



**United Nations Environment Programme  
(UNEP)**

**Final Evaluation of the UNEP Project  
“Enhancing Information for Renewable Energy Technology  
Deployment in Brazil, China and South Africa” (EIRET)**

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## Abbreviations

APR	Annual Progress Report
BMU	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
BR	Brazil
CDM	Clean Development Mechanism
CGC	China General Certification Center
CMA	China Meteorological Administration
CN	China
COPPE	Institute for Research and Postgraduate Studies in Engineering, Federal University of Rio de Janeiro
CRED	Center for Renewable Energy Development, Beijing
CRSES	Centre for Renewable and Sustainable Energy Studies, South Africa
CSP	Concentrating Solar Power
CWEA	Chinese Wind Energy Association, Beijing
DLR	Deutsches Zentrum für Luft und Raumfahrt, German Aerospace Center
EE	Energy Efficiency
EIRET	Enhancing Information for Renewable Energy Technology Deployment in Brazil, China and South Africa
ERI	Energy Research Institute, Beijing
FR	Final Report
GEF	Global Environment Facility
GHG	Greenhouse Gas
HRMS	Human Resource Management Service, UNEP Evaluation Office, Nairobi
IA	Implementation Agreements of the International Energy Agency (IEA)
IEA	International Energy Agency
IP	Implementation Progress
IR	Inception Report
IRENA	International Renewable Energy Agency
IRP	Integrated Energy Resource Planning
M&E	Monitoring and evaluations
MDG	Millennium Development Goal(s)
MoU	Memorandum of Understanding
MTR	Mid-term Review
NDRC	National Development and Reform Commission, China
NEA	National Energy Agency, Beijing
NREL	National Renewable Energy Laboratory, USA
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
PIR	Project Implementation Report
PM	Project Manager

PPE	Instituto de Pós-Graduação e Pesquisa de Engenharia, Brazil
PV	Photovoltaics
RAF	Resource Allocation Framework
RED	Sino-Danish Renewable Energy Development Project, Beijing
RETScreen	Clean energy project analysis software by the Government of Canada
ROAR	Result Oriented Annual Report
SHC	Solar Heating and Cooling (IEA Implementing Agreement)
SRF	Strategic Results Framework
SWERA	Solar and Wind Energy Resource Assessment
TE	Terminal Evaluation
TOR	Terms of References
UCT	University of Cape Town, South Africa
UFRJ	Universidade Federal do Rio de Janeiro, Brazil
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNDG	United Nations Development Group
UNDP	United Nations Development Programme
UNDP-CO	UNDP - Country Office
UNEG	United Nations Evaluation Group
UNEP	United Nations Environment Programme
UNEP-DTIE	United Nations Environment Programme, Division of Technology, Industry and Economics
UNFCCC	United Nations Framework Convention on Climate Change
UNOPS	United Nations Office for Project Services
USAID	US Agency for International Development
WB	World Bank
ZA	South Africa

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Exchange rates for this project as of 16 January 2012:

1 US Dollar	6.2875 Renminbi Yuan
1 Euro	7.9667 Renminbi Yuan

## Project Identification Table

The table below provides basic information on the project “Enhancing Information for Renewable Energy Technology Deployment in Brazil, China and South Africa” (EIRET). It was drawn from the evaluation terms of reference (TOR) and adjusted according to the new information gathered during the evaluation.

*Table 1: EIRET project identification table*

<b>Project Number</b>	CP/4040-09-02 (3743)		Implementers
<b>Sub-programme</b>	Division of Technology, Industry and Economics/Energy branch (DTIE)	<b>Implementation</b>	<p>UNEP DTIE With supporting organisations: Brazil: National Institute for Space Research, University Federal de Rio de Janeiro, and the Center for Integrated Studies on Climate Change and the Environment</p> <p>China: Energy Research Institute</p> <p>South Africa: Centre for Renewable and Sustainable Energy Studies, University of Stellenbosch Energy Research Centre, University of Cape Town.</p>
<b>Theme</b>	UNEP’s Climate Change strategy: Theme 1: Facilitating a transition towards low carbon societies.	<b>Total Cost</b>	US\$ 876,005
<b>Expected Accomplishment</b>	Countries make sound policy, technology and investment choices that lead to a reduction in greenhouse gas emissions and potential co-benefits, with a focus on clean and renewable energy sources, energy efficiency and energy conservation.	<b>Project Duration</b>	36 months (initially 2 years, but received no cost extension of 1 year).
<b>Geographic scope</b>	Brazil, China and South Africa	<b>Actual start date:</b>	Nov 2008
		<b>Completion date:</b>	Dec 2011 (actually finished in June 2011)

## Executive Summary

The **main aim of the Terminal Evaluation** is to understand and **give evidence on how successful the EIRET project<sup>1</sup> was in helping national governments** in Brazil, China and South Africa gain a better understanding of the resource, policy, risk management and technology information requirements associated with expanded, renewable energy technology deployment in these countries. This evaluation has two primary purposes: (i). to provide evidence of results to meet accountability requirements; and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP, and their partners.

Our **review** of project documents encompassed the given Terms of Reference and all UNEP and country-level project reports. In addition, a number of **interviews and site visits** have been carried out from January to February 2012. All in all, 17 interviews were conducted in order to provide the evaluation team with a clear and deep understanding of the project's outcomes. As a **result of this evaluation**, we have the following **findings** (details can be found in chapters II.A to II.D of this report).

- (1) In general, **wind and solar energy technologies still require policy support** in those parts of the world, as private actors by themselves will not deliver the required penetration on their national energy markets. Wind and solar resource assessments represent the critical first step of a whole cascade of elements necessary for successful solar and wind energy development. Therefore, the EIRET project was – and still is – **highly relevant** for renewable energy deployment. A very positive feature of the project was that it offered a relatively **large flexibility** in adapting the work program to the latest research needs in the three countries.
- (2) **Most project outputs have been delivered** as planned, and the project partners have made a great effort to influence real-world renewable energy policy-making. Since February 2012 – with a certain delay in publication – a summary report for the stocktaking and training component of the project is available at <http://www.unep.fr/energy/>.
- (3) **Weaknesses** of the project include missing outreach in the form of workshops with stakeholders and partially unsatisfactory proposals to national governments for more international cooperation. A summary report for the modeling component of the project is still missing.
- (4) The internal project **documentation** is comparatively weak. For example, there are no formal minutes of meetings between the members of the team and nearly no documents on the input given by the peer review panel – except those showing panel member participation in in-country trainings. So far, there has been **no active dissemination of information** and lessons learned from this project to a wider range of stakeholders.
- (5) There were **no local country managers for oversight**, which could have given the project some additional input regarding proper reporting and dissemination activities.

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<sup>1</sup> “Enhancing Information for Renewable Energy Technology Deployment in Brazil, China and South Africa” (EIRET). The project's overall development goal was to promote both an improved policy environment for investment in renewable energy, and a stronger, more robust national solar and wind energy market.

- (6) Except for one meeting between the members of the team, there was **neither a kick-off-meeting nor a final meeting** between the members of the project. Moreover, **no presentations of project results** have been held in the participating countries.
- (7) There was nearly **no exchange between the countries' experts**. All experts interviewed on the country level see such South-South co-operation as a high priority, but it has not been attempted so far in the context of this project.

With regard to **regional implementation, we have the following findings** (see chapter II and the respective subchapters on Brazil, China, and South Africa for details):

- In **Brazil**, most tasks have been completed. However, the proposal developed in task 3.2 is not addressed to the Brazilian government, as required in the TORs. The transfer of know-how from the project to current energy policy in Brazil is comparatively weak as there is limited contact between the team and the government. We recommend holding a final presentation at the national level and disseminating the results achieved to the political and administrative level.
- In **China**, the given tasks were mostly fulfilled according to the TOR, with the exception being one seminar that was not held due to the unavailability of international experts. and task 3.2 which was cancelled to use the remaining budget for supporting Chinese expert participation in an Implementing Agreement meeting of the IEA. As there is a close relation between the project team and government staff, the project has made a considerable contribution to the implementation of renewable energy, especially through the proposal for the calculation of a feed-in-tariff for both solar photovoltaics (PV) and wind energy.
- In **South Africa**, the documents required in the TOR were produced, and the seminars were successfully held. For activity 3, a relatively short proposal is available, but no mapping of national renewable energy priorities is included. A weak point in the South African part of the EIRET project is the skepticism of most governmental organizations in South Africa, especially the Department of Energy, with regard to the deployment of renewable energy technologies in the country. The project team was not in the position to overcome this barrier.

Table 2 below summarizes the project achievements by country.

*Table 2: Overview of achievements of outputs and activities by country*

	<b>Brazil</b>	<b>China</b>	<b>South Africa</b>
<b>Stocktaking and training component</b>			
Activity 1: Overview of knowledge gaps	Achieved	Achieved	Achieved
Activity 2: Roadmaps with training courses	Achieved	Achieved	Achieved
Activity 3: Development of closer links with international initiatives	One proposal to IEA, not to BR government	Partially achieved*	One relatively short proposal (2 pages)
<b>Modeling component</b>			
Activity 1: Assessment of policy effectiveness	Achieved	Not applicable**	Achieved
Activity 2: Development of policy roadmaps	Achieved	Not applicable**	Achieved

\* task 3.1 achieved; task 3.2 cancelled to use the remaining budget for supporting Chinese expert participation in IEA activities  
 \*\* because the Chinese project partners did not participate in the modeling component (also see footnote 2 in section 1.B)



**Conclusions, lessons learned and recommendations** can be summarized as follows:

Lessons learned (see section III.B for details)

1. Conducting an institutional and systems analysis during project planning
2. Designing projects based on stakeholder requests
3. Signing a Memorandum of Understanding
4. Ensuring an effective project start
5. Carrying out regular monitoring
6. Reserving resources for project oversight
7. Ensuring continuity in project management
8. Feed-back from UNEP and the peer review panel on project results
9. Faster processing by UNEP
10. South-South cooperation

Recommendations concerning the current EIRET project (see III.C for details)

1. Organization of a final meeting
2. Public awareness activities and dissemination of results
3. Preparation of summary report for the modeling component of the project
4. Ensuring a strong relation between the project team and the final recipient
5. Local presentation of UNEP's summary EIRET report for the modeling component to policy makers in BR, CN, ZA
6. Reviewing suggestions for future activities in the renewable energy technology sector based on the EIRET project (see details below)

Suggestions for future UNEP support to the renewable energy technology sector (see III.C for details)

1. Workshop for users of SWERA and other tools / support on linking and combining satellite data from ground measurement data for resource assessment; wind resource and solar resource assessment training seminars
2. Effects of renewable energy penetration on employment, industrialization, electric network stability, fuel substitution and on energy prices
3. Extending to biomass, CSP, solar heating and geothermal energy
4. Extending to other regions
5. South-south co-operation required; information exchange via workshop, seminar or study visit between the three or more emerging countries on renewable energy development
6. Large scale solar energy and wind energy integration into the national power grids
7. Regulations and procedures for the integration of small scale PV systems to the local grid including smart grid systems
8. Detailed calculation / re-calculation of feed-in-tariffs (wind energy and PV)
9. Research on renewable energy technology transfer
10. Using international experience
11. Analyzing and overcoming the existing barriers on IEA Implementing Agreements
12. Technology Centers for Renewable Energies

The **summary ratings** are shown in the table on the following page.

Table 3: Summary ratings for the project “Enhancing Information for Renewable Energy Technology Deployment in Brazil, China and South Africa”

Criterion	Summary Assessment (BR - Brazil; CN - China; ZA - South Africa)	Total	EO ratings and comments
<b>A. Attainment of project objectives and results</b>	The project had a moderately satisfactory effectiveness, a highly satisfactory relevance, and a moderately satisfactory efficiency.	<b>MS</b>	<b>MS</b>
1. Effectiveness	This objective has for the most part been achieved, with some country-specific restrictions. For BR, the project was effective in improving the general understanding with respect to solar energy. For wind energy, the project came comparatively late. For CN, EIRET was particularly effective with respect to feed-in legislation, due to the influential role of the project partner ERI. For ZA, even though stakeholders judge the project as successful, it could have been more effective if it had stronger links into policy-making.	MS	MS
2. Relevance	The project was highly relevant, that is, consistent with both the sub-regional requirements and UNEP’s mandate. Reducing information barriers and increasing awareness regarding renewable energy is an important issue in the transition towards a low-carbon society.	HS	HS
3. Efficiency	The project has mostly been implemented efficiently, with some variance in the three countries. Pre-existing institutions have been used by connecting the project to earlier SWERA activities, and by planning links to established IEA Implementing Agreements. In practice, however, the IEA links have not been pursued as much as originally planned.	MS	MS
<b>B. Sustainability of project outcomes</b>	The project had a moderately likely financial, socio-political, and institutional sustainability, as well as a likely environmental sustainability.	<b>ML</b>	<b>ML</b>
1. Financial	The evidence for financial sustainability is mixed, ranging from a very likely successful continuation of EIRET-related activities to a more unclear outlook. In BR, the project team founded a joint venture with a private investor to launch the implementation of PV systems. In CN, ERI has further means of financing coming from the World Bank or the Energy Foundation. The ZA government is comparatively unlikely to finance future projects on the introduction of renewable energy technologies in ZA.	ML	L Comments from ZA partner suggest that the ZA government is more likely to fund future work than the consultants suggest.
2. Socio-political	In two of the three countries, the outlook for socio-political sustainability is more positive than in the third, where renewable energy in general has a lower standing. In BR, with the implementation of the Wind Charter and with the Sun Charter, the two main political directions for supporting renewables are on the way. In CN, the EIRET project is part of the know-how gathering for national climate policy. In ZA, current policy is more in favor of fossil fuels than renewable energy compared to the other two participating countries.	ML	L Based on comments from ZA partner, EO feels situation in ZA more positive than consultants fear.

<b>Criterion</b>	<b>Summary Assessment</b> <i>(BR - Brazil; CN - China; ZA - South Africa)</i>	<b>Total</b>	<b>EO ratings and comments</b>
3. Institutional framework	Institutional sustainability is likely to be high in CN, but less so in BR, and relatively unclear in ZA. In BR, the likelihood of institutional sustainability is higher for wind energy than for PV. CN has a stable institutional environment, and NEA will continue to be the main focus point on renewable energy in the future. In ZA, the institutional framework cannot assure a continuation of EIRET activities.	ML	ML
4. Environmental	No major problems have been identified in the three countries, with some minor concerns relating to the environmental sustainability of wind energy technology deployment in ZA. This topic was addressed during the seminars held in ZA, but it is unclear whether it could be satisfactorily resolved.	L	L
<b>C. Catalytic role</b>	The catalytic role has been the strongest in CN, less so in BR, and even less in ZA. None of the countries has adequately pursued opportunities for catalytic change through an exchange with international experts. The produced proposals to consider participation of national governments in the IEA's implementing agreements do not include a "budgetary point of view", which could have served the purpose of follow-on catalytic financing.	MS	MS
<b>D. Stakeholders involvement</b>	We understand that no public awareness activities have been executed within the project. In BR, no specific public relations work has been produced, and no press releases have been published. In CN, there was no public participation outside the governmental level and the level of renewable energy business associations. In ZA, the interaction between the EIRET project team and the respective main stakeholders in ZA is lacking.	MU	MU
<b>E. Country ownership and drivenness</b>	Country ownership of the project is relatively strong. Compared to other projects, EIRET was in the fortunate situation that in the beginning, UNEP gave the three countries the opportunity to define the areas and topics of research regarding their domestic support of renewables deployment. Due to this flexibility, the countries assumed responsibility for the project part allocated to the country.	MS	MS
<b>F. Achievement of outputs and activities</b>	Most project outputs could be delivered, with weaknesses relating to outreach in the form of workshops with stakeholders and proposals to governments (task 3.2). The BR proposal was not addressed to the BR government. For CN, task 3.2 was cancelled. For ZA, there is one relatively short proposal.	S	S
<b>G. Preparation and readiness</b>	The project arrangements were clear to the project partners. However, the project document did not explicitly detail the modeling component, and the overall project budget did not include a budget for it. Moreover, the project document did not contain a plan for the use of the policy roadmaps produced in this component; that is influencing factors towards ultimate project goals have not been considered.	MU	MU

<b>Criterion</b>	<b>Summary Assessment</b> (BR - Brazil; CN - China; ZA - South Africa)	<b>Total</b>	<b>EO ratings and comments</b>
<b>H. Implementation approach</b>	The project management adapted to funding needs early on by deviating from the original plan. Since policy advice was deemed an important issue, the project's focus shifted towards more policy advice, and the funds originally reserved for local consultants for project oversight were allocated to the modeling component. On the negative side, input from the peer review panel was limited to the initial project phase, and there was no South-South cooperation.	<b>MS</b>	<b>MU</b> Transparency, ownership and adaptability would have been improved if peer review group/steering committee had been more active and if start and end of project meetings had been held. Lack of documentation created problems in continuity.
<b>I. Financial planning and management</b>	The financial planning and management was appropriate. The budget was revised several times as a result of re-allocations between budget lines to meet the needs of the project. The actual total project cost, however, remained nearly the same.	<b>MS</b>	<b>MS</b>
<b>J. Monitoring and Evaluation</b>	All three countries provided internal quality control. Given the lack of local country managers for oversight of project activities, however, no direct external feedback could be given to project partners. This is particularly relevant with respect to the execution of task 3.2 and the associated weaknesses in output delivery.	<b>MU</b>	<b>U</b>
1. M&E Design	Evaluation and monitoring had been planned in the original project document.	<b>MS</b>	<b>MS</b>
2. M&E Plan Implementation	No local country manager were available for project oversight.	<b>MU</b>	<b>MU</b>
3. Budgeting and funding for M&E activities	There was an explicit budget provision for evaluation.	<b>S</b>	<b>S</b>
<b>K. UNEP Supervision and backstopping</b>		<b>MS</b>	<b>MS</b>
1. Quality of UNEP supervision	Project partners deemed the support from UNEP and the peer review panel helpful, especially during the project start. But they would have liked to get more feedback from the UNEP team in Paris or from the peer review panel.	<b>MS</b>	<b>MS</b>

## I. Evaluation Background

### I.A Context

The EIRET project needs to be understood within a context of **rapid economic development** in all three participating countries, which requires increasing capacities for electricity generation. This development has been – and still is – dominated by traditionally available energy sources, such as large hydropower in Brazil, and coal in China and South Africa. With intensifying international and domestic discussions on sustainable development and global climate change, however, the negative consequences from large hydropower plants and coal have been acknowledged; and solar and wind energy technologies have become more important. Still, considerable political support is needed to steer national energy policies away from traditional carbon-intensive development paths towards large-scale deployment of renewable energy technologies. Therefore, understanding each country’s own solar and wind resource potential and providing information on renewable energy technologies and opportunities is a critical prerequisite for advancing national renewable energy policy.

UNEP has already gained considerable experience with providing such information relevant to decision-making on renewable energy through its Solar and Wind Energy Resource Assessment (SWERA), which covered thirteen developing countries. SWERA ([www.unep.swera.net](http://www.unep.swera.net)) has been successful in making available energy resource datasets and related tools to remove critical information barriers, thereby leading to policy development and some large-scale investments in renewable energy (Brew-Hammond 2011).

### I.B The project

The project EIRET (“Enhancing Information for Renewable Energy Technology Deployment in Brazil, China and South Africa”) had as its **objective** to help national governments in Brazil, China and South Africa to gain a better understanding of the resource, policy, risk management and technology information requirements associated with an expanded renewable energy technology deployment in these countries. The project’s overall development goal was to promote both an improved policy environment for investment in renewable energy, and a stronger, more robust national solar and wind energy market. EIRET consisted of two components.

