Thailand was somewhat limited. BMP already had STFE, an engineering firm, as a shareholder and subsidiary which provided technical support to the plant. A&P Lubricants had an ongoing operation importing and distributing hydrocarbon refrigerants but needed financing after a change in ownership of the firm. E+Co did provide A&P Lubricants with assistance in improving its financial management systems.

Technical assistance is a crucial need for SMEs especially in rural areas. These SMEs need to be educated about the benefits of RE and EE technologies, which can provide attractive financial returns. E+Co provides some technical assistance to its clients but does not appear to be equipped or staffed to provide the amount or depth of support that some of these businesses require. In some ways the company has become too lean. At the same time, however, E+Co is a commercial, profit-oriented enterprise. The balance between its developmental and commercial objectives must be clear going forward.

It is apparent that E+Co learns from its mistakes and develops the experience and skills so that they are not repeated in the future. Loan criteria have become tougher and E+Co's due diligence on new customers more stringent, such that it is hailed as a model by other developmental organisations (for example, the Inter-American Development Bank).

From a historical perspective, it is unclear how much technical assistance was provided, to whom and what kind since E+Co does not start keeping records of that detail until 2008. What is clear is that, as can be expected, more technical assistance was given to seed and equity investments than to growth investments. For example, it is clear that E+Co's support to SME-Re (an E+Co equity investment and a SEF loan recipient) is crucial in everything from business planning to finance and technology decisions. For later stage investments like Tecnosol III and Transsen, E+Co appears not to have added value in technical services.

We failed to observe or find evidence of much TA applied to a broader audience that would support replication such as training workshops for potential entrepreneurs or formal TA with or to local financial institutions.

There appears to be no difference in the kind and level of technical assistance provided under SMEP and SEF when it comes to loans. This is because the E+Co model of service delivery does not change from one funding source to another. In effect, E+Co subsidised the SMEP technical assistance costs from its other resources.

4.2.5 Sustainability

> How will the SMEs continue to grow once the SEF support ends? Will the E+Co exit from its investment negatively affect the SME's growth plan?

This is best answered by describing the E+Co approach or view of SME development[37]. In evaluating the case studies, the team developed an SME paradigm that is implicit in E+Co's approach and which helps to frame many of the issues that this report investigates. SMEs have a growth path in terms of professional and commercial maturity as shown in Figure 4.1. E+Co's technical assistance helps to address this and move them along the growth path. This can be seen in the growth of SME-RE, for example, as it moves upward. This growth path is represented on the vertical axis where 1 is a very low level of professional/commercial development and 10 represents a fully functional best practice SME. The country's growth path is represented on the horizontal axis; similarly 1 is a very low level of country development and 10 represents best practices. The country path is somewhat more complex. It includes factors such as the enabling frameworks for SMEs and energy, subsidisation of energy, environmental regulation, maturity of commercial banks, preferential treatment or incentives for clean energy and many other considerations.

The figure is divided into four quadrants. Quadrant I is where E+Co services are not as highly valued because SMEs have gained experience and enabling institutions and frameworks are well developed. SMEs are beginning to find other financing and can

[37] This is not a view that we found written in any E+Co materials but one which reveals itself piece by piece in discussions with staff, donors and entrepreneurs.

function as commercial entities often without E+Co assistance. Quadrant IV represents the worst case where both SMEs and the country are just beginning to move towards best practices.

E+Co focuses its activities primarily in quadrants II, III and IV. E+Co has the ability to impact the SME growth path significantly, both with the provision of capital and with technical assistance. Take the example of SME-RE. When E+Co first began working on this investment, the organisation did not even exist (effectively Quadrant IV). E+Co helped the parent, an NGO, to develop it. Slowly with time and E+Co support, SME-RE's professional/commercial capabilities have grown and now it is Quadrant II. At the same time, Cambodia has made changes which strengthen the environment in which SME-RE operates and so the movement is upward to the right. Transsen, in Quadrant I, no longer needs E+Co financing. In light of E+Co's and IFC's broader goals of market catalyzation, it is questionable whether SEF funds should have used for Transsen or for an entity unable to obtain commercial financing. Moreover, given the concern about crowding out, investments of this type should be reviewed.