The **stocktaking/training component** (2008–2010) encompassed the following activities:

1. An overview of knowledge gaps with respect to present and planned developments regarding the resource, policy, technology and risk management information requirements associated with an expanded solar and wind energy technology deployment,
2. Roadmaps for filling those information gaps, including training courses, and
3. The development of closer links between national institutions and related international initiatives.

The **modeling component** (2010) – with only Brazil and South Africa involved<sup>2</sup> – included:

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<sup>2</sup> The Chinese project partners did not participate in the modeling component, because the Chinese government was only partly interested in it, and the technical institute that would have had to carry out this work was too busy.

1. An assessment of solar and wind energy policy effectiveness, and
2. The development of policy roadmaps.

The **target group** encompassed decision-makers in public and private organizations of the energy sector.

The **main partners** for project implementation in the target countries comprised the National Institute for Space Research and the Center for Integrated Studies on Climate Change and the Environment (Brazil); the Energy Research Institute (China); the Centre for Renewable and Sustainable Energy Studies, Stellenbosch University, and the Energy Research Centre, University of Cape Town (South Africa).

A **peer review panel** providing advice to the project management consisted of the United States National Renewable Energy Laboratory, the German Aerospace Centre and the Risø National Laboratory at the Technical University of Denmark.

UNEP-DTIE was responsible for overall project coordination. Initially, additional country project managers based in UNEP's regional offices had been planned for oversight. Here, however, an early **project modification** was made: It was decided that the local consultants for oversight were not needed, and that the funds originally reserved for this purpose could be allocated to the modeling component (see above).

**Financing** for EIRET encompassed earmarked contributions from the government of Germany (USD 775,225) and in-kind contributions from UNEP (USD 100,780).

## I.C Evaluation objectives, scope and methodology

### I.C.1 Evaluation's purpose and key question

This evaluation has two primary **purposes**: (1) to provide evidence of results to meet accountability requirements, and (2) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP, and their partners.

As a **key question**, this evaluation asks:

*“How successful was the project in helping national governments in Brazil, China and South Africa gain a better understanding of resource, policy, risk management and technology information requirements associated with expanded, renewable energy technology deployment in these countries?”*

This main question was further developed and divided into actual evaluation questions listed in section IV.B.

### I.C.2 Approach and methods

The **evaluation criteria** are grouped into four categories as shown in sections II.A to II.D. The evaluation was performed from 28 December 2011 to 2 April 2012. The **data sources** used throughout the evaluation include the references listed in the bibliography (IV.D) as well as 17 interviews with key persons – i.e. project partners, and important stakeholders from the public and private sector – by phone and email, and in the context of a country visit to China from 13 January to 18 January 2012 (see IV.C). An important **limitation** of this evaluation is the classic “counterfactual problem” – that we are inherently unable to determine how exactly the world would have looked like without the EIRET project being implemented. Without such a clearly defined baseline, our results necessarily carry some uncertainty.

## II. Project Performance and Impact

Chapter II is organized according to the four categories of evaluation criteria (as required in section D of the evaluators' TOR) and provides factual evidence relevant to the evaluation questions asked, as well as analysis and interpretation of such evidence.

### II.A Attainment of objectives and planned results

#### II.A.1 Achievement of outputs and activities

In this section, we assess, for each component, the project's success in producing the programmed outputs, both in quantity and quality, as well as to what degree their usefulness and timeliness has been achieved. The achievements under the regional and national demonstration projects receive particular attention.

Overall, **most project outputs have been delivered** as planned, with weaknesses relating to outreach in the form of workshops with stakeholders and proposals to governments regarding the international knowledge-sharing platform (tasks 3.1/3.2). More specifically, task 3.1 in the TOR required the project teams to “map out national renewable energy development priorities against areas with an active IEA implementing agreement”. Task 3.2 required them to draft “two succinct (five-to-eight page) “specific cooperation proposals” for consideration by the respective national government to describe “how the country might benefit from participation in the relevant IEA ‘implementing agreement’ and what this would entail from an organization and budgetary point of view”. The goal was “to provide the national government with a sound basis for deciding whether or not cooperation is desirable.” See Table 4 for an overview of achievements by country, and Table 5 below for more details on each country's participation in relevant solar and wind IEA Implementing Agreements.

Table 4: Overview of achievements of outputs and activities by country

	Brazil	China	South Africa
<b>Stocktaking and training component</b>			
Activity 1: Overview of knowledge gaps	Achieved	Achieved	Achieved
Activity 2: Roadmaps with training courses	Achieved	Achieved	Achieved
Activity 3: Development of closer links with international initiatives	One proposal to IEA, not to BR government	Partially achieved*	One relatively short proposal (2 pages)
<b>Modeling component</b>			
Activity 1: Assessment of policy effectiveness	Achieved	Not applicable**	Achieved
Activity 2: Development of policy roadmaps	Achieved	Not applicable**	Achieved

\* task 3.1 achieved; task 3.2 cancelled to use the remaining budget for supporting Chinese expert participation in IEA activities  
 \*\* because the Chinese project partners did not participate in the modeling component (also see footnote 2 in section I.B)

The **country-specific results** are as follows:

- **Brazil:** All project results and outputs for the Brazilian part have been produced in time. However, the proposal developed in task 3.2 differs from the TOR requirements in that it is *one* “research proposal to the IEA for solar PV development in Brazil” (which rather seems to meet the requirements of task 3.1), but is not addressed to the Brazilian government. On the other hand, from a different

perspective, the technical experts involved in EIRET were glad to get in touch with the IEA in this way. The proposal was less formally addressed to the Brazilian government, given the heavy official IEA process with member and non-member countries. Therefore, a more informal contact was preferred here to circumvent potential bureaucratic barriers.

- **China:** Most project results have been delivered, but task 3.2 was cancelled to use the remaining budget for supporting Chinese participation in a meeting of an Implementing Agreement (IA; of the International Energy Agency/IEA), in which China was not participating at the time. Moreover, a part of the policy training has not been carried out as planned. It was very difficult to get foreign experts to China, due to organizational problems and financial restrictions. Two workshops, one on “Wind Resource Assessment” and another one on “Solar Resource Assessment” were cancelled due to financial and organizational problems, as the budget of the project did not allow European experts to travel to China for participating in this event. The Europeans claimed that the proposed salary for the presentations was too low, which is why they decided not to go to China. The participation of the Chinese side in IEA IAs is concentrated on participation by CWEA in tasks 11 and 30. Task no. 33 is under process of participation.
- **South Africa:** All project outputs have been delivered. For task 3.2, a relatively short proposal (2 pages) is available, but no mapping of national RE priorities (task 3.1) is included. South Africa participates in the following IEA Implementing Agreements on renewable energy, namely Solar Power and Chemical Energy Systems (SolarPACES), Solar Heating and Cooling, Photovoltaic Power Systems, Bioenergy, Ocean Energy Systems, Energy Technology Data Exchange, Greenhouse Gas RD Programme. As an additional result of task 3.2, a website has been set up: <http://www.sun.ac.za/IEA/><sup>3</sup>. From the viewpoint of South Africa, the project was judged as a “very successful exercise” to support the implementation of renewables to South Africa, even if was very limited attention given to the project by the South African administration. The impact was mainly on non-governmental stakeholders; the seminars were very well attended and the discussion was reported as very lively. To complement the findings on participation in IEA Implementing Agreements, Table 5 provides an overview of participation status by country.

*Table 5: Participation in relevant IEA Implementing Agreements (IA) on solar and wind energy technologies\**

	<b>Brazil</b>	<b>China</b>	<b>South Africa</b>
<b>Participation in IA (2010)</b> as of 31 March 2010 (IEA 2010)	-	-	▪ Solar Concentrated
<b>Signatory of IA (2012)</b> as of 9 February 2012 (IEA 2012)	▪ Solar Concentrated	▪ Solar Concentrated ▪ Photovoltaics ▪ Wind (Chinese Wind Energy Association)	▪ Solar Concentrated ▪ Solar Heating and Cooling

\* Relevant Agreements are: Photovoltaics, Solar Concentrated (i.e. SolarPACES), Solar Heating & Cooling, Wind, Renewable Energy Technology Deployment. Note that IEA Implementing Agreements are also known as Multilateral Technology Initiatives.

<sup>3</sup> The website was accessible in early 2012, but it has been down at least since 15 Feb 2012. Its copy can be seen here: <http://webcache.googleusercontent.com/search?q=cache:ggHCKmIDrx0J:www0.sun.ac.za/IEA/+%22south+africa%22+implementing+agreement+site:za&cd=4&hl=de&ct=clnk&gl=de>



## II.A.2 Relevance

With reference to this evaluation criterion we assess, in retrospect, whether the project's objectives and implementation strategies were consistent with sub-regional environmental issues and needs, and the UNEP mandate and policies at the time of design and implementation.

Overall, **the project was highly relevant**, that is, consistent with both the sub-regional requirements and UNEP's mandate. To begin with, climate change as a global challenge was part of UNEP's 2008-2009 program of work. The transition towards a low-carbon society has been formulated in UNEP's climate change strategy. In this respect, reducing information barriers and increasing awareness regarding renewable energy is an important issue (Arvizu et al. 2011). The EIRET project has been part of UNEP's larger SWERA effort (see I.A) and represents a scale up of these successful activities. On the country level, the individual results are as follows:

- Brazil: The objectives of the project are still valid even after its completion. The outputs were produced according to the given TOR, but the project was mainly necessary and useful regarding solar energy because the Brazilian wind energy policy had already been completed before the start of the project.
- China: The objectives for this project were defined in 2008, and since then, the energy market situation in China regarding the use of wind and solar energy has considerably changed. China has the highest installed capacity of wind energy converters, and it is the world market leader in the production of PV systems. In 2011, about 18 GW of wind energy converters and over 2 GW of solar PV were added to the installed capacity. But even today – after huge changes in the provision of wind and solar energy to the Chinese economy – the project objectives are as valid as before. Developers implementing investments in solar energy had to use SWERA data, as other solar data for China were not available; for wind data, SWERA is also an important source. Therefore, all stakeholders reassured the necessity and usefulness of this project. The same applies to the software tool “RETScreen” (hyperlinked from SWERA) to calculate backflows from the investments. The project was highly welcomed by the Chinese side as they received a deep inside look into renewable technologies and policies. In the responses to a questionnaire sent out by the Chinese project team after the seminars, the project has received mostly positive feedback.
- South Africa: The project objectives are fully compatible with UNEP's goals. The project's effects are seen on the regional level and in particular for employment, which is an important topic in South Africa. Especially the training seminars are useful for the stakeholders, as South Africa is currently tendering 2,400 MW renewable energy projects, so that any assistance from outside is deemed valuable in supporting this ongoing process. PV system installations are judged as comparatively expensive compared to the relatively large regional resources of solar thermal energy. The SWERA wind atlas helped significantly in promoting and launching wind energy projects. The project was really well timed for the energy sector in South Africa as the project was in parallel to the newly implementation of the Integrated Resource Planning (IRP) and to the revision period of the Renewable Energy White Paper. But communication and co-operation with the Department of Energy in South Africa was very limited. The project raised awareness on the topic of renewable energy in this country. Meanwhile, the government has accepted a

higher percentage for renewables in the future plans and forecasts for the energy sector in South Africa.

### II.A.3 Effectiveness

In this section, we assess to what extent the project has achieved its **main objective**: to help national governments in Brazil, China and South Africa to gain a better understanding of the resource, policy, risk management and technology information requirements associated with expanded renewable energy technology deployment in these countries. Overall, this objective has **for the most part been achieved**, with some country-specific restrictions described below:

- **Brazil:** The project was effective in improving the general understanding with respect to solar energy. For wind energy, the project came comparatively late, as other initiatives had been progressing before the start of the project, but for the solar part, the project was in perfect timing. The methodology produced within EIRET can be seen as a success of the project. The indicator developed in the project (i.e. ratio of actually installed renewable capacity to theoretical potential) is politically relevant. During the implementation period of the project, the review of world experience with solar energy was particularly important for decision makers in Brazil. Due to very good business relations between the project team and the Green Deputy of the State of Rio de Janeiro, Mr Carlos Mink, the EIRET project was in the position to support the market introduction for the use of photovoltaic in the State of Rio de Janeiro. Subsequently, Carlos Mink moved to the national level and became the federal Minister of the Environment. The project team used its expertise and developed for the Ministry the main anchors regarding the implementation strategy for the use of PV in Brazil. The EIRET objective of a potential Brazilian cooperation in the context of IEA Implementing Agreements seems to be somewhat problematic in general. For example, the IA Solar Heating and Cooling has made a number of efforts to include Brazil. Since becoming a member is not seen as prohibitively expensive, it is more likely that membership is impeded by bureaucratic barriers.
- **China:** Here, EIRET was particularly effective with respect to feed-in legislation, due to the influential role of the project partner ERI – one of the leading energy research institutions in China. Since 2003, when the Energy Bureau (now: National Energy Administration/NEA) was established, ERI has supported Chinese energy policy on the national level. ERI helps policy maker to define policy guidelines and has drafted the “5-Year-Plan for Renewable Energies” in China. Therefore, know-how and experience gained from the UNEP project has been introduced to energy policy in China. And ERI reports on a more or less daily basis to the government, the NEA, which reports directly to the National Development and Reform Commission (NDRC) and then the State Council. This close co-operation ensures that results from the UNEP project are being used for national energy policy. Moreover, ERI supports the People’s Congress directly on legislative topics, and on renewable power pricing policy. For example, in one workshop on renewable energy tariffs held in 2010, the methodology for calculating the feed-in-tariff was presented by an international team. After the workshop, ERI calculated the first feed-in-tariffs for China and submitted these data to NEA and NDRC the People’s Congress, where they were used for the policy on feed-in-tariffs of solar PV. ERI calculated feed-in-tariffs of 1.15 Yuan per kWh for solar PV. These national feed-

in-tariffs were mainly derived on the basis of the UNEP seminar on “Solar and Wind Pricing Mechanisms”. The outcomes of the seminar were also used for the evaluation of the feed-in-tariff for wind power in China in 2011. Of course, this development for renewable energy in China cannot be exclusively attributed to EIRET, but EIRET was one of the supporting instruments. This view is supported by a member of the peer review panel, because having access to fundamental information on wind and solar energy tends to have a positive influence on policy-making. Besides the feed-in-tariff, ERI provided assistance during the drafting of the Renewable Energy Law and its revision by the end of 2009, which coincided with the work in the EIRET project. As to the international dimension of the EIRET project, it remains unclear why China has not made greater efforts to becoming a member of, for example, the Solar Heating and Cooling Implementing Agreement, given its world leadership in solar heating systems. A possible reason is the same as in the case of Brazil (see above).

- South Africa: In this country, results are somewhat mixed. On the one hand, the South African project partners understand the project as the central place for information on renewable energy in their country. Stakeholders have expressed their gratitude and judge the project as very successful; and the energy policy process is being supported by the project, especially the “Climate Policy 2020” and the current “IRP- Integrated Energy Resource Planning” Program within the electricity sector. On the other hand, EIRET could potentially have been more effective if it had stronger links into policy-making. Generally, the first addressee of EIRET results is the Department of Environment as it is about the consequences and the potential impact of wind and solar energy. Moreover, the Department of Energy is currently revising its strategy paper with new figures for 2020 and 2030. Here, EIRET could be of some kind of assistance, but there is no direct contact from the project team to the administration and policy-makers, but limited to communication with the Department of Environment and not with the Department of Energy<sup>4</sup>. As to the international dimension, EIRET probably raised awareness of ongoing IEA Implementing Agreements for improving quality of data through international cooperation, according to a member of the peer review panel.

#### II.A.4 Efficiency

With reference to this evaluation criterion we assess the cost-effectiveness and timeliness of project execution, and we describe any cost- or time-saving measures put in place in attempting to bring the project to a successful conclusion within its programmed budget and the extended time. We analyze how delays have affected project execution, costs and effectiveness, and how pre-existing institutions have been used.

Overall, the project has **mostly been implemented efficiently**, with some variance in the three countries. Originally, a tight schedule had been imposed by the donor for the first project activity. To ensure timely delivery, UNEP/DTIE provided direct oversight during this part of the implementation. Thereafter, however, there is not much evidence for specific measures put in place. While the initial planning was to reserve funds for local UNEP staff for project oversight, this idea was not followed later. Pre-

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<sup>4</sup> The Department of Energy refused to work with the project team in this project.

existing institutions have been used by connecting the project to earlier SWERA activities and experts, and by planning links to established IEA Implementing Agreements (see Table 5 on page 16). In practice, however, the IEA links have not been pursued as much as originally planned. The specific results on the country level are as follows:

- Brazil: Overall, the project was carried out in an economic and timely efficient matter. An exception seems to be activity 1, whose report is dated “December 2009” (version 2.0), although the TOR required its finalization already by February 2009. The UNEP team supported the implementation of solar energy by defining 12 different markets for PV use in Brazil. All actions carried out by the project team were cost-efficient.
- China: This part of the project was completed in January 2011, therefore in a timely manner. Payments from UNEP have been received. Compared to the budget, the project results and outcomes are cost-effective. There was some delay in the preparation of UNEP’s summary EIRET report for the stocktaking and training component (Moner-Girona et al. 2012), and this has required some extra input by the Chinese team in the first half of 2011.
- South Africa: The project was completed in time and was cost-effective when comparing outputs produced and TOR given.

## II.A.5 Review of outcomes to impacts

In this section, we reconstruct with reference to this evaluation criterion the logical pathways from project outputs over achieved objectives towards impacts, taking into account performance and impact drivers, assumptions and the roles and capacities of key actors and stakeholders, using the GEF methodology (GEF 2009). We examine to what extent the project has contributed to date, and is likely to contribute in the future to further changes in stakeholder behavior, particularly governments as regards the likelihood of EIRET leading to increased solar and wind energy generation in the focus countries.

Overall, the evidence indicates that the project has **contributed to positive change** with respect to wind and solar energy development, but especially some **opportunities for international knowledge-sharing were not taken adequately**. The specific results on the country level are as follows:

- Brazil: Due to strong working relations between the EIRET team and the Minister of Environment, Mr Carlos Mink, the team supported the implementation of the “Wind Charter”, by introducing a tax exemption for used wind energy equipment. Subsequently, in parallel to the project, the team assisted in the implementation of a new “Solar Charter” to support the introduction of PV into the Brazilian energy market. The Solar Charter was signed by the State energy secretaries in 2010 and it includes the list of equipment and the fiscal exemptions as to EIRET. With the two Charter documents, the project supported the introduction of renewables, thereby making a difference for PV. Still, a more targeted proposal for consideration by the Brazilian national government, as required by the TOR (stocktaking and training component, activity 3) could have increased the likelihood of the project contributing to stronger international collaboration, in particular with the IEA, with improved opportunities for solar and wind development and related policy change in the future.

- China: The project has been presented continuously to NEA, the National Energy Agency and to the national associations for wind energy and solar energy. Regular meetings have been held, mostly half-day meetings in Beijing. No kick-off-meeting was conducted at the beginning of the project. Final presentations of the project results were given in January 2011 to NEA. Similar to the case of Brazil, the planned activity 3 of the project has not been implemented as planned, thereby reducing the chances of EIRET contributing to international exchange on solar and wind information and associated policy impact.
- South Africa: Since the general political debate in South Africa is not as favorable for renewable energy as in China and Brazil, it is difficult to discuss the outcomes of the EIRET project with the respective governmental organizations. Only where the project team has close personal links to the government, are results incorporated into national energy policy, for example via the current IRP for South Africa. Here, the South African parliament asked for a hearing with respect to the results from EIRET's modeling component on policy effectiveness and roadmaps, which demonstrates an actual impact on policy-making that has been reached in the project. On the other hand, a scenario update with the findings from the EIRET project on renewable energies would be helpful for supporting the Trade and Industry Department, the Science and Technology Department and the Treasury.

Table 6 provides the rating of outcomes and progress to intermediate states (also see section IV.F.1). The outcomes of (1) improved access of national governments to data relevant to solar and wind energy and (2) better awareness and understanding of the related information requirements have been mostly achieved with implicit forward linkages to intermediary stages and impacts. Progress towards the intermediate states of (1) an improved policy environment for investment in solar and wind energy technologies and (2) stronger, more robust national solar and wind energy markets has started, but there are still barriers and unmet assumptions. The final impact of a reduction in greenhouse gas emissions hinges on the assumption that development of absolute gross domestic product in the three focus countries does not overcompensate the reduced emissions intensity associated with an increased deployment of solar and wind energy technologies. This assumption has not been met so far.

Table 6: Rating of outcomes and progress to intermediate states

Outputs	Outcomes	Rating (D – A)	Intermediary	Rating (D – A)	Impact (GEBs)	Rating (+)	Overall
1. Overview of knowledge gaps	1. Improved access of national governments to data	B	1. Improved policy environment	C	1. Reduction in greenhouse gas emissions		BC
2. Roadmaps with training courses			2. More robust national markets	C			
3. Development of links with international initiatives	2. Better awareness and understanding of information requirements	B	3. Increased deployment in other countries	D			
4. Assessment of policy effectiveness							
5. Development of policy roadmaps							

The overall rating “BC” corresponds to an **overall likelihood of impact achievement** that is **moderately likely**.

## II.B Sustainability and catalytic role

### II.B.1 **Socio-political sustainability**

In this section, we analyze to what extent any social or political factors have influenced positively or negatively the sustenance of project results and progress towards impacts. And we look at the level of ownership by the main national and regional stakeholders that will allow for the project results to be sustained.

Overall, in two of the three countries, the **outlook** for socio-political sustainability is more **positive** than in the third, where renewable energy in general has a lower standing. The specific results on the country level are as follows:

- **Brazil:** With the implementation of the Wind Charter and with the Sun Charter, the two main political directions for supporting renewables in Brazil are on the way. As Brazil has one of the largest resources of silicon material in the world, PV based on panels produced in Brazil will enter continuously into the electricity market in the country. We are confident that the current government will continue the way renewables have been brought to the Brazilian market. In this case, the Center for Integrated Studies on Climate Change and the Environment/COPPE has got the intellectual ownership on the project results and methodologies; and this will ensure continuation of the project. Recently, a “Letter of Sun” based on the EIRET project has been produced by the Brazilian team members to give recommendations to the government of Rio de Janeiro State on the introduction of renewables, especially on incentives for wind energy and solar energy, by finding a “reformulation of regulation” in the electricity sector, namely concentrating on net-metering procedures.
- **China:** The EIRET project is part of the know-how gathering for climate policy in China, which helps the Chinese government to understand the different procedures in relation to renewable energy in different countries. With this close co-operation between ERI and NEA, the national solar and wind energy policy in China has been influenced by the project. EIRET has partly been used for national energy policy: ERI has to draft the 5-year-plans for the government in relation to renewable energy planning. Results from the project, especially from the policy part have influenced the 5-year-planning<sup>5</sup>. The Chinese side stressed the high importance of the EIRET project, especially the two resource assessments conducted for wind and solar. And Chinese government officials stated that the price policy module for the feed-in-tariff was extremely helpful thanks to the EIRET project.
- **South Africa:** In general, the Department of Energy’s current policy is more in favor of supporting conventional fossil fuels than renewable energies, as the unions in the coal sector have a large influence on the government and try to ensure high employment within the coal industry. The coal mining sector, in particular, has

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<sup>5</sup> It is important to recognize the speed of renewable energy development in China. Already in 2008, China had the largest installed solar hot water/heating capacity worldwide, and it maintained that position over the course of the EIRET project. Moreover, China doubled its installed wind power capacity nearly twice – increasing it from 12 GW in 2008 to 45 GW in 2010 – thereby becoming the world leader in wind energy installations (REN21 2009, 2011).

enormous influence in the Department's energy policy. There is also a strong lobby for an increase in nuclear energy. South Africa's government is fragmented on the topic of renewables, although even the president supports renewable energy in general. The business lobby for conventional fossil fuels is well organized, compared to the South African associations for wind and solar energy. In order to support the use of renewables, these associations and the respective business community will have to be strengthened. The situation for co-operation between the project and the government in South Africa is not easy; the respective Directorate General for Renewable Energy declined to attend the EIRET workshops on renewables in South Africa. In this regard, one possible barrier has to do with the continuous discussion in South Africa about the role of renewable energy compared to coal use, as an increase in renewables could affect the employment in the coal industry and create opposition within the unions. From our perspective, in the evaluation process, a Memorandum of Understanding between UNEP and the government of South Africa would have eased the way for implementing results from the project to the administrative level; we believe this would have made a difference in the implementation of project results in South Africa.

## II.B.2 Financial resources

With reference to this criterion we evaluate to what extent the continuation of project results and the eventual impact of the project are dependent on continued financial support. And we assess the likelihood that adequate financial resources will be or will become available to implement the programs, plans and agreements under the project.

Overall, the **evidence for financial sustainability is mixed**, ranging from a very likely successful continuation of EIRET-related activities to a more unclear outlook. The specific results on the country level are as follows:

- Brazil: Besides the funding by the German government under the EIRET budget, the Brazilian project team founded a joint venture with a private investor from Germany to launch the implementation of PV systems in Brazil named "Gehrlicher Ecoluz do Brazil Limited". Through this investment, it was possible to continue the work started in the EIRET project and to add some necessary details to it. Here, we find an excellent example for good communication between the level of public research and private investment activities. COPPE – with its long experience in the energy sector, and as a well-established and internationally recognized Brazilian research organization – is the appropriate organization for supporting the implementation process for renewables in Brazil.
- China: The financial resources for the project from UNEP's side were limited, but ERI added own financial resources to the project, as ERI has other means of financing coming from the World Bank and from the Energy Foundation etc. ERI sees the project as advantageous as it is a multi-national project covering and comparing a number of different countries' energy policies. The input of own financial resources clearly indicates the interest of the country in EIRET's results. The project results will remain with the team as ERI is financed under the State budget, therefore no loss of know-how due to financial restrictions will occur.
- South Africa: After the completion of the EIRET project, the South African government is – compared to the two other countries – more hesitating to finance future projects on the introduction of renewable energy technologies in South

Africa, although South Africa has a plan to introduce more than 3.5 GW of renewables through the REIPPPP with tariffs higher than existing coal and nuclear generation costs. Of course, compared to Brazil and to China these are only plans and therefore the situation for renewables energies in South Africa is still more difficult. South Africa is currently facing a politically difficult situation with respect to renewable energy because unions are heavily pressing for a continuous use of coal in order to secure jobs in the coal mining sector. As long as this pro-coal policy continues, we do not expect the South African government to financially support a further continuation of the topics addressed in the EIRET study. In case South African energy policy changes, however, a continuation of the work started in the EIRET project based on financial support from the South African government would become more likely.

### **II.B.3 Institutional framework**

Here we have a close look at to what extent the sustenance of the results and onward progress towards impact is dependent on issues relating to institutional frameworks and governance. We try to understand how robust the institutional achievements are, such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. required to sustaining project results and to lead those to impact on human behavior and environmental resources.

Overall, **institutional sustainability** is likely to be high in China, but less so in Brazil, and relatively unclear in South Africa. The specific results on the country level are as follows:

- Brazil: Ensuring the long-term effect of the EIRET project requires stability in the team. The EIRET team is currently working at COPPE, one of the most experienced research teams in South America, which bodes well for continuation of the work they have initiated. Any action ensuring the continued stability of the project team will increase the long-term effects of the project. As to Brazilian policies on renewable energy that have a bearing on institutional sustainability, these policies have so far targeted solar water heating systems, off-grid PV and wind energy. The expansion of wind power is primarily promoted through auctions. Although the price of electricity from wind energy installations fell below the price of electricity generated from natural gas in the second half of 2011, the following restriction applies: Once the best resource locations have been used for wind, additional financial support may become necessary to keep electricity from wind installations competitive. Moreover, grid-connected PV has not been addressed by Brazilian policies. Overall, the likelihood of institutional sustainability is higher for wind energy than for PV.
- China: The governmental situation in China is very stable, and we do not see instability on the national level, which could negatively influence the implementation of the project results. The re-organization of NEA had been completed three years ago in 2008, and NEA will continue to be the main focus point on renewable energy in China. One of the outcomes of the project – the calculation of the feed-in-tariffs for wind and solar energy – has been transposed into national law and allows for a massive expansion of investments in the renewable energy sector.



- South Africa: The first obstacle for renewables is the “uncertainty of policy procedure” in the country with respect to renewable energies. Second, there is no “central point” in South Africa collecting and gathering related data and policy analyses. While EIRET was important for discussions and further investigations into the use of renewables, a continuation of these activities cannot be assured as of now. The only governmental organization currently working in this field is the Development Bank of South Africa, with a limited budget for this topic.

#### **II.B.4 Environmental sustainability**

With reference to this evaluation criterion we define, if any, the environmental factors, positive or negative, that can influence the future flow of project benefits and sustainability of project benefits.

Overall, **no major problems** have been identified in the three countries, with some minor concerns relating to the environmental sustainability of wind energy technology deployment. The specific results on the country level are as follows:

- Brazil: Here, we have no specific comments except that the EIRET project supports the reduction of CO<sub>2</sub> emissions through an improved policy strategy for renewable energies.
- China: The project is part of the national energy strategy and contributes to the promotion of renewable energies, in this case wind energy and solar energy, which is a support to the reduction of CO<sub>2</sub> emissions.
- South Africa: There were some minor concerns for birds caused by large-scale wind energy farms but this has no influence on the current or future use of wind energy in South Africa. This topic was addressed during the seminars held in South Africa, but it is unclear whether it could be satisfactorily resolved. Outside the South African Government, the German GIZ supports the “Climate Policy Support Programme” and the “Renewable Energy Programme.”

#### **II.B.5 Catalytic role and replication**

##### **II.B.5.1 Catalytic role**

With reference to this evaluation criterion, we analyze the catalytic role played by this project, namely to what extent the project has catalyzed behavioral changes, provided incentives, contributed to institutional changes, contributed to policy changes, contributed to sustained follow-on financing and created opportunities for particular individuals or institutions.

Overall, the project’s **catalytic role** has been the relatively strongest in China, less so in Brazil, and even less in South Africa. Still, none of the countries has adequately pursued opportunities for catalytic change through an exchange with international experts. The produced proposals to consider participation of national governments in the IEA’s implementing agreements do not include a “budgetary point of view” as required in the TOR (activity 3), which could have served the purpose of follow-on catalytic financing (also see section II.A.1 regarding output for activity 3). The specific results on the country level are as follows:

- Brazil: For the solar part, the EIRET project was definitely in the right place and in the right time to support the development of tariffs in the solar PV sector. For the

wind part, on the other hand, most of the actions for the promotion of wind energy had already been completed, when the project started.

- **China:** Implementation of wind energy and solar energy in China is supported by a number of laws, regulations and norms. Here we see a direct input from the EIRET project on this legislative procedure (feed-in-tariffs), which lead to large scale investments in renewables. Indirect effects by the project via the national governmental authorities, namely NEA, occur with the drafting of the 5-year-plan for renewable energy. The usefulness of the project was strengthened by the Chinese Wind Energy Association<sup>6</sup> (CWEA): Based on the workshops on wind and solar pricing mechanisms, the introduction of renewable energy has been considerably supported; and vice versa, without the feed-in-tariffs, nearly no investment would have been realized.
- **South Africa:** The catalytic role of the project is mainly seen in the workshops that have been held. These workshops were the main contact points to the government and allowed for establishing working relations to parts of the government and to the South African associations for renewable energy, as the main stakeholder organizations.

### II.B.5.2 Replication

With reference to this evaluation criterion, we identify any lessons and experiences coming out of the project that have been replicated; experiences that are repeated in other sectors; and lessons applied in different geographic areas or scaled up.

Overall, an EIRET **replication** in other countries is deemed useful, but **has not been tackled yet**. Replication within the three countries is mostly not intended, with the exception being lessons regarding data collection in China. Of course, replication of lessons learned and experience gained during the EIRET project would have been very useful. The specific results on the country level are as follows:

- **Brazil:** Here, we have no specific comments. The Brazilian team sees the EIRET project as a contribution to the national energy policy, whereas a transfer of know-how to other regions in Brazil or to other regions in South America was not planned.
- **China:** Within China, there is no discussion about the potential need of an EIRET replication to the regional level of Provinces. Only at the international level, for example in India (or any other country in South East Asia), an EIRET replication could be useful for the implementation of renewables in those countries if such replication transfers the information and know-how collected in this project. Based on the SWERA dataset (10 km by 10 km) used in the EIRET project, the next generation of instruments to measure solar radiation has been agreed on the national level. They will serve for the extension of national weather stations to measure direct and diffuse radiation on different angles as well direct normal irradiance. This will be done for 400 meteorological stations, which will cost about 160 million Yuan (at the current exchange rate in January 2012, this is about 25.4 million USD). The same applies to wind energy, to have more correct data than the SWERA data for investments in wind energy in China. The China Meteorological Administration set up additional stations and calculated wind data on the national 1 km by 1 km

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<sup>6</sup> CWEA is a non-governmental organization (NGO) with 600 active members from the wind energy sector industry, including manufacturers, component manufacturers and developers of wind energy.

grid, using advanced software as there will be only 400 measuring points with a data flow of data on a 10-minutes base. Total costs amounted to 300 million Yuan (about 47.7 million USD).

- South Africa: There is a huge potential for renewable energy in South Africa, especially for small-scale hydro but also for energy crops. But as the introduction of wind and solar energy in South Africa is more difficult compared to the two other countries, an extension of the EIRET project to those other forms of renewable energy is unlikely.

## II.C Processes affecting attainment of project results

### II.C.1 Preparation and readiness

With reference to this evaluation criterion we investigate to what extent the project's objectives and components were clear, practicable and feasible within its timeframe; to what extent the capacities of executing agencies were properly considered when the project was designed; and we look at project management arrangements.

Overall, the **project arrangements were clear** to the project partners. However, the project document did not explicitly detail the modeling component, in which only Brazil and South Africa were involved (see I.B). Consequently, the overall project budget did not include a budget for the modeling component, as detailed in the second TOR for Brazil and South Africa. Therefore, it is unclear how the budget for those second TOR fits into the overall budget (see section II.C.2 below). Finally, the project document did not contain a plan for the use of the policy roadmaps produced in the modeling component; that is influencing factors towards ultimate project goals have not been considered. The specific results on the country level are as follows:

- Brazil: The project objectives were very clear and appropriate; the project team has had no difficulties to follow the objectives given.
- China: The project objectives were clearly described. During implementation of the project no change in the objectives was required.
- South Africa: During the preparation phase, the EIRET team should have realized that the acceptance for renewables at governmental level is very limited; therefore from the beginning of the project, a special attention on co-operation with the government should have been given, for example by the national representative of UNEP in South Africa and a possible MoU for the project.

### II.C.2 Implementation approach and adaptive management

This section includes an analysis of approaches used by the project, its management framework, the project's adaptation to changing conditions (adaptive management) and an evaluation of the performance of the implementation arrangements and partnerships.

Overall, the **project management adapted to funding needs early on** by deviating from the original plan. Initially, a first priority mapping was conducted for the purpose of TOR development. But when the actual negotiations with the project partners started, it turned out that there was partially already sufficient renewable energy information available, and that policy advice was a more important issue. Therefore, the project's focus shifted towards more policy advice, and the funds originally

reserved for local consultants for project oversight were allocated to the modeling component, that is, the assessment of solar and wind energy policy effectiveness as well as the development of policy roadmaps for Brazil and South Africa.

On the negative side, **input from the peer review panel was limited**, and there was **no South-South cooperation**. During the beginning of the EIRET project, there was continuous communication between all project partners and UNEP Paris. Moreover, a member of the peer review panel contributed to a training workshop in South Africa in early 2010. During the last year of project execution, however, the peer review panel was only involved in a training workshop in China, and communication between UNEP Paris and the team was very limited. For example, a member of EIRET's peer review panel indicated that with respect to the wind resource assessments presented in the EIRET (country) reports, he would have liked to see more specifics on validation techniques, outcomes of validations and uncertainty estimates. Here we have not seen sufficient action from the UNEP team in Paris to ensure a more effective use of the know-how from the peer review panel and to ensure the knowledge sharing between the project partners as part of a south-south co-operation. The specific results on the country level are as follows:

- Brazil: Besides the general information on the EIRET project given so far, we have no additional comments on this subject for Brazil.
- China: The Chinese side judged the EIRET project management by the UNEP team in Paris as very useful. Especially during the definition of task 3, the objectives were not clear, and UNEP Paris helped with details and examples (also see section II.A.1 regarding output for activity 3). On the other hand, the planning of only one meeting between the project partners during this three-year project was not deemed adequate. While communication by email and phone calls on a monthly basis was helpful, annual meetings of the project team would have increased the quality of project results considerably.
- South Africa: Besides the general comments we have no additional comments on the situation in South Africa.

### **II.C.3 Stakeholder participation and public awareness**

With reference to this evaluation criterion, we assess public awareness activities, and how participation of the main stakeholders in the country was ensured.

Overall, we understand that **no public awareness activities** have been executed within the project. We propose that an information campaign be carried out by UNEP (but also at the level of the three countries) sharing the results from the EIRET study – at least a press release and some scientific publications in specialized energy journals. The stakeholder participation was not as good as it should be and this can be explained by a number of factors; first we see a lack in the continuation of project management in UNEP Paris, due to changes in staffing, the follow-up of these P.R. activities was not of priority and according to our understanding “never” discussed with the local partners. And of course there is a certain lack of public awareness; but an objective of the project was to overcome this information and awareness gap. We do not see this as a failure in the partner selection process of the EIRET project, since all project partners are well-established national organizations. The specific results on the country level are as follows:

- Brazil: Two large workshops were held in 2011 on the introduction of solar energy to the Brazilian market. One workshop was exclusively for the State of Rio de Janeiro, another workshop was for the meeting of State Representatives. No specific public relations work has been produced, and no press releases have been published up to this day, even after completion of the Brazilian part of the EIRET project.
- China: In this project, no public participation outside the governmental level and the level of professional associations in the renewable sector has been executed for the Chinese part of the project. The only exchange with stakeholders outside of government was with the wind energy and solar energy associations, and with some organizations close to the Ministry of Science and Technology and other organizations. The Chinese side does not see any need for a specific public relation work on the results from the EIRET study, except for a presentation of results during the upcoming Wind Energy Fair in October 2012. Linked to this event – or on another occasion – the Chinese team could give a short overview on the EIRET results achieved, followed by a discussion of a wider definition of stakeholder interests, for example include to the list of stakeholders the producers of wind generators or wind energy project developers.
- South Africa: The interaction between the EIRET project team and the respective main stakeholders in South Africa is lacking – namely the interaction with the Department of Energy and other national and regional governmental organizations, but also with the business community, including electric utilities, and the two main associations on wind and solar energy.