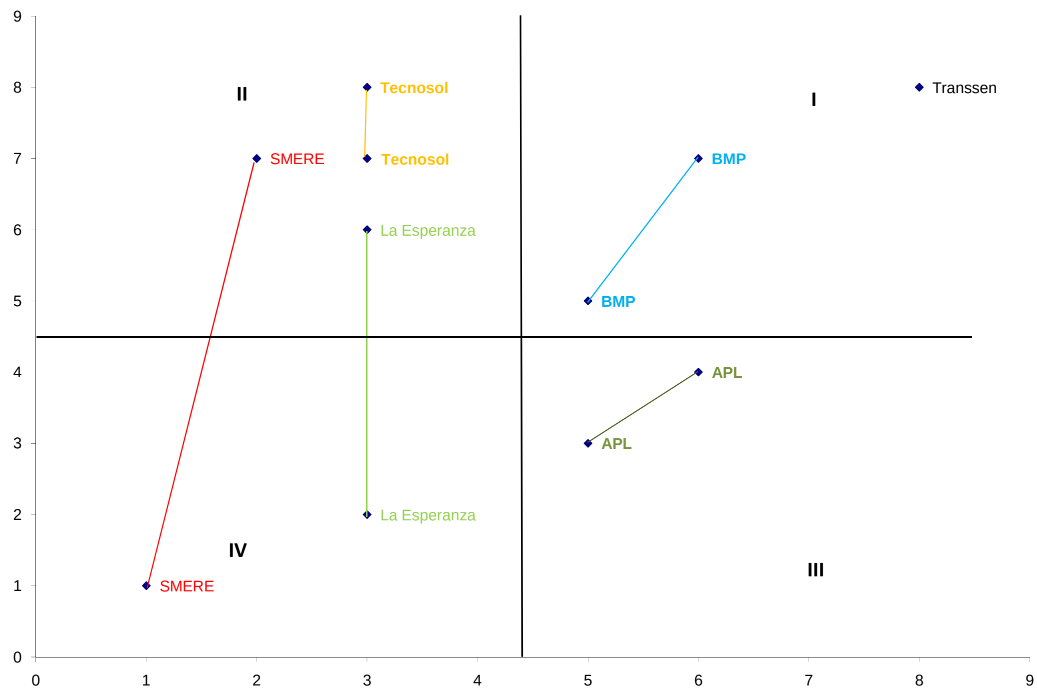

Figure 4.1 E+Co View of SME Maturity

The SMEs plotted in Figure 1 are the case-studied companies; more information is available in Annex 2. Transsen, a fully functional commercial company, began in quadrant I and while benefiting commercially from SEF funds did not grow professionally as a result.

How will the SME continue to grow once the SEF support ends?

The simplest answer depends on two factors: (1) whether E+Co would provide funding once the SEF ends and (2) in which quadrant the SME is located. Based on the sample of companies, our interviews and analysis, it is likely that for most SMEs E+Co would attempt to provide funding through some other source and continue to support the entrepreneurs in seeking loans from elsewhere. There is an actual example. After the third loan to SME-RE, the IFC disallowed any further investments from SEF. E+Co found funding for another 25 gasifiers. In the case of an existing equity investment, E+Co would simply continue to provide support. Finally, there are companies that would be in quadrant I when further funding was cut off; they do not need E+Co anymore.

> Will the E+Co exit from its investment negatively affect the SME's growth plan?

The answer depends on which quadrant the SME is located. Based on our analysis and our broad experience in the sector, no true peer to E+Co can be found. So while E+Co can shift to other funding sources if SEF funding disappears, the SMEs really don't have anywhere else to turn where they can obtain funding and technical assistance intertwined in a service delivery platform. While these resources are available separately in the market, the cost of obtaining the same combination of capital and expertise, delivered in such a seamless package, is likely to be prohibitive, even if the SMEs were capable of sourcing it.

Perhaps more important than whether the existing SMEs with SEF financing will be negatively impacted is the question of how the other sector SMEs looking for assistance will be impacted. All evidence suggests that in the absence of SEF-type funding, they would find it even more difficult to access funding than existing borrowers, who will at least have the benefit of E+Co's past support and a track record of repayment. It is difficult to avoid the conclusion that in the absence of the SEF or a similar analogue, penetration of clean energy in SMEs will be negatively affected and possibly decline.

4.2.6 Post SEF Performance

> Are the environmental and financial benefits created by and for E+Co and the SME borrowers likely to continue post-SEF for the investee companies?

The environmental and financial benefits from the projects financed by E+Co will continue beyond E+Co's involvement in the project. The projects financed through the SEF facility are RE and EE projects that will continue to deliver benefits throughout their lives. For example, if Transsen disappears tomorrow, all those solar water heating systems installed would continue to function up to their expected lives. Consumers could and would find other companies to maintain the equipment and would most likely replace their old SWH with a new one when the time comes. If the company that owns La Esperanza goes bankrupt, it is unlikely that the hydro plant will cease operating. It is more likely that another investor would step in.

5 REPLICABILITY OF THE MODEL

Describe instances of replication, if any, by SMEs and E+Co: (a) SMEs replicating their activities elsewhere and/or being replicated by others; and (b) E+Co replicating a certain intervention model across several SMEs and/or E+Co being replicated by others.

We found several examples of replication. In Cambodia, the SME that E+Co helped to establish and which the SEF funded its first three projects, has now replicated that experience to another 27 clean energy projects. One of those first investments is now manufacturing biogasifiers itself and trying copy SME-RE. SME-RE is considering expanding into Vietnam and Laos.