#### **II.C.4 Country ownership and driven-ness**

With reference to this evaluation criterion, we look at to what extent the governments, including the contact institutions, of the three countries have assumed responsibility for the project.

Overall, the **ownership** of results from the project depends on the specific situation in the respective country. Compared to other projects, EIRET was in the fortunate situation that in the beginning, UNEP gave the three countries the opportunity to define the areas and topics of research regarding their domestic support of renewables deployment. This offered considerable flexibility for the members of the team in the respective countries to adapt the work program to their research needs. UNEP gave the countries the chance to define the respective project TOR; and the countries assumed responsibility for the project part allocated to the country. The specific results on the country level are as follows:

- Brazil: Due to the strong relation between the EIRET project team and the Minister of Environment, Mr Carlos Mink, the know-how of the project continues within the COPPE team and within the Ministry itself. But this is only due to strong personal relations between the two organizations. We understand that the results would have weakened if this relation between the research level and the political level had been disturbed.
- China: Here we have no specific comments.
- South Africa: The findings of the project, especially from the workshops, will contribute to the implementation of renewable energies in South Africa. From the point of relevance, a closer link of EIRET to the current IRP planning process would be needed; EIRET project results should be fed into the IRP. Here, we refer

to the proposal of a MoU between the government and UNEP, which could have eased this implementation process (III.B).

## II.C.5 Financial planning and management

With reference to this evaluation criterion we look at the financial planning and management of the project.

Overall, the financial planning and management was **appropriate**. EIRET's original budget totaled USD 876,005 and consisted of USD 775,225 total direct cost and USD 100,780 program support cost (as in-kind contributions from UNEP). The budget was revised in March 2010, February 2011, and April 2011 as a result of re-allocations between budget lines to meet the needs of the project (see II.C.2 for an early revision and re-allocation of funds). The actual total project cost, however, remained nearly the same – with the only exception being an increase in project cost of USD 33,022 due to exchange rate gains between the original pledge from the donor (in Euros) and the sum actually received (in Dollars).

Table 7 below shows the original and the final budget as of March 2011 by contract components. The largest change in budget is due to the fact that the personnel component (no. 1999) – including country project managers – was reduced by nearly 90 %. Instead, more money was made available for subcontracts and actual project work in the three countries (no. 2999). Moreover, the resources originally planned for reporting (no. 5200) and evaluation (no. 5500) were considerably reduced.

Table 7: *Development of budget components over the course of the project*

Contract component	No. (s)	Budget (in USD)		Change between original and final	
		Original	Final	in USD	in %
Personnel component (total)	1999	236,822	28,019	-208,803	-88%
Subcontract component (total)	2999	491,238	750,672	+259,434	+53%
Meeting component (total)	3999	0	761	+761	-
Reporting cost	5200	13,476	0	-13,476	-100%
Evaluation	5500	33,693	25,000	-8,693	-26%
<b>Total direct cost</b>		<b>775,229</b>	<b>804,452</b>	<b>+29,223</b>	<b>+3.8%</b>
Programme support cost		100,780	104,579	+3,799	+3.8%
<b>Grand total</b>	<b>99</b>	<b>876,009</b>	<b>909,031</b>	<b>+33,022</b>	<b>+3.8%</b>

*Note: The final budget is drawn from the 3<sup>rd</sup> revision as of 30 March 2011. The deviation between the original grand total reported in this table (USD 876,009) and in the project document (USD 876,005) is deemed negligible and may be due to rounding. The change in grand total (USD 33,022) is due to exchange rate gains.*

Co-financing was not planned in the project document, and no further information on co-financing is available to the evaluation team, besides the country-specific information below:

- **Brazil:** Both financial planning and management of the project were appropriate giving the budget, the outputs produced and the respective given TOR. All payments from UNEP were received.
- **China:** The financial planning for the project was adequate for the given TOR and the given work plan. The management support from UNEP Paris was judged as very helpful from the Chinese side. Timesheets covering the input to the project are not

available in China. An amount of 40,000 USD was deducted from the budget due to the cancellation of task 3.2 and of one workshop (see II.A.1). These changes in the budget were agreed between UNEP Paris and the Chinese side. Still, even after this reduction, China was left with the largest project budget out of the three participating countries.

- South Africa: The financial planning of the project compared to the output and the given TOR are appropriate; as to the contractor, all payments were received.

### II.C.6 UNEP supervision and backstopping

For this section, we asked the project partners about their opinion on any supervision activities by the UNEP project management in Paris and to what extent backstopping capacities of UNEP have been used.

Overall, project partners deemed the support from UNEP and the peer review panel helpful, especially during the project start. But partners in the countries **would have liked to get more feedback from the UNEP team in Paris or from the peer review panel**. Clearly, the peer review panel made contributions in the beginning of the project and to the seminars; but, subsequently, there was nearly no contribution from the peer review panel, which would have been very welcomed by the national teams. UNEP Paris put the summary EIRET report for the stocktaking component (Moner-Girona et al. 2012) on its website only with a certain delay. A summary report for the modeling component is still missing. The specific results on the country level are as follows:

- Brazil: The Brazilian team judges the support from UNEP as very helpful in ensuring the success of the project in Brazil; in particular the support given by the project management through UNEP Paris. From the perspective of the Brazilians, the UNEP management of the EIRET project was adequate. For administrative matters, teleconferences have been held with UNEP in Paris. This relation with UNEP is judged by the Brazilian team as very co-operative. On the other hand, the Brazilian team has not benefited from the teams in China or South Africa during the entire course of the project.
- China: Especially in the beginning of the project, UNEP backstopping from the team in Paris was very helpful and necessary. All requests for support from UNEP Paris were handled promptly and well according to the Chinese side, even during periods of change in the management team in Paris. The peer review panel was very useful in the beginning of the project and contributed to the success of the project considerably. During the second half of the project, however, the peer review panel only acted in response to specific requests from the Chinese side. The peer review panel using the expertise from NREL, DLR and RISOE was very welcomed by the Chinese side and mentioned as very helpful to the country's energy policy. Especially the meeting of the entire project team in Paris in 2009 was judged as very positive, as this was the only meeting by the team. Accordingly, such meetings should have been held on an annual basis. A final meeting after project completion could be very useful to allow a direct exchange of ideas and conclusions with the project partners from the other participating countries, especially for the purpose of South-South-Cooperation. It was clearly stated that there has never been any exchange of experience with Brazil or South Africa. Of course, the Chinese side used experience from the EU and the USA, but definitely not from Brazil and South Africa.

- South Africa: Concerning the management of EIRET, the South African side valued the flexibility of the UNEP team in Paris, which allowed for setting priorities according to the direct needs of South Africa. On the other hand, the “missing continuity” within the project due to changes in the staffing of UNEP’s management in Paris was reported as one of the main weaknesses in the project. The discontinuity led to a weak project management, where nearly no attempts were made to strengthen the co-operation between the countries involved. UNEP project management in Paris was seen – due to other projects – as “slightly overworked” and there was “not enough support to the project”. The work of the peer review panel was judged as “very supportive and helpful”.

### II.C.7 Monitoring and evaluation

This section includes an evaluation and assessment of the quality, application and effectiveness of project monitoring and evaluation plans and tools.

Overall, all three countries provided internal quality control. Given the **lack of local country managers for oversight** of project activities (due to a re-allocation of funds originally reserved for oversight as described in section II.C.2), however, no direct external feedback could be given to the project partners. This is particularly relevant with respect to the execution of task 3.2 and the associated weaknesses in output delivery described in section II.A.1. The specific results on the country level are as follows:

- Brazil: The internal quality control inside the project has closely looked at the reports produced by the Brazilian side and gave detailed comments and questions concerning specific content of the relevant reports produced.
- China: Within ERI, there is an internal quality control system, which was used during project execution.
- South Africa: The outcomes of the project were internally monitored by revision of other organization experts.

### II.D Complementarity with UNEP programs and strategies

In this section, we look at the project and to what extent the UNEP programs and strategies (UNEP’s POW 2010-2011, Bali Strategic Plan (BSP), gender aspects, South-South cooperation and others) are linked to the project.

Overall, the project was in line with the BSP, but **it did not use the opportunity for South-South cooperation** between the three participating countries. The specific results on the country level are as follows:

- Brazil: The project is judged to be in alignment with the BSP. Gender aspects were not addressed in this project. South-South co-operation has not appeared from the Brazilian perspective. There was no South-South cooperation in the project according to the statements from Brazil. The Brazilian side would be interested in learning curves on the market introduction of renewable energies by exchanging information with Chinese and South African partners in the project.
- China: As to the Chinese side, the BSP has been positively affected by the project. Gender aspects were not addressed by the project. With reference to South-South cooperation, no single attempt was made from the Chinese side, and the Chinese



project team has not been called by the two other national teams from Brazil and South Africa.

- South Africa: With respect to South-South cooperation, an exchange of ideas with the other countries would have been very useful for the South African team. One of the weakest points in the project was the missing South-South cooperation, from which South Africa would have benefited most, compared to the other countries. For example, South Africa has much to learn from the Chinese side about the experience with the GIZ China Wind Energy Centre, which is supposed to be replicated in South Africa. In a broad sense, the South African partner of the EIRET project has in fact cooperated with China to benefit from the Chinese experience (Wiesegart et al. 2011). We value this approach as a joint Chinese and South African exercise in the field of renewable energies. In a narrower sense – i.e. as part of the actual EIRET project – however, there was no attempt to establish South-South cooperation.

### III. Conclusions and Recommendations

#### III.A Conclusions and ratings

In this section, we **summarize** the main findings of the evaluation and the overall assessment of the EIRET project. Given the situation of wind and solar energy technology development in the three participating countries, the EIRET project was – and still is – **highly relevant** for renewable energy deployment. Overall, most planned project outputs have been delivered, and the project partners have made a great **effort to influence real-world renewable energy policy-making**, with weaknesses relating to outreach in the form of workshops with stakeholders and proposals to national governments for international cooperation (activity 3). The **lack of adequate oversight** by country project managers as well as **limited feedback from the peer review panel** may have contributed to the unclear execution of task 3.2 that deviates from the TOR requirements. The internal project documentation is comparatively weak. For example, there are **no formal minutes** of meetings between the members of the team, no documents on the input given by the peer review panel – except those showing panel member participation in in-country trainings. So far, there has been no active dissemination of information and lessons learned from this project to a wider range of stakeholders. Except for one meeting between the members of the team, there was neither a kick-off-meeting nor a **final meeting between the members** of the project. Moreover, no presentations of project results have been held in the participating countries. There was nearly **no exchange between the countries' experts** within the EIRET project (of course we are aware of other international activities, which are jointly carried out by experts of the participating countries, but these activities are not part of the EIRET project). All experts interviewed on the country level see such South-South co-operation as a high priority, but it has not been attempted so far in the context of this project. The specific conclusions on the country level are as follows:

- **Brazil:** Due to a positive coincidence, the execution of the UNEP project was in parallel to changes in energy policy in Brazil for the PV sector; therefore the contribution of the UNEP team was highly welcomed by the governmental organizations, in this case the Ministry of Environment. And with the new methodology from the IEA, the project gave added value to the Brazilian energy sector.
- **China:** One of the main benefits from the Chinese perspective is the information exchange on an international level. Of course after completion of the project this necessity is decreasing, but looking back to the beginning of the project, this international exchange of different approaches was considered as highly useful. The Chinese team is not clear why the project partners met only on one occasion during three years of the project life.
- **South Africa:** The main achievement in this country is the completion of a synthesis on the situation solar and wind energy in South Africa. The workshops were also helpful for this task. With completion of the UNEP project, the status report on renewable energy will finally stop; but the implementation process for renewables should be tracked on a yearly basis. South-South cooperation would have been very useful for the South African team as their national attitude towards renewable energy is more difficult than in the two other countries participating in the EIRET project. Clearly, South Africa would have benefited from this exchange.

The **summary ratings** are shown in the table on the following page.

*Table 8: Summary ratings for the project “Enhancing Information for Renewable Energy Technology Deployment in Brazil, China and South Africa”*

<b>Criterion</b>	<b>Summary Assessment</b> (BR - Brazil; CN - China; ZA - South Africa)	<b>Total</b>	<b>EO ratings and comments</b>
<b>A. Attainment of project objectives and results</b>	The project had a moderately satisfactory effectiveness, a highly satisfactory relevance, and a moderately satisfactory efficiency.	<b>MS</b>	<b>MS</b>
1. Effectiveness	This objective has for the most part been achieved, with some country-specific restrictions. For BR, the project was effective in improving the general understanding with respect to solar energy. For wind energy, the project came comparatively late. For CN, EIRET was particularly effective with respect to feed-in legislation, due to the influential role of the project partner ERI. For ZA, even though stakeholders judge the project as successful, it could have been more effective if it had stronger links into policy-making.	MS	MS
2. Relevance	The project was highly relevant, that is, consistent with both the sub-regional requirements and UNEP’s mandate. Reducing information barriers and increasing awareness regarding renewable energy is an important issue in the transition towards a low-carbon society.	HS	HS
3. Efficiency	The project has mostly been implemented efficiently, with some variance in the three countries. Pre-existing institutions have been used by connecting the project to earlier SWERA activities, and by planning links to established IEA Implementing Agreements. In practice, however, the IEA links have not been pursued as much as originally planned.	MS	MS
<b>B. Sustainability of project outcomes</b>	The project had a moderately likely financial, socio-political, and institutional sustainability, as well as a likely environmental sustainability.	<b>ML</b>	<b>ML</b>
1. Financial	The evidence for financial sustainability is mixed, ranging from a very likely successful continuation of EIRET-related activities to a more unclear outlook. In BR, the project team founded a joint venture with a private investor to launch the implementation of PV systems. In CN, ERI has further means of financing coming from the World Bank or the Energy Foundation. The ZA government is comparatively unlikely to finance future projects on the introduction of renewable energy technologies in ZA.	ML	L Comments from ZA partner suggest that the ZA government is more likely to fund future work than the consultants suggest.

<b>Criterion</b>	<b>Summary Assessment</b> (BR - Brazil; CN - China; ZA - South Africa)	<b>Total</b>	<b>EO ratings and comments</b>
2. Socio-political	In two of the three countries, the outlook for socio-political sustainability is more positive than in the third, where renewable energy in general has a lower standing. In BR, with the implementation of the Wind Charter and with the Sun Charter, the two main political directions for supporting renewables are on the way. In CN, the EIRET project is part of the know-how gathering for national climate policy. In ZA, current policy is more in favor of fossil fuels than renewable energy compared to the other two participating countries.	ML	L Based on comments from ZA partner, EO feels situation in ZA more positive than consultants fear.
3. Institutional framework	Institutional sustainability is likely to be high in CN, but less so in BR, and relatively unclear in ZA. In BR, the likelihood of institutional sustainability is higher for wind energy than for PV. CN has a stable institutional environment, and NEA will continue to be the main focus point on renewable energy in the future. In ZA, the institutional framework cannot assure a continuation of EIRET activities.	ML	ML
4. Environmental	No major problems have been identified in the three countries, with some minor concerns relating to the environmental sustainability of wind energy technology deployment in ZA. This topic was addressed during the seminars held in ZA, but it is unclear whether it could be satisfactorily resolved.	L	L
<b>C. Catalytic role</b>	The catalytic role has been the strongest in CN, less so in BR, and even less in ZA. None of the countries has adequately pursued opportunities for catalytic change through an exchange with international experts. The produced proposals to consider participation of national governments in the IEA's implementing agreements do not include a "budgetary point of view", which could have served the purpose of follow-on catalytic financing.	MS	MS
<b>D. Stakeholders involvement</b>	We understand that no public awareness activities have been executed within the project. In BR, no specific public relations work has been produced, and no press releases have been published. In CN, there was no public participation outside the governmental level and the level of renewable energy business associations. In ZA, the interaction between the EIRET project team and the respective main stakeholders in ZA is lacking.	MU	MU
<b>E. Country ownership and drivenness</b>	Country ownership of the project is relatively strong. Compared to other projects, EIRET was in the fortunate situation that in the beginning, UNEP gave the three countries the opportunity to define the areas and topics of research regarding their domestic support of renewables deployment. Due to this flexibility, the countries assumed responsibility for the project part allocated to the country.	MS	MS
<b>F. Achievement of outputs and activities</b>	Most project outputs could be delivered, with weaknesses relating to outreach in the form of workshops with stakeholders and proposals to governments (task 3.2). The BR proposal was not addressed to the BR government. For CN, task 3.2 was cancelled. For ZA, there is one relatively short proposal.	S	S

<b>Criterion</b>	<b>Summary Assessment</b> <i>(BR - Brazil; CN - China; ZA - South Africa)</i>	<b>Total</b>	<b>EO ratings and comments</b>
<b>G. Preparation and readiness</b>	The project arrangements were clear to the project partners. However, the project document did not explicitly detail the modeling component, and the overall project budget did not include a budget for it. Moreover, the project document did not contain a plan for the use of the policy roadmaps produced in this component; that is influencing factors towards ultimate project goals have not been considered.	<b>MU</b>	<b>MU</b>
<b>H. Implementation approach</b>	The project management adapted to funding needs early on by deviating from the original plan. Since policy advice was deemed an important issue, the project's focus shifted towards more policy advice, and the funds originally reserved for local consultants for project oversight were allocated to the modeling component. On the negative side, input from the peer review panel was limited to the initial project phase, and there was no South-South cooperation.	<b>MS</b>	<b>MU</b> Transparency, ownership and adaptability would have been improved if peer review group/steering committee had been more active and if start and end of project meetings had been held. Lack of documentation created problems in continuity.
<b>I. Financial planning and management</b>	The financial planning and management was appropriate. The budget was revised several times as a result of re-allocations between budget lines to meet the needs of the project. The actual total project cost, however, remained nearly the same.	<b>MS</b>	<b>MS</b>
<b>J. Monitoring and Evaluation</b>	All three countries provided internal quality control. Given the lack of local country managers for oversight of project activities, however, no direct external feedback could be given to project partners. This is particularly relevant with respect to the execution of task 3.2 and the associated weaknesses in output delivery.	<b>MU</b>	<b>U</b>
1. M&E Design	Evaluation and monitoring had been planned in the original project document.	<b>MS</b>	<b>MS</b>
2. M&E Plan Implementation	No local country manager available in the project for project oversight.	<b>MU</b>	<b>MU</b>
3. Budgeting and funding for M&E activities	There was an explicit budget provision for evaluation.	<b>S</b>	<b>S</b>
<b>K. UNEP Supervision and backstopping</b>		<b>MS</b>	<b>MS</b>
1. Quality of UNEP supervision	Project partners deemed the support from UNEP and the peer review panel helpful, especially during the project start. But they would have liked to get more feedback from the UNEP team in Paris or from the peer review panel.	<b>MS</b>	<b>MS</b>

### III.B Lessons learned

In this section, we look closely at lessons that are rooted in real project experiences, i.e. based on good practices and successes which could be replicated or derived from problems encountered during the project implementation period. Based on the evaluation process, we have the following general lessons:

1. Projects benefit from an **early and detailed institutional and systems analysis** in project planning and preparation. Examples of the consequences of a lack of such analysis from the EIRET project include the problems with governmental stakeholders in South Africa, as well as the lack of full understanding of needs so that EIRET's modeling component had to be introduced after the project start.
2. The project demonstrated that initiatives based on **stakeholder requests** are more likely to be successful; therefore national project planning should be coordinated from the beginning with the relevant governmental organisations.
3. Signing a **Memorandum of Understanding** between UNEP and the relevant governmental organizations – in most cases the Ministry or Department of Energy – is an effective way to **strengthen the relation** between the project team members and the respective national administrations. Based on such MoU, the transfer of results from the project to the governmental level would be eased. For example, in South Africa, the Clinton Foundation has signed a Memorandum of Understanding with the government, and the implementation of the “Solar Park” was definitely eased by this procedure. The lesson learned is that when working with governmental organizations and when their project support seems not to be fully ensured, projects should create MoUs.
4. Future UNEP projects should be designed to **hold kick-off-meetings** with all project partners to get a common understanding of the project approach and objectives – something that was missed by some stakeholders in the EIRET project.
5. **Regular monitoring** should be carried out in order to allow for the practical implementation of “points for improvement”. In EIRET, some problems might have been avoided if more monitoring had been in place. For example, the demand for more South-South cooperation could have been identified and adequately addressed through stronger monitoring activities. Similarly, in the case of South Africa, better monitoring would have revealed the difficulties with respect to the implementation of results to the energy sector and to the respective governmental organizations. Based on the insights from monitoring activities, measures for improvement could have been taken during the second part of the EIRET project.
6. **Reserving resources for project oversight** and other necessary project components is critical. Making decisions about how to spend scarce project resources – for project work or for oversight purposes – can be difficult. Yet, there should be some room for trading off both objectives at the margin, so that no extreme decisions have to be taken. For example, spending all resources for project work so that virtually few resources remain for oversight runs the risk that outputs are not delivered as planned during project implementation. Similarly, covering travel cost for Western experts to seminars in the participating countries – in this case to China – would have been important in the EIRET project. The management team of UNEP Paris should ensure during budget allocation that necessary travel costs could be covered by the project budget. The broader lesson learned is that crucial funds should be ring fenced, and in no case transferred to other activities.