SME-RE now as a total of 30 clients all stemming from the original SEF funding. Those 30 gasifiers are responsible for an annual saving of 3 million litres of diesel and generate 8 tons of carbon offsets annually.

E+Co took its experience with SME-RE in Cambodia and acquired equity in BMP Thailand. In Nicaragua E+Co replicated its experience with Tecnosol and has invested in several other PV companies. Moreover, Tecnosol is being replicated by its competitors. E+Co's strategy of targeting a current or potential market leader in a particular field and using this as a springboard to further loans to competitors and companies up or down the value chain (manufacturers, agents) is a valid one and in this case (PV in Nicaragua) it has been successful. The next stage will be to determine whether the Nicaraguan experience can be replicated elsewhere, starting in Central America.

In Honduras the work conducted through the SMEP and SEF is now being used by other hydros. E+Co is now supporting the project promoted by Elsia Paz, President of the Honduras Renewable Energy Association and a former employee of La Esperanza. CABEI and AHPPER argued strongly that there is a need for resources to support developers at the early stages to prepare bankable documents (feasibility study, business plan) to help them get financing.

Replication is built into two of E+Co's investment strategies. The first that we witnessed was a favourite of the Asia office, investing in a project developer and continuing to invest in their individual projects. E+Co has done this with SME-RE, W2E and Power Source. The second model is that of value chain investing where E+Co invests with companies all along the value chain as a way of strengthening the sector.

We found only one example of E+Co itself being replicated: SME-RE, which E+Co helped to found. Additional details on replication appear in the appendices.

There is a broader context for replication that the TORs do not address, that is the replication in the market place by SMEs or entities that are not directly involved with SEF or E+Co. Given that E+Co and IFC have limited funds, the direct work they can do is only a drop in the bucket of the sector's needs in any given country. It would appear that there is very limited effort spent on educating those outside a specific investment and that TA to those not directly involved in a SEF deal is very limited or nonexistent. This may not be the case but our field visits indicated only an informal mechanism through which "outsiders" were involved.

Opine on whether the SEF and/or IFC/GEF SMEP Program models can be replicated (a) with E+Co in a different geography or market segment or, (b) with other institutions (e.g. GVEP International)

Opine on whether it is important to develop other players like E+Co, and also what it might take to develop such market participants possibly in the same or other sectors.

The short answer is that our analysis indicates that E+Co has done a very good job and that the SMEP and SEF were well designed, so that we propose:

1. Neither the SMEP nor the SEF should be replicated in their entirety. Rather, there are characteristics of SMEP and SEF that should be replicated and lessons learned that should be incorporated in the next generation of Facility design. We have listed those characteristics in earlier sections of this report.

2. It is important to the extent possible that the E+Co model continue to be supported and we have provided our reasoning above. E+Co should be one of the entities invited to participate in the next Facility since it has proven its concept and its ability to deliver. However, the absorptive capacity of E+Co is limited and the best way to increase the reach and scope is to support both E+Co and other organisations with a similar approach. Experience has shown that supporting more than one service provider can lead to innovative solutions and given the depth and breadth of market imperfections confronting SMEs, this is important. Furthermore, this would place IFC in a position of being able to disseminate such innovations across the market (providing that the structure of the new Facility allows this).

3. E+Co and S^3IDF have shown that their models work for energy. Should IFC replicate the SEF in other geographic sectors? Yes, provided that it prioritises those countries according to their ability to support successful SMEs and that it or the Fund Manager has a well thought out strategy. Given the success SEF had of building off of existing E+Co operations, it may be prudent to consider expanding to areas where similar service providers have operations. For example, PA in Sri Lanka or S^3IDF in India.

4. E+Co owes part of its success to its focus on energy and it does not venture into other sectors. S^3IDF and PA have successfully worked with SMEs in other sectors such as ICT and water and those SMEs face many of the same problems that clean energy SMEs face. IFC chose clean energy in part because of the environmental benefits and in part because of the economic benefits: economies grow on commercial energy. Similarly, other infrastructure can provide critical economic benefits. IFC may wish to consider whether to attempt to replicate the SEF experience in other sectors, taking into consideration:

   a. The extent to which those investments can yield a sufficient private financial rate of return to entice private sector providers and eventually entice commercial capital, and

   b. The extent to which service provides can be found that either do currently emulate the E+Co model or are willing to do so.

5. That institutions such as GVEP International (Global Village Energy Partnership), while important in their own right, are not a proper substitute for an active manager. SEF, unlike its predecessors, has been a success partly due to its design and partly to adopting the E+Co model of lending plus TA. Since SEF was designed for E+Co, the two can't really be separated. GVEP and similar institutions don't act like E+Co: they simply on-lend or provide grants on a commercial basis. This does not address the market failures discussed above.