7. **Project management continuity** is part of a project's success. During the beginning of the EIRET project, there was continuous communication between all project partners and UNEP Paris, whereas during the last year of project execution, the peer review panel was not involved in any activity, and communication between UNEP Paris and the team was very limited. The lesson learned is that projects must work hard to ensure continuity. If there is a high staff turnover, then annual reports are even more important to ensure that there is continuity and institutional memory.
8. Projects should **ensure feedback from UNEP Paris** and the **peer review panel** on the approach and on documents produced by the national partners. If it had received feedback, the project would have added much more value. For example, a member of EIRET's peer review panel indicated that with respect to the wind resource assessments presented in the EIRET (country) reports, he would have liked to see more specifics on validation techniques, outcomes of validations and uncertainty estimates. Such feedback can only be given by experts in the field. The lesson learned is to involve the peer review panel throughout the entire project life.
9. Feedback from UNEP Paris should be **timely** and efficient avoiding unnecessary delays in project completion. If **publications** are delayed, usually the benefits and impacts are lowered or lost. This is especially true for projects in the rapidly changing sector of renewable energy technologies. During the EIRET project, results were produced in a timely manner from Brazil, South Africa and with minor delay from China. Since then, the procedure to publish the summary EIRET report for the stocktaking and training component (Moner-Girona et al. 2012) on UNEP's homepage (<http://www.unep.fr/energy/>) has taken more than 4 months. As the renewable sector in all three countries changes fast, any delay in publishing data and reports will decrease the value of such information. Administrative procedures take too much time within UNEP; this leads to unnecessary losses in the project and disappointment and frustration within the entire team (besides losses due to outdated documents due to slow administrative procedures). In general, feedback from UNEP was described as "very slow" and there was no way for the national participants to speed up any kind of feedback processes. The lesson learned is a need for UNEP projects to do a faster turnaround on reporting.
10. Missing **South-South cooperation** means that opportunities for exchange or replication are lost when such cooperation does not occur. For example, in the EIRET project, South Africa could potentially have learned something from the Chinese experience with the GIZ China Wind Energy Centre; but such cooperation was not established within the project. The lesson is that South-South cooperation has to be prioritised and monitored by UNEP projects.

### III.C Recommendations

Recommendations from the evaluation team are mostly based on the discussion with the respective project partners and – in parallel – a review of project documents. Recommendations are given on the project level but not on the country level, as these recommendations cover all countries.

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▶ Recommendation 1: Organization of a final meeting

The reason that the project team met only on one occasion during four years of project work is not clear. The planning of only one meeting between the project partners during this four-year project is not adequate. Communication by email and phone calls on a monthly basis is definitely helpful, but annual meetings of the project team would have increased the quality of project results considerably. From the Chinese side, it was recommended to carry out the workshop with the entire team and then have three parallel sessions on solar, wind and policy in parallel before meeting all together at the end of the workshop for conclusions and next steps. A final meeting between the different members of the three country teams should be dedicated to a common brainstorming rather than to technical exchange between the partners on renewable energies, as this is typically a topic for international meetings and conferences on wind energy and solar PV. In order to reduce cost for traveling and to limit emissions, such a meeting could be done by video conferencing, organized via UNEP's office in Paris. This could be done by UNEP Paris.

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▶ Recommendation 2: Public awareness activities and dissemination of results

UNEP should consider (but also discuss this issue with the three countries) an information campaign to share the results from the EIRET study – at least a press release and some scientific publications in specialized energy journals. The publication of the summary EIRET report for the stocktaking and training component (Moner-Girona et al. 2012) could also serve as an “event” to present the results on the respective national levels (for example, in China the final presentation can be organized as a side-event and/or presentation given during the National Wind Energy Fair in October 2012). In addition, with the completion of the summary report, an article should be published in UNEP publication, such as newsletters. All reports produced during the project should be disseminated in all countries involved. This could be done by the national teams with support of the local UNEP representative.

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▶ Recommendation 3: Preparation of summary report for the modeling component

After the successful publication of UNEP's summary report that aggregates the EIRET results from all three participating countries for the stocktaking and training component of the project (Moner-Girona et al. 2012), a similar summary report – for which there is no draft available yet – should be published for the modeling component. To be done by UNEP Paris. Once this report has been finalized, its actual impact on policy making should be maximized. This issue is further detailed in recommendation 5 below.



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► Recommendation 4: Ensuring a strong relation between the project team and the final recipient

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Due to the strong relation between the EIRET project team and the Minister of Environment, Mr Carlos Mink, the know-how of the UNEP project continues within the COPPE team and within the Ministry itself. But this is only due to strong personal relations between the two organizations. Any action ensuring the continuation of the project team will increase the long-term effects of the project. There is a strong need for a close connection between the research part of the UNEP project and the political level in the respective country. For South Africa additional support on transferring the results from the UNEP project to the administrative level and political level is required. This could be done by the national teams with support of the local UNEP representative, which in the case of South Africa would ease the access to the governmental level.

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► Recommendation 5: Local presentation of UNEP's summary EIRET report for the modeling component to policy makers in BR, CN, ZA

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The completion of UNEP's summary EIRET report for the modeling component may be a good opportunity to connect to policy-makers and authorities. This applies especially to Brazil and South Africa because they have actually participated in the modeling component. But they may also have interesting lessons learnt to offer to Chinese authorities. It is recommended that the results of the project be presented in all three countries at national events, but also at the international level. This could be done with assistance of the local UNEP offices in order to limit travel, travel cost and the respective emissions. A press release should be produced in advance. The participation of Mr Daniel Puig or Mrs Magda Moner-Girona would be recommended as they are the appropriate experts to report on the results from the respective two other countries. A final presentation of the entire project and the results for South Africa and Brazil should be organized. UNEP has tremendous know-how and convening power, and this could be used to support this presentation of findings to the respective governmental organizations responsible for renewable energy policy in South Africa. This could be done by the national teams with support of the local UNEP representative.

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► Recommendation 6: Reviewing suggestions for future activities in the renewable energy technology sector based on the EIRET project

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We recommend that the project team review the following suggestions for future work in the renewable energy technology sector (see box on the following page) with key staff in DTIE, Paris and ensure that they could be considered in future project planning and prioritisation activities linked to the topic of the EIRET project in this sector.

## **Suggestions for future UNEP support to the renewable energy technology sector**

- ▶ *Suggestion 1: Workshop for users of SWERA and other tools / support on linking and combining satellite data from ground measurement data for resource assessment; wind resource and solar resource assessment training seminars*

SWERA data is more detailed than the solar data currently available in China. Today, most project developers are using RETScreen to prepare feasibility studies for projects because the tool is easy to use and only requires horizontal global irradiation data. If developers want to do a more accurate job for their projects, they need to use detailed solar data from SWERA and need to use other tools than RETScreen, which has a number of limitations. Training is required for developers in the respective countries on how to use SWERA data. This should include a comparison between the different types of design tools for solar PV technologies. The Chinese government is supporting a project for solar resources measurement, and the budget of the project amounts to 159 million Yuan. This project includes 3 components: (1) Installing measurement equipment at 380 existing weather stations to enable them to measure not only horizontal global irradiation, but also direct and diffuse irradiation and direct normal irradiance, and irradiation on tilted surface and vertical wall. (2) Establishing a database of both measurement data and calculation data by comparing the satellite and measurement data in more detailed resolution, possibly 10 x 10 km. (3) Developing ways to use the data, including power generation forecasts for solar power plants, developing the software for design purpose, comparing the solar resources data and the real output of solar power plants. While component (1) is organized and financed by China, UNEP could consider assistance for component (2) and component (3). For China, the one output missing is on wind and solar energy resource assessment. As it was very difficult to get foreign experts to China, both on organizational problems and financial restrictions, this event should be planned for a future project. If this activity is not part of UNEP's actions, it could also be an activity of the International Renewable Energy Agency (IRENA).

- ▶ *Suggestion 2: Effects of renewable energy penetration on employment, industrialization, electric network stability, fuel substitution and on energy prices*

From the perspective of South Africa, the following more detailed information on a further implementation of renewable energy is needed: impacts of renewable energy implementation on the national and regional job market (employment) and validation of these figures; impact of renewable energy penetration on generation processes in the electricity sector; effects of renewable energy on industrialization and respective industry policy required; effects of renewable energy penetration on shifting coal use, all direct and indirect effects of this substitution process, impact on prices due to construction and operation, scenario updates for the IRP with focus on renewables as a supply option. These additional activities would add value to the project impact, as the transfer of results would then lead more directly to policy-makers.

- ▶ *Suggestion 3: Extending to biomass, CSP, solar heating and geothermal energy*

As the project team has established good working relations between UNEP in Paris and each of the respective partner organization in the three countries, we suggest that UNEP consider an extension of the project to cover other types of renewable energy, for example biomass, concentrating solar power (CSP) and geothermal energy for all countries involved. In addition to these types of renewable energy, the discussion on

second generation biofuels based on hydrolysis of sugar cane or jatropha seeds and similar processes should be carefully followed. There was also a proposal from the South African side to widen the focus of renewable energy technologies to include ocean energy in future projects.

▶ *Suggestion 4: Extending to other regions*

A replication of the EIRET project that transfers the information and know-how collected in this study could be useful for the implementation of renewables in these countries (India, South East Asia, Central and South America). From the Chinese side there were no direct suggestions as to which Asian countries should participate, but in our view Japan, Korea and India could be considered as possible partners. Other proposals were for Kenya or Zambia which have resources of hydro, geothermal energy and crops and a high potential for substitution of locally used diesel oil for electricity production. From the South African side, some kind of regional coverage was discussed, for example a project covering those regions that are part of a single electricity grid. From the perspective of South Africa, an extension of the regions covered should be limited to direct neighboring regions, in this case for example to the Namibian solar market.

▶ *Suggestion 5: South-South co-operation required; information exchange via workshop, seminar or study visit between the three or more emerging countries on renewable energy development*

From the viewpoint of the Brazilians, there was no South-South cooperation during the entire course of the project; probably China has benefited from the contribution by the peer review panel in the beginning of the project, but no South-South co-operation was established. This should be tackled as a priority, for example at least one final meeting in Paris could assist in South-South Co-operation. Meanwhile during the entire course of the project the Brazilian team has not benefited from interaction with the teams in China or South Africa. Chinese stakeholders recommended that any South-South cooperation should include a wider range of stakeholders, for example different governmental organizations and different industries and project developers from all participating countries to ensure a full exchange of ideas and start common business development in the field of renewable energies.

▶ *Suggestion 6: Large scale solar energy and wind energy integration into the national power grids*

The technical and managerial aspects of integrating large scale solar energy and wind energy into the national power grids should be further investigated. A future project should be based on experiences in countries which already have a comparatively high share of electricity generation from wind and solar energy.

▶ *Suggestion 7: Regulations and procedures for the integration of small scale PV systems to the local grid including smart grid systems*

Support to develop regulations and procedures for the integration of small scale PV systems to the local grid and the management and re-numeration processes would be useful. As there are new installments necessary for online-measuring, the introduction of smart grid systems linked to these PV systems will be investigated.

▶ *Suggestion 8: Detailed calculation / re-calculation of feed-in-tariffs (wind energy and solar PV)*

The detailed methodology for the calculation or re-calculation of feed-in-tariffs for both, solar and wind energy is urgently needed according to Chinese stakeholders. As the tariff will have considerable influence on the investment in renewable energy, this could be one of the main tasks for the future to support the implementation of renewables in the region.

▶ *Suggestion 9: Research on renewable energy technology transfer*

A proposal has been provided by the Chinese Wind Energy Association on future research on renewable energy technology transfer and free trading mechanisms speeding up the renewable energy development and the establishment of an international market by overcoming trade barriers and other factors.

▶ *Suggestion 10: Using international experience*

Another proposal has been given by the Chinese Wind Energy Association on using China's experience in renewable energy development especially with respect to wind for a rapid growth in aspects of policy and industry and transmission to countries who are in the initial stage of renewable energy development.

▶ *Suggestion 11: Analyzing and overcoming the existing barriers to participation in IEA Implementing Agreements*

Since the participation of Brazil and China in IEA Implementing Agreements could not be adequately enhanced through the EIRET project, the existing barriers should be analyzed in greater depth to facilitate international cooperation and exchange on solar and wind energy in the future. This suggestion implies that pursuing a more differentiated project approach in the three participating countries in the future could be more useful.

▶ *Suggestion 12: Technology Centers for Renewable Energies*

There is a proposal for defining and setting-up "Technology Centers for Renewable Energies" in the participating countries. These Centers should co-operate based on the findings in the EIRET project on a very close contact between the countries; this would allow the South African side to benefit from the experience gained in the other countries.

## IV. Annexes

### IV.A Evaluation terms of reference

#### TERMS OF REFERENCE

#### Terminal Evaluation of the Project: Enhancing information for renewable energy technology deployment in Brazil, China and South Africa

#### PROJECT BACKGROUND AND OVERVIEW

##### Project General Information

**Table 1. Project summary**

<b>Project Number</b>	CP/4040-09-02 (3743)		<b>Implementers</b>
<b>Subprogramme</b>	Division of Technology, Industry and Economics/Energy branch (DTIE)	<b>Implementation</b>	UNEP DTIE With supporting organisations: Brazil: National Institute for Space Research, University Federal de Rio de Janeiro China: Energy Research Institute South Africa: Centre for Renewable and Sustainable Energy studies, Energy Research Centre, University of Capetown.
<b>Theme</b>	UNEP's Climate Change strategy: Theme 1: Facilitating a transition towards low carbon societies.	<b>Total Cost</b>	US\$876,005
<b>Expected Accomplishment</b>	Countries make sound policy, technology and investment choices that lead to a reduction in greenhouse gas emissions and potential co-benefits, with a focus on clean and renewable energy sources, energy efficiency and energy conservation.	<b>Project Duration</b>	36 months (initially 2 years, but received no cost extension of 1 year).
<b>Geographic scope</b>	Brazil, China and South Africa	<b>Actual start date:</b>	Nov 2008
		<b>Completion date:</b>	Dec 2011 (actually finished in June 2011)

#### Acronyms

DTIE	UNEP's division of Technology, Industry and Economics/Energy
EA	Expected Accomplishment
SWERA	Solar and Wind Energy Assessment Project

#### Project Context and Rationale

Renewable sources of energy, solar and wind in particular, can meet several times the world's energy demands. Making use of these resources saves on national energy import costs, can generate national income in the form of energy exports, and drives innovation and job creation in this increasingly competitive energy market segment.

Solar and wind energy resource potentials differ from location to location. Through a range of well-established techniques mapping these potentials is possible. This allows investors to determine the size of the investments required to exploit indigenous resources for meeting specific energy demands. This in turn makes it possible to calculate return-on-investment figures – which can be higher than otherwise anticipated without explicit knowledge of the resource base.

A Global Environment Facility-sponsored project, the Solar and Wind Energy Resource Assessment (SWERA) (launched in 2001) has produced a range of solar and wind datasets and maps at better spatial scales of resolution than previously available.. Results were integrated into a user-friendly computer-based geo-referenced information system, which supports informed decision-making and helps increase investor confidence in renewable energy projects.

SWERA covered major areas of thirteen developing countries in Latin America, the Caribbean, Africa and Asia. This project was designed to scale up the success of the SWERA project: extending its coverage and broadening the range of services it provides. China, Brazil and South Africa were selected as focus countries on the basis of both their emission profiles and their interest in promoting renewable sources of energy.

#### Project objectives and expected accomplishments

The **project's overall development goal** was to promote both an improved policy environment for investment in renewable energy, and a stronger, more robust national solar and wind energy market.

The project's **objective** was to help national governments in Brazil, China and South Africa to gain a better understanding of the resource, policy, risk management and technology information requirements associated with expanded renewable energy technology deployment in these countries.

In order to meet this objective, the project planned to:

- (i) study present and planned developments in the four areas above,
- (ii) determine potential avenues for improving the in-country information base on those areas,
- (iii) facilitate the development of closer links between national institutions and related international initiatives.

See Annex 1 for log framework.

#### Executing Arrangements

Given the relatively small size of the project, a straightforward organisational structure was adopted. The overall project coordinator, based in UNEP's Division of Technology, Industry and Economics, oversaw the work to complete the first project activity.

UNEP DTIE worked with project partners in each of the focus countries (see table 1 above).

A peer review panel advised the overall project coordinator and the three country project managers. The panel comprised representatives from the United States National Renewable Energy Laboratory, the German Aerospace Centre and the Risø National Laboratory at the Technical University of Denmark. Panel members undertake cutting edge work in the area of renewable energy resource information and are thus well-equipped to help in-country partners assess existing information vis-à-vis state-of-the-art practices (activity 1), design the training sessions (activity 2), and identify international efforts which are relevant to the concerns of the three recipient countries (activity 3).

Key project stakeholders include energy sector decision-makers in both government and industry, notably energy sector regulators and utilities.

#### Project Cost and Financing

The project budget was \$876,005. The project was funded by the German Government, and from the UNEP core budget.

See Annex 2 for project budget.

#### Project Implementation Issues

The project received a no cost extension of one year and was completed in December 2011.

### **TERMS OF REFERENCE FOR THE EVALUATION**

#### Objective and Scope of the Evaluation

1. In line with the UNEP Evaluation Policy<sup>7</sup> and the UNEP Evaluation Manual<sup>8</sup> the terminal evaluation of the Project “**Enhancing information for renewable energy technology deployment in Brazil, China and South Africa**” is undertaken at the end of the project to assess project performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP, and their partners. Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation. It will focus on the following sets of **key questions**, based on the project’s intended outcomes, which may be expanded by the consultants as deemed appropriate:

- 1. How successful was the project in helping national governments in Brazil, China and South Africa gain a better understanding of resource, policy, risk management and technology information requirements associated with expanded, renewable energy technology deployment in these countries?**

#### Overall Approach and Methods

2. The terminal evaluation of the Project “**Enhancing information for renewable energy technology deployment in Brazil, China and South Africa** .”will be conducted by an

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<sup>7</sup> <http://www.unep.org/eou/StandardsPolicyandPractices/UNEPEvaluationPolicy/tabid/3050/language/en-US/Default.aspx>

<sup>8</sup> <http://www.unep.org/eou/StandardsPolicyandPractices/UNEPEvaluationManual/tabid/2314/language/en-US/Default.aspx>

independent consultant under the overall responsibility and management of the UNEP Evaluation Office (Nairobi).

3. It will be an in-depth evaluation using a participatory approach whereby key stakeholders are kept informed and consulted throughout the evaluation process. Both quantitative and qualitative evaluation methods will be used to determine project achievements against the expected outputs, outcomes and impacts.
4. The findings of the evaluation will be based on the following:
  - a. A **desk review** of project documents<sup>9</sup> including, but not limited to:
    - Relevant background documentation.
    - Project design documents; Annual Work Plans and Budgets or equivalent, revisions to the logical framework and project financing;
    - Project reports such as progress and financial reports; Peer review panel meeting minutes; annual Project Implementation Reviews and relevant correspondence;
    - Web based products
    - Other documentation/audio visuals etc relating to project activities and outputs.
  - b. **Interviews**<sup>10</sup> with:
    - Project management and execution support;
    - Members of peer review panel.
    - UNEP Project Manager and Fund Management Officer (Nairobi);
    - In country partners
    - Recipients of project training and other outputs;
    - Members of appropriate government agencies.
  - c. **Country visits.**

The consultant will travel to Beijing to meet with project partners. Project partners in Brazil and South Africa will be contacted by phone and email.

#### Key Evaluation principles

5. Evaluation findings and judgements should be based on **sound evidence and analysis**, clearly documented in the evaluation report. Information will be triangulated (i.e. verified from different sources) to the extent possible, and when verification is not possible, the single source will be mentioned<sup>11</sup>. Analysis leading to evaluative judgements should always be clearly spelled out.
6. The evaluation will assess the project with respect to a **minimum set of evaluation criteria** grouped in four categories: (1) Attainment of objectives and planned results, which comprises the assessment of outputs achieved, relevance, effectiveness and efficiency and the review of outcomes towards impacts; (2) Sustainability and catalytic role, which focuses on financial, socio-political, institutional and ecological factors conditioning sustainability of project outcomes, and also assesses efforts and achievements in terms of replication and up-scaling of project lessons and good practices;

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<sup>9</sup> Documents to be provided by the UNEP are listed in Annex.

<sup>10</sup> Face-to-face or through any other appropriate means of communication

<sup>11</sup> Individuals should not be mentioned by name if anonymity needs to be preserved.



(3) Processes affecting attainment of project results, which covers project preparation and readiness, implementation approach and management, stakeholder participation and public awareness, country ownership/driven-ness, project finance, UNEP supervision and backstopping, and project monitoring and evaluation systems; and (4) Complementarity with the UNEP strategies and programmes. The lead consultant can propose other evaluation criteria as deemed appropriate.

7. **Ratings.** All evaluation criteria will be rated on a six-point scale. However, complementarity of the project with the UNEP strategies and programmes is not rated. Annex 5 provides detailed guidance on how the different criteria should be rated and how ratings should be aggregated for the different evaluation criterion categories.
8. In attempting to attribute any outcomes and impacts to the project, the evaluators should consider the difference between **what has happened with** and **what would have happened without** the project. This implies that there should be consideration of the baseline conditions and trends in relation to the intended project outcomes and impacts. This also means that there should be plausible evidence to attribute such outcomes and impacts to the actions of the project. Sometimes, adequate information on baseline conditions and trends is lacking. In such cases this should be clearly highlighted by the evaluators, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgments about project performance.
9. As this is a terminal evaluation, particular attention should be given to learning from the experience. Therefore, **the “why?” question** should be at front of the consultants’ minds all through the evaluation exercise. This means that the consultants needs to go beyond the assessment of “what” the project performance was, and make a serious effort to provide a deeper understanding of “why” the performance was as it was, i.e. of processes affecting attainment of project results (criteria under category 3). This should provide the basis for the lessons that can be drawn from the project. In fact, the usefulness of the evaluation will be determined to a large extent by the capacity of the consultants to explain “why things happened” as they happened and are likely to evolve in this or that direction, which goes well beyond the mere assessment of “where things stand” today.

#### Evaluation criteria

##### **Attainment of Objectives and Planned Results**

10. The evaluation should assess the relevance of the project’s objectives and the extent to which these were effectively and efficiently achieved or are expected to be achieved.
  - a) *Achievement of Outputs and Activities:* Assess, for each component, the project’s success in producing the programmed outputs as presented Annex 1, both in quantity and quality, as well as their usefulness and timeliness. Briefly explain the degree of success of the project in achieving its different outputs, cross-referencing as needed to more detailed explanations provided under Section 3 (which covers the processes affecting attainment of project objectives). The achievements under the regional and national demonstration projects will receive particular attention.
  - b) *Relevance:* Assess, in retrospect, whether the project’s objectives and implementation strategies were consistent with: i) Sub-regional environmental issues and needs; ii) the UNEP mandate and policies at the time of design and implementation.
  - c) *Effectiveness:* Assess to what extent the project has achieved its main objective: **to help national governments in Brazil, China and South Africa to gain a better understanding of the resource, policy, risk management and technology**

**information requirements associated with expanded renewable energy technology deployment in these countries** as presented in section C above. To measure achievement, use as much as appropriate the indicators for achievement proposed in the Logical Framework Matrix (Logframe) of the project, adding other relevant indicators as appropriate. Briefly explain what factors affected the project's success in achieving its objectives, cross-referencing as needed to more detailed explanations provided under Section 3.

- d) *Efficiency*: Assess the cost-effectiveness and timeliness of project execution. Describe any cost- or time-saving measures put in place in attempting to bring the project to a successful conclusion within its programmed budget and (extended) time. Analyse how delays, if any, have affected project execution, costs and effectiveness. Wherever possible, compare the cost and time over results ratios of the project with that of other similar projects. Give special attention to efforts by the project teams to make use of / build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. to increase project efficiency.
- e) *Review of Outcomes to Impacts (ROtI)*: Reconstruct the logical pathways from project outputs over achieved objectives towards impacts, taking into account performance and impact drivers, assumptions and the roles and capacities of key actors and stakeholders, using the methodology presented in the GEF Evaluation Office's ROtI Practitioner's Handbook<sup>12</sup> (summarized in Annex 7 of the TORs). Examine to what extent the project has contributed to date, and is likely to contribute in the future to further changes in stakeholder behaviour, particularly governments as regards: i) increased capacity for informed assessment of renewable energy potential, and the likelihood of this leading to increased solar and wind energy generation in the focus countries.

### **Sustainability and catalytic role**

11. **Sustainability** is understood as the probability of continued long-term project-derived results and impacts after the external project funding and assistance ends. The evaluation will identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of benefits. Some of these factors might be direct results of the project while others will include contextual circumstances or developments that are not under control of the project but that may condition sustainability of benefits. The evaluation should ascertain to what extent follow-up work has been initiated and how project results will be sustained and enhanced over time. Application of the ROtI method will assist in the evaluation of sustainability.
12. Four aspects of sustainability will be addressed:
  - a. *Socio-political sustainability*. Are there any social or political factors that may influence positively or negatively the sustenance of project results and progress towards impacts? Is the level of ownership by the main national and regional stakeholders sufficient to allow for the project results to be sustained? Are there sufficient government and stakeholder awareness, interests, commitment and incentives to execute, enforce and pursue the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project?

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<sup>12</sup> [http://www.thegef.org/gef/sites/thegef.org/files/documents/Impact\\_Eval-Review\\_of\\_Outcomes\\_to\\_Impacts-RotI\\_handbook.pdf](http://www.thegef.org/gef/sites/thegef.org/files/documents/Impact_Eval-Review_of_Outcomes_to_Impacts-RotI_handbook.pdf)

- b. *Financial resources.* To what extent are the continuation of project results and the eventual impact of the project dependent on continued financial support? What is the likelihood that adequate financial resources<sup>13</sup> will be or will become available to implement the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project? Are there any financial risks that may jeopardize sustenance of project results and onward progress towards impact?
  - c. *Institutional framework.* To what extent is the sustenance of the results and onward progress towards impact dependent on issues relating to institutional frameworks and governance? How robust are the institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. required to sustaining project results and to lead those to impact on human behaviour and environmental resources?
  - d. *Environmental sustainability.* Are there any environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher level results that are likely to affect the environment, which, in turn, might affect sustainability of project benefits?
13. **Catalytic Role and Replication.** The *catalytic role* of UNEP interventions is embodied in their approach of supporting the creation of an enabling environment and of investing in pilot activities which are innovative and showing how new approaches can work. UNEP also aims to support activities that upscale new approaches to a national, regional or global level, with a view to achieve sustainable global environmental benefits. The evaluation will assess the catalytic role played by this project, namely to what extent the project has:
- a. *catalyzed behavioural changes* in terms of use and application by the relevant stakeholders of: i) technologies and approaches show-cased by the demonstration projects; ii) strategic programmes and plans developed; and iii) assessment, monitoring and management systems established at a national and sub-regional level;
  - b. provided *incentives* (social, economic, market based, competencies etc.) to contribute to catalyzing changes in stakeholder behaviour;
  - c. contributed to *institutional changes*. An important aspect of the catalytic role of the project is its contribution to institutional uptake or mainstreaming of project-piloted approaches in the regional and national demonstration projects;
  - d. contributed to *policy changes* (on paper and in implementation of policy);
  - e. contributed to sustained follow-on financing (*catalytic financing*) from Governments or other donors;
  - f. created opportunities for particular individuals or institutions (“*champions*”) to catalyze change (without which the project would not have achieved all of its results).

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<sup>13</sup> Those resources can be from multiple sources, such as the public and private sectors, income generating activities, other development projects etc.

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

### **Processes affecting attainment of project results**

15. **Preparation and Readiness.** Were the project's objectives and components clear, practicable and feasible within its timeframe? Were the capacities of executing agencies properly considered when the project was designed? Was the project document clear and realistic to enable effective and efficient implementation? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were counterpart resources (funding, staff, and facilities) and enabling legislation assured? Were adequate project management arrangements in place? Were lessons from other relevant projects properly incorporated in the project design? Were lessons learned and recommendations from Peer review panel meetings adequately integrated in the project approach? What factors influenced the quality-at-entry of the project design, choice of partners, allocation of financial resources etc.?
16. **Implementation Approach and Adaptive Management.** This includes an analysis of approaches used by the project, its management framework, the project's adaptation to changing conditions (adaptive management), the performance of the implementation arrangements and partnerships, relevance of changes in project design, and overall performance of project management. The evaluation will:
- a. Ascertain to what extent the project implementation mechanisms outlined in the project document have been followed and were effective in delivering project outputs and outcomes. Were pertinent adaptations made to the approaches originally proposed?
  - b. Assess the role and performance of the units and committees established and the project execution arrangements at all levels;
  - c. Evaluate the effectiveness and efficiency of project management and how well the management was able to adapt to changes during the life of the project;
  - d. Assess the extent to which project management responded to direction and guidance provided by the Peer review panel and implementing agency supervision recommendations;
  - e. Identify administrative, operational and/or technical problems and constraints that influenced the effective implementation of the project, and how the project partners tried to overcome these problems;
17. **Stakeholder<sup>14</sup> Participation and Public Awareness.** The term stakeholder should be considered in the broadest sense, encompassing project partners, government institutions,

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<sup>14</sup> Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake in the outcome of the project. The term also applies to those potentially adversely affected by the project.

private interest groups, local communities etc. The assessment will look at three related and often overlapping processes: (1) information dissemination between stakeholders, (2) consultation between stakeholders, and (3) active engagement of stakeholders in project decision making and activities. The evaluation will specifically assess:

- a. the approach(es) used to identify and engage stakeholders in project design and implementation. What were the strengths and weaknesses of these approaches with respect to the project's objectives and the stakeholders' motivations and capacities? What was the achieved degree and effectiveness of collaboration and interactions between the various project partners and stakeholders during the course of implementation of the project?
- b. the degree and effectiveness of any public awareness activities that were undertaken during the course of implementation of the project; or that are built into the assessment methods so that public awareness can be raised at the time the assessments will be conducted; how the results of the project (strategic programmes and plans, monitoring and management systems, sub-regional agreements etc.) engaged key stakeholders involved in the development of MDGs and national poverty reduction strategies.
- c. The ROTI analysis should assist the consultants in identifying the key stakeholders and their respective roles, capabilities and motivations in each step of the causal pathway from activities to achievement of outputs and objectives to impact.

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

- a. in how the Governments have assumed responsibility for the project and provided adequate support to project execution, including the degree of cooperation received from the various contact institutions in the countries involved in the project and the timeliness of provision of counter-part funding to project activities;
- b. to what extent the political and institutional framework of the participating countries has been conducive to project performance. Look, in particular, at the extent of the political commitment to enforce (sub-) regional agreements promoted under the project;
- c. to what extent the Governments have promoted the participation of communities and their non-governmental organisations in the project; and

19. **Financial Planning and Management.** Evaluation of financial planning requires assessment of the quality and effectiveness of financial planning and control of financial resources throughout the project's lifetime. The assessment will look at actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing. The evaluation will:

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

- b. Appreciate other administrative processes such as recruitment of staff, procurement of goods and services (including consultants), preparation and negotiation of cooperation agreements etc. to the extent that these might have influenced project performance;
  - c. Present to what extent co-financing has materialized as expected at project approval (see Table 1). Report country co-financing to the project overall, and to support project activities at the national level in particular. The evaluation will provide a breakdown of final actual costs and co-financing for the different project components (see Annex 2).
  - d. Describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective. Leveraged resources are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector.
20. Analyse the effects on project performance of any irregularities in procurement, use of financial resources and human resource management, and the measures taken by UNEP and the executing partner (s) to prevent such irregularities in the future. Examine whether the measures taken were adequate.
21. **UNEP Supervision and Backstopping.** The purpose of supervision is to verify the quality and timeliness of project execution in terms of finances, administration and achievement of outputs and outcomes, in order to identify and recommend ways to deal with problems which arise during project execution. Such problems may be related to project management but may also involve technical/institutional substantive issues in which UNEP has a major contribution to make. The evaluators should assess the effectiveness of supervision and administrative and financial support provided by UNEP including:
- a. The adequacy of project supervision plans, inputs and processes;
  - b. The emphasis given to outcome monitoring (results-based project management);
  - c. The realism and candour of project reporting and ratings (i.e. are PIR ratings an accurate reflection of the project realities and risks);
  - d. The quality of documentation of project supervision activities; and
  - e. Financial, administrative and other fiduciary aspects of project implementation supervision.
22. **Monitoring and Evaluation.** The evaluation will include an assessment of the quality, application and effectiveness of project monitoring and evaluation plans and tools, including an assessment of risk management based on the assumptions and risks identified in the project document. The evaluation will examine how information generated by the M&E system during project implementation was used to adapt and improve project execution, achievement of outcomes and ensuring sustainability. M&E is assessed on three levels:
- a. *M&E Design.* Projects should have sound M&E plans to monitor results and track progress towards achieving project objectives. An M&E plan should

include a baseline (including data, methodology, etc.), SMART indicators and data analysis systems, and evaluation studies at specific times to assess results. The time frame for various M&E activities and standards for outputs should have been specified. The evaluators should use the following questions to help assess the M&E design aspects:

- Quality of the project logframe as a planning and monitoring instrument
  - SMART-ness of indicators: Are there specific indicators in the logframe for each of the project objectives? Are the indicators measurable, attainable (realistic) and relevant to the objectives? Are the indicators time-bound?
  - Adequacy of baseline information: To what extent has baseline information on performance indicators been collected and presented in a clear manner? Was the methodology for the baseline data collection explicit and reliable?
  - Arrangements for monitoring: Have the responsibilities for M&E activities been clearly defined? Were the data sources and data collection instruments appropriate? Was the frequency of various monitoring activities specified and adequate? In how far were project users involved in monitoring?
  - Arrangements for evaluation: Have specific targets been specified for project outputs? Has the desired level of achievement been specified for all indicators of objectives and outcomes? Were there adequate provisions in the legal instruments binding project partners to fully collaborate in evaluations?
- b. *M&E Plan Implementation.* The evaluation will verify that:
- the M&E system was operational and facilitated timely tracking of results and progress towards projects objectives throughout the project implementation period;
  - annual project reports and Progress Implementation Review (PIR) reports were complete, accurate and with well justified ratings;
  - the information provided by the M&E system was used during the project to improve project performance and to adapt to changing needs;
  - projects had an M&E system in place with proper training, instruments and resources for parties responsible for M&E.
- c. Budgeting and funding for M&E activities. The evaluation will determine whether:
- support for M&E was budgeted adequately and was funded in a timely fashion during implementation.

### **Complementarities with UNEP strategies and programmes**

23. The evaluation should present a brief narrative on the following issues:

- a. *Linkage to UNEP's Expected Accomplishments and POW 2010-2011.* The UNEP MTS specifies desired results in six thematic focal areas. The desired results are termed Expected Accomplishments. Using the completed ROI analysis, the evaluation should comment on whether the project makes a tangible contribution to any of the Expected Accomplishments specified in the UNEP MTS. The magnitude and extent of any contributions and the causal linkages should be fully described.

- b. *Alignment with the Bali Strategic Plan (BSP)*<sup>15</sup>. The outcomes and achievements of the project should be briefly discussed in relation to the objectives of the UNEP BSP.
- c. *Gender*. Ascertain to what extent project design, implementation and monitoring have taken into consideration: (i) possible gender inequalities in access to and the control over natural resources; (ii) specific vulnerabilities of women and children to environmental degradation or disasters; and (iii) the role of women in mitigating or adapting to environmental changes and engaging in environmental protection and rehabilitation. Appreciate whether the intervention is likely to have any lasting differential impacts on gender equality and the relationship between women and the environment. To what extent do unresolved gender inequalities affect sustainability of project benefits?
- d. *South-South Cooperation*. This is regarded as the exchange of resources, technology, and knowledge between developing countries. Briefly describe any aspects of the project that could be considered as examples of South-South Cooperation.

#### The Consultants' Team

24. For this evaluation, an independent consultant(s) will be hired. The following expertise and experience is required:
- a. Experience of evaluation
  - b. Degree in energy/economics related field.
  - c. At least 10 years knowledge and experience of the renewable energy sector.
  - d. Knowledge of the policy/institutional environment for renewable energy development (ideally in the focus countries).
  - e. Knowledge of target countries preferred.
25. The **Consultant** will be responsible for data collection and analysis phase of the evaluation, and preparing the main report. (S)He will ensure that all evaluation criteria are adequately covered.
26. *By undersigning the service contract with UNEP/UNON, the consultant certifies that they have not been associated with the design and implementation of the project in any way which may jeopardize their independence and impartiality towards project achievements and project partner performance. In addition, they will not have any future interests (within six months after completion of their contract) with the project's executing or implementing units.*

#### Evaluation Deliverables and Review Procedures

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

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<sup>15</sup> <http://www.unep.org/GC/GC23/documents/GC23-6-add-1.pdf>



- Project relevance (see paragraph 20 (b));
- A desk-based Theory of Change of the project (see Annex 7- ROTI analysis);
- Sustainability consideration (see paragraphs 21-22) and measures planned to promote replication and upscaling (see paragraph 23);
- Preparation and readiness (see paragraph 25);
- Financial planning (see paragraph 30);
- M&E design (see paragraph 33(a));
- Complementarities with UNEP strategies and programmes (see paragraph 34);
- Using the above, complete and assessment of the overall quality of the project design (see Annex 6)

The evaluation framework will present in further detail the evaluation questions under each criterion with their respective indicators and data sources. The inception report will be submitted for review by the Evaluation Office before the evaluation team conducts any field visits.

28. **The main evaluation report** should be brief (no longer than 35 pages – excluding the executive summary and annexes), to the point and written in plain English. The report will follow the annotated Table of Contents outlined in Annex 4. It must explain the purpose of the evaluation, exactly what was evaluated and the methods used (with their limitations). The report will present evidence-based and balanced findings, consequent conclusions, lessons and recommendations, which will be cross-referenced to each other. The report should be presented in a way that makes the information accessible and comprehensible. Any dissident views in response to evaluation findings will be appended in footnote or annex as appropriate.
29. **Review of the draft evaluation report.** The Team Leader will submit the zero draft report latest by 24<sup>th</sup> February 2012 to the UNEP EO and revise the draft following the comments and suggestions made by the EO. The EO will then share the first draft report with the UNEP Division of Environmental Policy Implementation. They will forward the first draft report to the other project stakeholders, in particular implementing partners in the three countries, for review and comments. Stakeholders may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. Comments would be expected within two weeks after the draft report has been shared. Any comments or responses to the draft report will be sent to the UNEP EO for collation. The EO will provide the comments to the Consultant for consideration in preparing the final draft report. The Consultant will submit the final draft report no later than 2 weeks after reception of stakeholder comments. The Consultant will prepare a **response to comments** that contradict the findings of the evaluation team and could therefore not be accommodated in the final report. This response will be shared by the EO with the interested stakeholders to ensure full transparency.
30. Consultations will be held between the consultant, EO staff, UNEP/DTIE and key members of the project execution team. These consultations will seek feedback on the proposed recommendations and lessons.
31. **Submission of the final Terminal Evaluation report.** The final report shall be submitted by Email to:

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

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

Mark Radka  
Energy Chief  
UNEP/DTIE  
15, rue de Milan

F-75441 • Paris CEDEX 09 • France  
Telephone: +33 1 44 37 14 27  
[mark.radka@unep.org](mailto:mark.radka@unep.org)

33. The final evaluation report will be published on the UNEP Evaluation Office web-site [www.unep.org/eou](http://www.unep.org/eou) and may be printed in hard copy.
34. As per usual practice, the UNEP EO will prepare a **quality assessment** of the zero draft and final draft report, which is a tool for providing structured feedback to the evaluation consultants. The quality of the report will be assessed and rated against UNEP criteria as presented in Annex 8.
35. The UNEP Evaluation Office will also prepare a **commentary** on the final evaluation report, which presents the EO ratings of the project based on a careful review of the evidence collated by the evaluation team and the internal consistency of the report. Resources and Schedule of the Evaluation
36. This Terminal Evaluation will be undertaken by an independent evaluation consultants contracted by the UNEP Evaluation Office. The consultant will work under the overall responsibility of the UNEP Evaluation Office and they will consult with the EO on any procedural and methodological matters related to the evaluation. It is, however, the consultant's individual responsibility to arrange for their travel, obtain documentary evidence, meetings with stakeholders, field visits, and any other logistical matters related to their assignment. The UNEP Project Manager and regional and national project staff will provide logistical support (introductions, meetings, transport, lodging etc.) for the country visits where necessary, allowing the consultants to conduct the evaluation as efficiently and independently as possible.
37. The **Consultant** will be hired for 1 month 3 weeks spread over 3 months between 28 December 2011 and April 2nd 2012. He will travel to China and conduct phone/email interviews with project partners and stakeholders in Brazil and South Africa.

## Schedule Of Payment

### **Lump Sum**

38. The consultant will be hired under an individual Special Service Agreement (SSA). The fee will be estimated as a lumpsum, inclusive of all expenses such as travel, accommodation and incidental expenses.
39. The consultant will receive an initial payment covering the travel costs upon signature of the contract.
40. The Team Leader will receive 40% of the honorarium portion of his/her fee upon acceptance of a draft report deemed complete and of acceptable quality by the EO. The remainder will be paid upon satisfactory completion of the work.
41. In case the consultant is not able to provide the deliverables in accordance with these TORs, in line with the expected quality standards by the UNEP Evaluation Office, payment may be withheld at the discretion of the Head of the Evaluation Office until the consultants have improved the deliverables to meet UNEP's quality standards.
42. If the consultant fails to submit a satisfactory final product to UNEP in a timely manner, i.e. within one month after the end date of their contract, the Evaluation Office reserves the right to employ additional human resources to finalize the report, and to reduce the consultants' fees by an amount equal to the additional costs borne by the Evaluation Office to bring the report up to standard.

## IV.B The evaluation framework

We will establish initial contact with individuals through short personal emails which contain

- four open key questions (see IV.B.1).
- a long list of further questions (see sections IV.B.2 and IV.B.3)
- a deadline and contact details

Given the openness of the key questions, respondents can elaborate on them as they wish. Moreover, they can respond to any question in the long list. The long list will also be used as an aide memoire for face-to-face interviews with project partners and stakeholders in the field visit.

The questions for **project partners** in section IV.B.2 reflect the structure and content of the final evaluation report as required by the TOR. While they serve as a general guide, not all of them will be asked to every person due to time restrictions.

Special questions for **stakeholders** are described in section IV.B.3. The main focus here is on the causal path from outcomes to ultimate goals described in the Theory of Change above. Stakeholders should include some potential critics as well as those who know only very little about the project.

As we enter into a dialogue with stakeholders consulted, we will assure respect of confidence and anonymity of attribution. Moreover, in general we will not tell stakeholders about other participants contacted in this evaluation, apart from an introductory group email to all project partners at the very beginning of the evaluation.

### IV.B.1 Key evaluation questions

1. What evidence can you point to, if any, which shows that this project has helped the national government in [Brazil, China or South Africa, depending on the addressee] gain a better understanding of the resource, policy, risk management and technology information associated with expanded renewable energy technology deployment?
2. Do you have evidence or experience of the project being the cause of useful change in the policy environment for investment in renewable energy, and a stronger more robust solar and wind energy market? Please describe.
3. If you are able to, please name at least (a) one strength and (b) one weakness in the way the project was organized and managed. (Elaborate as much as you wish).
4. Do you have evidence or experience of the project contributing to the development of an international knowledge sharing platform (such as the IEA “implementing agreements”) to inform long term planning on renewable energy policy and technology?

### IV.B.2 Evaluation questions for project partners

#### IV.B.2.1 Attainment of objectives and planned results

##### Achievement of outputs and activities

In your opinion, how do you assess, for each component, the project’s success in producing the programmed outputs as to the given TOR as well as their usefulness and

timeliness? How do you see the degree of success of the project in achieving its different outputs?

### **Relevance**

In your opinion, how do you assess, in retrospect, whether the project's objectives and implementation strategies were consistent with the UNEP goals on sub-regional environmental issues and needs and with the UNEP mandate and policies at the time of design and implementation?

### **Effectiveness**

In your opinion, to what extent has the project achieved its main objective, namely to help national governments in Brazil, China and South Africa to gain a better understanding of the resource, policy, technology and risk management information requirements associated with expanded renewable energy technology deployment in these countries? What factors affected the project's success in achieving its objectives?

### **Efficiency**

In your opinion, how do you assess the cost-effectiveness and timeliness of project execution? Did any delays, if any, affect the project execution, costs and effectiveness? How do you see the costs and time over results ratios of the project with that of other similar projects, initiatives, and programmes etc. to increase project efficiency, if any?

### **Review of outcomes to impacts**

To what extent has the project contributed to date, and is likely to contribute in the future to further changes in stakeholder behavior? In your opinion, is the government better prepared with regard to increased capacity for informed assessment of renewable energy potential, and the likelihood to increased solar and wind energy generation in the focus countries?

## **IV.B.2.2 Sustainability and catalytic role**

### **Socio-political sustainability**

Are there any social or political factors that may influence positively or negatively the sustenance of project results and progress towards impacts?

Is the level of ownership by the main national and regional stakeholders sufficient to allow for the project results to be sustained?

Are there sufficient government and stakeholder awareness, interests, commitment and incentives to execute, enforce and pursue the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project?

### **Financial resources**

To what extent are the continuation of project results and the eventual impact of the project dependent on continued financial support?

What is the likelihood that adequate financial resources will be or will become available to implement the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project?

Are there any financial risks that may jeopardize sustenance of project results and onward progress towards impact?

### **Institutional framework**

To what extent is the sustenance of the results and onward progress towards impact dependent on issues relating to institutional frameworks and governance?

How robust are the institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. required to sustaining project results and to lead those to impact on human behaviour and environmental resources?

### **Environmental sustainability**

Are there any environmental factors, positive or negative, that can influence the future flow of project benefits?

Are there any project outputs or higher level results that are likely to affect the environment, which, in turn, might affect sustainability of project benefits?

Catalytic role and replication

### **Catalytic role**

In your opinion, what is the catalytic role played by this project, namely to what extent the project has contributed to catalyzed behavioural changes, incentives, institutional changes, policy changes, sustained follow-on financing (catalytic financing), created opportunities for particular individuals or institutions (“champions”)?

### **Replication**

Were lessons and experiences coming out of the project replicated, experiences repeated and lessons applied in different geographic areas?

Or were lessons scaled up and experiences repeated and in the same geographic area but on a much larger scale and funded by other sources?

## **IV.B.2.3 Processes affecting attainment of project results**

### **Preparation and readiness**

Were the project’s objectives and components clear, practicable and feasible within its timeframe? Were the capacities of executing agencies properly considered when the project was designed? Was the project document clear and realistic to enable effective and efficient implementation? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were counterpart resources (funding, staff, and facilities) and enabling legislation assured?

Were adequate project management arrangements in place? Were lessons from other relevant projects properly incorporated in the project design? Were lessons learned and recommendations from Peer Review Panel meetings adequately integrated in the project approach?

### **Implementation approach and adaptive management**

How did you see during the project execution time the management framework, the project’s adaptation to changing conditions (adaptive management), the performance

of the implementation arrangements and partnerships, relevance of changes in project design, and overall performance of project management?

To what extent have the project implementation mechanisms outlined in the project document been followed and were effective in delivering project outputs and outcomes?

Were pertinent adaptations made to the approaches originally proposed?

How do you evaluate the effectiveness and efficiency of project management and how well the management was able to adapt to changes during the life of the project?

How do you assess the extent to which project management responded to direction and guidance provided by the Peer Review Panel and implementing agency supervision recommendations?

### **Stakeholder participation and public awareness**

How did you ensure a wide stakeholder participation in your country? Which stakeholders were approached by your team? Which stakeholders did respond; which did not respond and what were the reasons for this? How did you raise public awareness in general? What actions did you carry out to raise public awareness?

### **Country ownership and driven-ness**

Do you see that the country in general has taken over the approach and findings of the project? Are the results and recommendations given in the project owned by the main stakeholders in your country?

### **Financial planning and management**

In your opinion, was the financial planning for the project adequate to reach the given aims and goals as to the TOR? Has the financial management been carried out and completed as originally planned from both contracting sides?

### **UNEP supervision and backstopping**

How do you see the management and supervision by UNEP for the project?

Was the management in the position to act in time and adequately to your needs? From a content point of view, did you use the backstopping capacities of UNEP?

What is the wider innovation framework? Who are the key actors and what have the key innovations over the project life.

What would have happened in this sector anyway (if the project hadn't taken place)

Were there significant events in this sector during the project life, and since then, which may effect the impact of the project. If so, how did the project management team react.

### **Monitoring and evaluation**

How did you evaluate the quality, application and effectiveness of project monitoring and evaluation plans and tools? How was the information generated by the M&E system during project implementation used and adapted to improve project execution, achievement of outcomes and ensuring sustainability? What is in your opinion the quality of the project logframe as a planning and monitoring instrument? To what extent has baseline information on performance indicators been collected and presented in a clear manner?

Was the methodology for the baseline data collection explicit and reliable? Have the responsibilities for M&E activities been clearly defined? Were the data sources and data collection instruments appropriate? Was the frequency of monitoring activities specified and adequate? In how far were project users involved in monitoring?

### **Complementarity with UNEP programmes and strategies**

Do you see the project as a linkage to UNEP's Expected Accomplishments and POW 2010-2011? In your opinion, is the project in alignment with the Bali Strategic Plan (BSP)? Were gender aspects adequately considered? To what extent do unresolved gender inequalities affected sustainability of project benefits? Was the project a support to South-South Cooperation?

## **IV.B.2.4 Conclusions and recommendations**

### **Conclusions**

In your opinion, please explain, what were the most positive achievements in the project and please indicate why this could be achieved during the project implementation? What were – in your opinion - the less successful aspects of the project?

### **Lessons learned**

In your opinion, what are the main lessons learned from the project? Are there any lessons learned that are rooted in project experiences, i.e. based on good practices and successes which could be replicated or derived from problems encountered in the project and mistakes made, which should be avoided in the future?

### **Recommendations**

Are there, in your opinion, any main recommendations that should be anchored in the conclusions of this evaluation report? Do you have any proposals on how to resolve concrete problems affecting the project or the sustainability of its results?

Final questions

### **Do you have any other general comments on the project?**

Are there any recommendations from your side to discuss this project with stakeholders in your country, for example Government Organisations, Ministry of Energy, Ministry of Finance, Energy Agencies, Utilities, Consumer Organisations, Associations of Producers for RE equipment, Association of Dealers for RE equipment, Association of Engineers and Architects and others?

## **IV.B.3 Evaluation questions for stakeholders**

Have you heard about the project? What is your opinion about the project? Is the project helpful for your country?

Is there a chance for influence by the project on national renewable energy policy?

Is there a chance for increased deployment of solar or wind energy technologies due to the project? Do you have any recommendation for next steps or future projects?



#### IV.C Evaluation program

The following people have been interviewed during the evaluation.

*Table 9: Key persons contacted during the evaluation*

No.	Name	Affiliation	Role	Email / Phone
1	Mr. Jake Badger	Risø National Laboratory at the Danish Technical University	Peer review panel	<a href="mailto:jaba@risoe.dtu.dk">jaba@risoe.dtu.dk</a> 0045-46775094
2	Mr. David Renné	Formerly United States National Renewable Energy Laboratory	Peer review panel	<a href="mailto:drenne@mac.com">drenne@mac.com</a>
3	Mr. Carsten Hoyer-Klick	German Aerospace Centre	Peer review panel	<a href="mailto:carsten.hoyer-klick@dlr.de">carsten.hoyer-klick@dlr.de</a> 0049-711-6862-728
4	Mr. Enio Pereira	National Institute for Space Research	Project partner	<a href="mailto:enio.pereira@inpe.br">enio.pereira@inpe.br</a> 0055-12-3208-6741
5	Mr. Emilio Lèbre La Rovere	Federal University of Rio de Janeiro	Project partner	<a href="mailto:emilio@ppe.ufrj.br">emilio@ppe.ufrj.br</a> 0055-21-2562.8759
6	Ms. Shi Jingli	Energy Research Institute, National Development and Planning Commission	Senior Research Fellow, Project partner	<a href="mailto:shjingli2002@163.com">shjingli2002@163.com</a> 0086-10-63908466
7	Mr. Wang Zhongying	Energy Research Institute, National Development and Planning Commission	Deputy Director-General, Project partner	<a href="mailto:wangzhongying@amr.gov.cn">wangzhongying@amr.gov.cn</a>
8	Mr. Wikus van Niekerk	Stellenbosch University	Project partner	<a href="mailto:wikus@sun.ac.za">wikus@sun.ac.za</a> 0027-21-808 4251
9	Mr. Andrew Marquard	University of Cape Town	Project partner	<a href="mailto:andrew.marquard@uct.ac.za">andrew.marquard@uct.ac.za</a> 0027-21-650 3230
9	Ms. Magda Moner-Girona	Formerly UNEP	Project manager	<a href="mailto:magdamnr@gmail.com">magdamnr@gmail.com</a>
10	Ms. Shannon Cowlin	Formerly UNEP	Project manager	<a href="mailto:shannon.cowlin@nrel.gov">shannon.cowlin@nrel.gov</a>
11	Mr. Daniel Puig	Formerly UNEP	Project manager	<a href="mailto:dapu@risoe.dtu.dk">dapu@risoe.dtu.dk</a>
12	Mr Wang Zhongying	Energy Research Institute, Beijing		<a href="mailto:wangzhongying@amr.gov.cn">wangzhongying@amr.gov.cn</a>
13	Mrs Lily Yuan	Sino-Danish Renewable Energy Development Project	Expert	<a href="mailto:yuanjingting@cnred.org.cn">yuanjingting@cnred.org.cn</a>
14	Mr Qin Haiyan	Chinese Wind Energy Association	Secretary General	<a href="mailto:qinhy@cwea.org.cn">qinhy@cwea.org.cn</a>
15	Mrs Wang Yan	Chinese Wind Energy Association	Wind Expert	<a href="mailto:wangyan@cwea.org.cn">wangyan@cwea.org.cn</a>
16	Mr Wang Sicheng	Center for Renewable Energy Development, Energy Research Institute, Beijing	Senior Research Fellow	<a href="mailto:wangsc@eri.org.cn">wangsc@eri.org.cn</a>
17	Mr Shi Lishan	National Energy Authority	Head of Department for New and Renewable Energy	

## IV.D Bibliography

### IV.D.1 Background

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#### IV.E Summary of co-finance information and statement of project expenditure

Not available.

#### IV.F Review of project design

##### IV.F.1 Theory of change analysis

###### **Intended impacts**

According to the Terms of Reference (TOR) of all three EIRET focus country projects, the objective of the project is

*“[...]to help national governments in Brazil, China and South Africa gain a better understanding of the resource, policy, risk management and technology information requirements associated with expanded renewable energy technology deployment in these countries. Ultimately the goal is to promote both an improved policy environment for investment in renewable energy, and a stronger, more robust national solar and wind energy market.”*

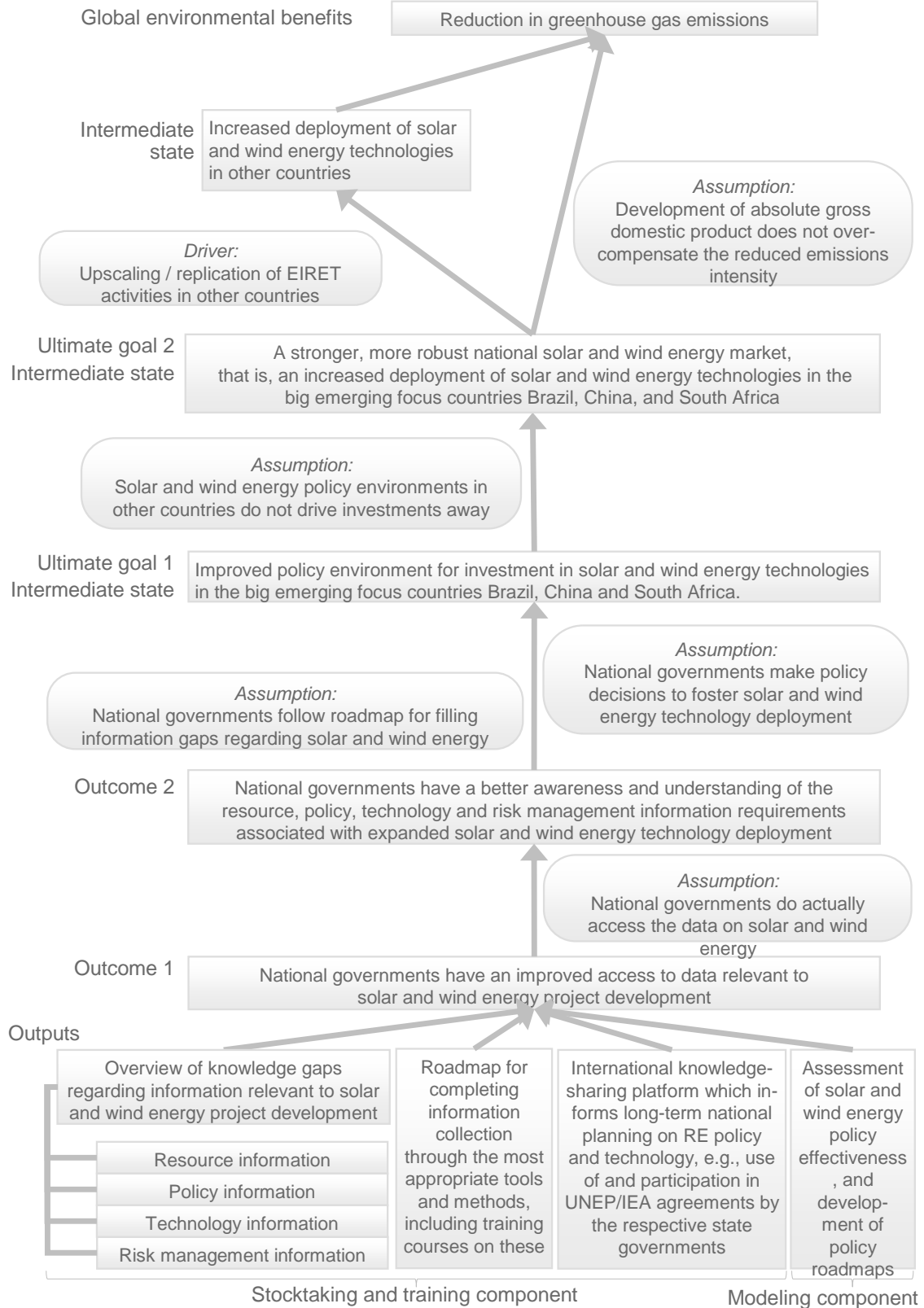
###### **Causal logic**

The diagram on the following page maps out the Theory of Change as we understand the causal logic of the EIRET project from the project document and the TOR.

It starts from the project **outputs** at the bottom, including an overview of knowledge gaps regarding resource, policy, technology and risk management information, as well as a roadmap for filling information gaps, links to international initiatives, the assessment of policy effectiveness, and the development of policy roadmaps. As the first **outcome** of the project, national governments have a *better access* to the relevant solar and wind energy technology data and information. Under the assumption that national governments do actually access the data, the second outcome can be reached, that is, national governments have a *better awareness and a better understanding* of the information requirements associated with an expanded solar and wind energy technology deployment. Achieving the first **ultimate goal** will be possible if national governments follow the roadmaps for filling remaining information gaps, and if they make policy decisions to foster solar and wind energy deployment. This will lead to an improved policy environment for investment in solar and wind energy technologies in the big emerging focus countries Brazil, China and South Africa. The second ultimate goal of a stronger, more robust national solar and wind energy market with an increased deployment can be reached if investments are made in the focus countries and if they are not driven away to other countries (a phenomenon that could be observed, e.g. in Europe, where individual member states attracted most of the photovoltaic investments due to their attractive policy environments).

The project's final impact of **global environmental benefits in the form** of reduced greenhouse gas emissions depends on two assumptions. First, these benefits can only be achieved if the development of absolute gross domestic product in the three focus countries does not overcompensate the reduced emissions intensity associated with an increased deployment of solar and wind energy technologies. Second, if the project can be upscaled or replicated in other countries, global environmental benefits can be even higher.

**Theory of Change:**  
**Enhancing Information for Renewable Energy Technology Deployment**  
**in Brazil, China, and South Africa (EIRET)**



#### **IV.F.2 Review of project design quality**

In addition to the Theory of Change analysis, the review of design quality required by the TOR covers the aspects of project relevance, sustainability considerations, measures to promote replication and upscaling, preparation and readiness, financial planning, M&E design, as well as complementarities with UNEP strategies and programmes. These issues are addressed in the assessment of the quality of project design (see below).

In summary, the assessment of project quality leads to different ratings for the individual criteria, which are mostly “satisfactory” or “moderately satisfactory” with two exceptions being the categories of “risk identification and social safeguards” (“moderately unsatisfactory”) and “financial planning/budgeting” (“unsatisfactory”)



Table 10: Assessment of the quality of project design

Note: In the reference column, "TOR1" refers to the stocktaking component of EIRET, "TOR2" to the modeling component, and "Prodoc" to the Project Document.

Relevance		Evaluation Comments	Prodoc reference
Are the intended results likely to contribute to UNEP's expected accomplishments and programmatic objectives?		Yes, overcoming RE information barriers is important for a transition towards a low-carbon society.	Prodoc, p.4; TOR1,p.2; UNEP's climate change strategy
Does the project form a coherent part of a UNEP-approved programme framework?		Yes, SWERA scale up as part of the renewable energy activities.	Prodoc, p.4; TOR1, p.1; UNEP/DTIE website
Is there complementarity with other UNEP projects, planned and ongoing?		Yes, the SWERA project.	Prodoc, p. 2-3; TOR1, p.1
Are the project's objectives and implementation strategies consistent with:	i) Sub-regional environmental issues and needs?	Yes, climate change is a global challenge.	Prodoc, p.4
	ii) the UNEP mandate and policies at the time of design and implementation?	Yes, UNEP mandate on climate change work in the 2008-2009 programme of work.	Prodoc, p.4; UNEP's climate change strategy
	iv) Stakeholder priorities and needs?	Yes, through a decentralized approach with in-country partners that have an interest in promoting RE.	Prodoc, p.3; TOR1, p. 2
<b>Overall rating for Relevance</b>			<b>S</b>
<b>Intended Results and Causality</b>			
Are the objectives realistic?		Yes, the direct objective. The ultimate goal depends on several influencing factors.	Prodoc, p.2 TOR1, p.2
Are the causal pathways from project outputs [goods and services] through outcomes [changes in stakeholder behaviour] towards impacts clearly and convincingly described? Is there a clearly presented Theory of Change or intervention logic for the project?		No, a rather brief statement of direct objectives and ultimate goals without a Theory of Change or clearly described causal pathway and intervention logic.	Prodoc, TOR1, p.2

Is the timeframe realistic? What is the likelihood that the anticipated project outcomes can be achieved within the stated duration of the project?	Yes, realistic for the direct outcome of accessibility. Less so for the outcome of better understanding. Not realistic for ultimate goal of more robust RE market. There was a delay in project execution. Therefore, it received a one year extension without budget changes.	Prodoc, p.7-8; TOR1, p. 2
Are the activities designed within the project likely to produce their intended results?	Yes, at the level of individual activities, the intended results seem to be achievable.	Prodoc;TOR1; TOR2
Are activities appropriate to produce outputs?	Yes, they are appropriate.	Prodoc;TOR1; TOR2
Are activities appropriate to drive change along the intended causal pathway(s)	Yes, they are appropriate.	Prodoc;TOR1; TOR2
Are impact drivers, assumptions and the roles and capacities of key actors and stakeholders clearly described for each key causal pathway?	No, not described.	Prodoc;TOR1; TOR2
<b>Overall rating for Intended Results and causality</b>		<b>MS</b>
<b>Efficiency</b>		
Are any cost- or time-saving measures proposed to bring the project to a successful conclusion within its programmed budget and timeframe?	Yes, for the stocktaking component direct oversight of implementation by UNEP/DTIE given the tight schedule.	Prodoc, p. 5; TOR1,p.3
Does the project intend to make use of / build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. to increase project efficiency?	Yes, scale up of SWERA project and experts, and the same in-country partners in both components.	Prodoc, p.2; TOR1,p.3
<b>Overall rating for Efficiency</b>		<b>S</b>
<b>Sustainability / Replication and Catalytic effects</b>		
Does the project design present a strategy / approach to sustaining outcomes / benefits?	No overarching strategy, but individual activities (see next row).	Prodoc; TOR1; TOR2

Does the design identify the social or political factors that may influence positively or negatively the sustenance of project results and progress towards impacts? Does the design foresee sufficient activities to promote government and stakeholder awareness, interests, commitment and incentives to execute, enforce and pursue the programmes, plans, agreements, monitoring systems etc. prepared and agreed upon under the project?		Yes, build-up of in-country human capacities, creation of training manual, proposal for future cooperation for national governments and policy roadmap. But no plan for use of policy roadmap foreseen. No explicit consideration of influencing factors towards impacts.	Prodoc; TOR1; TOR2
If funding is required to sustain project outcomes and benefits, does the design propose adequate measures / mechanisms to secure this funding?		Funding for activities described above is included.	Prodoc; TOR1; TOR2
Are there any financial risks that may jeopardize sustenance of project results and onward progress towards impact?		Yes, the implementation of policy instruments for more solar/wind deployment may require funding that can potentially not be secured due to fiscal restrictions in the focus countries.	Project application for funding to BMU, p.7
Does the project design adequately describe the institutional frameworks, governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. required to sustain project results?		No explicit consideration in project design.	Prodoc; TOR1; TOR2
Does the project design identify environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher level results that are likely to affect the environment, which, in turn, might affect sustainability of project benefits?		No, those factors are not identified, but is it unclear what they might possibly be in the context of reduced greenhouse gas emissions through renewable energy deployment.	Prodoc; TOR1; TOR2
Does the project design foresee adequate measures to catalyze behavioural changes in terms of use and application by the relevant stakeholders of (e.g.):	i) technologies and approaches show-cased by the demonstration projects;	Yes, preparatory training workshop to be held.	Prodoc, p.5; TOR1, p.5
	ii) strategic programmes and plans developed	Yes, policy roadmaps are to be developed.	TOR2
	iii) assessment, monitoring and management systems established at a national and sub-regional level	No.	Prodoc; TOR1; TOR2
Does the project design foresee adequate measures to contribute to institutional changes? [An important aspect of the catalytic role of the project is its contribution to institutional uptake or mainstreaming of project-piloted approaches in any regional or national demonstration projects]		Yes, through the proposal to consider participation of national governments in the IEA's implementing agreements.	Prodoc, p.5; TOR1, p.6-7

Does the project design foresee adequate measures to contribute to policy changes (on paper and in implementation of policy)?	Yes, through policy roadmaps.	TOR2
Does the project design foresee adequate measures to contribute to sustain follow-on financing (catalytic financing) from Governments or other donors?	Yes, the budgetary point of view is included in the proposal to consider participation (see above).	TOR1, p.6-7
Does the project design foresee adequate measures to create opportunities for particular individuals or institutions (“champions”) to catalyze change (without which the project would not achieve all of its results)?	Yes, domestic government energy agencies foreseen for having a dialogue with international experts.	Prodoc; TOR1, p.6
Are the planned activities likely to generate the level of ownership by the main national and regional stakeholders necessary to allow for the project results to be sustained?	Yes, the decentralized approach with in-country institutions should facilitate a level of ownership that allows for some sustenance.	Prodoc; TOR1; TOR2
<b>Overall rating for Sustainability / Replication and Catalytic effects</b>		<b>MS</b>
<b>Risk identification and Social Safeguards</b>		
Are critical risks appropriately addressed?	Yes, but the only risk identified is a potential lack of political momentum for more RE deployment.	Project application for funding to BMU, p.7
Are assumptions properly specified as factors affecting achievement of project results that are beyond the control of the project?	One assumption is explicitly addressed in the logframe: resources and time of all relevant stakeholders to contribute to the project.	Prodoc, p. 7
Are potentially negative environmental, economic and social impacts of projects identified?	No, but those appear to be limited for solar and wind energy technologies.	TOR1; TOR2
<b>Overall rating for Risk identification and Social Safeguards</b>		<b>MU</b>
<b>Governance and Supervision Arrangements</b>		
Is the project governance model comprehensive, clear and appropriate?	Each of the three country sub-projects is governed in a decentralized way at the country level. Coordination with UNEP provides for the necessary consistency. This country-oriented approach appears to be appropriate.	Prodoc, p.9; TOR1; TOR2

Are roles and responsibilities clearly defined?	Yes, they are clearly defined.	Prodoc, p.9; TOR1; TOR2
Are supervision / oversight arrangements clear and appropriate?	Yes, after an initial oversight by UNEP-DTIE, oversight is secured with regional UNEP offices in relative close proximity to each focus country.	Prodoc, p.9; TOR1, p.3
<b>Overall rating for Governance and Supervision Arrangements</b>		<b>S</b>
<b>Management, Execution and Partnership Arrangements</b>		
Have the capacities of partners been adequately assessed?	Capacities have not been assessment explicitly in the TOR. However, the capacities of well-established partners such as power utilities, solar/wind industry associations and the International Energy Agency can be assumed to be sufficient and adequate.	Prodoc; TOR1; TOR2
Are the execution arrangements clear?	Yes, they are clear. Implementation is described as being largely done by in-country partners, whereas UNEP has a coordinating role for template development, and a supportive role for other issues.	Prodoc, p.9; TOR1; TOR2
Are the roles and responsibilities of internal and external partners properly specified?	Mostly yes, except for the responsibility how to proceed with the proposal for consideration by national governments (task 3.2) once it has been drafted.	Prodoc, p.5; TOR1; TOR2
<b>Overall rating for Management, Execution and Partnership Arrangements</b>		<b>MS</b>
Financial Planning / budgeting		

Are there any obvious deficiencies in the budgets / financial planning	The overall project budget does not refer to the budget for the modeling component, as detailed in the TOR2 for Brazil and South Africa. It remains unclear how the budget for TOR2 fits into the overall budget. (Note: According to UNEP project management, it was later decided that the local consultants originally planned for oversight were not needed. Therefore, those funds were allocated to the work in the modeling component.)	Prodoc, p.11; TOR1; TOR2
Cost effectiveness of proposed resource utilization as described in project budgets and viability in respect of resource mobilization potential	The budgets for the modeling component (TOR2) make use of the resources in a cost-effective way, although they differ in terms of transparency regarding the expertise needed for tasks. The budgets for the stocktaking component (TOR1) do not present the resource utilization.	Prodoc, p.11; TOR1; TOR2
Financial and administrative arrangements including flows of funds are clearly described	Yes, flows of funds are clearly described. Also, both TOR1 and TOR2 clearly state that certain fees, travel and accommodation costs have to be covered by the contractor's budget.	Prodoc; TOR1; TOR2
<b>Overall rating for Financial Planning / budgeting</b>		<b>U</b>
<b>Monitoring</b>		
Does the logical framework: <ul style="list-style-type: none"> <li>capture the key elements in the Theory of Change for the project?</li> <li>have 'SMART' indicators for outcomes and objectives?</li> <li>have appropriate 'means of verification'</li> </ul>	The logical framework captures key elements from the level of "activities" to "results" (i.e. outcome), but leaves out the ultimate development goal mentioned in the TOR and the global environmental benefits (impact).	Prodoc, p.7. ; TOR1;TOR2

<ul style="list-style-type: none"> <li>adequately identify assumptions</li> </ul>	Indicators are only briefly described (accessibility of data and availability of plans), but appear to be "SMART". Means of verification and assumptions are appropriate and adequate within the logframe logic.	
Are the milestones and performance indicators appropriate and sufficient to foster management towards outcomes and higher level objectives?	Yes, the indicators and milestones in the form of task outputs are sufficient.	TOR1;TOR2
Is there baseline information in relation to key performance indicators?	The project takes stock of the knowledge base and provides an overview of knowledge gaps, so that these initial findings serve as baseline information.	Prodoc, p. 7; TOR1;TOR2
Has the method for the baseline data collection been explained?	Individual indicators for taking stock of the knowledge base have been defined (see above).	Prodoc; TOR1;TOR2
Has the desired level of achievement (targets) been specified for indicators of outcomes and are targets based on a reasoned estimate of baseline?	No, the level of achievement has only been described as an "improved" access and understanding without a clear specification and without reference to an estimate of baseline.	Prodoc; TOR1;TOR2
Has the time frame for monitoring activities been specified?	Yes, each project task has a clearly defined deadline for output delivery, enabling monitoring.	TOR1;TOR2
Are the organisational arrangements for project level progress monitoring clearly specified?	Yes, through output delivery (see above), as well as project support and coordination by UNEP.	Prodoc; TOR1;TOR2
Has a budget been allocated for monitoring project progress in implementation against outputs and outcomes?	Yes, the overall project budget has money allocated for project progress monitoring.	Prodoc, p. 11
Overall, is the approach to monitoring progress and performance within the project adequate?	Yes, the approach to monitoring is adequate.	TOR1;TOR2

<b>Overall rating for Monitoring</b>		<b>MS</b>
<b>Evaluation</b>		
Is there an adequate plan for evaluation?	Yes, there is an adequate plan for evaluation.	Prodoc, p. 10
Has the time frame for Evaluation activities been specified?	Yes, the evaluation is supposed to be conducted upon project completion.	Prodoc, p. 10
Is there an explicit budget provision for mid term review and terminal evaluation?	Yes, there is an explicit budget provision for evaluation (see above).	Prodoc, p. 10
Is the budget sufficient?	Yes, if interviews are mostly done by phone and email (with very limited field visit).	consultant's TOR
<b>Overall rating for Evaluation</b>		<b>MS</b>



## IV.G Brief CV of the consultant

### IV.G.1 **Andreas Jahn**

Mr Andreas Helmut Jahn (57) was born in Berlin. He graduated from the Technical University of Berlin in 1979 with a Degree in Economics specializing in Energy Economics and Econometrics. For five years (1980-1984) he worked as Researcher at the Institute of Energy and Water Economics of Technical University and subsequently spent 22 years (1984-2005) in an international engineering and consulting company MVV Consulting GmbH, the former InnoTec GmbH. He was Managing Director of this company for 18 years (1988-2005). During this time he accumulated extensive international experience in energy economics, energy master planning, reforming the regulatory framework in the energy sector and advising electric power utilities worldwide. His expertise also embraces a wide range of other areas including financial planning and investment preparation, management restructuring for industrial companies and utilities, advice to national and regional governments on legislation, privatization, liberalization and tariff policy. During his career he has been involved in a multitude of energy, water/sewage, transport and environmental projects on behalf of international financing agencies, including the World Bank (Washington), United Nations Development Programme (UNDP), the European Commission (Brussels and Luxembourg), Kreditanstalt für Wiederaufbau (KfW, Frankfurt) and the European Bank for Reconstruction and Development (EBRD, London) and has assisted clients in applying to international banks for loans.

Mr Jahn has also been involved in several projects in South America, in South East Asia, in the CIS countries and in the Middle East. With his long-term experience in project tender procedures, project management of large scale international projects in the infrastructure sector, Mr Jahn also has gained extensive experience in tender evaluation and programming. Mr Jahn has been involved in 570 tender procedures and has carried out 135 projects, 96% of which have been implemented outside of Germany, mostly in co-operation with other non-German international engineering or consultancy institutions. In 2000, during his role as Managing Director, Mr Jahn introduced the DIN EN ISO 9001:2000 procedure for Quality Management certified by the TÜV Nord Cert in his company. In 2011 Mr Jahn has completed three different project evaluations, both final evaluation and mid-term evaluation.

As a native German speaker, Mr Jahn also speaks excellent English and has a basic command of French. A list of publications (309 publications) can be provided on request. Since 2006 Mr Jahn has been working as an independent consultant in the infrastructure sector (energy, water/sewage, transport).

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