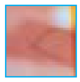
DEDICATED TO MAKING A DIFFERENCE

Engaging the private sector in the Clean Development Mechanism

World Business Council for Sustainable Development



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This project was coordinated by Kjell Oren and Susanne Haefeli, WBCSD. This report was written by Mahua Acharya, WBCSD.

Page 1: Brazilian children at school in a “favela”.

Page 16: NASA

Foreword

The Clean Development Mechanism (CDM) embodies the core principles of sustainable development: economic development, environmental improvement, and social progress. Envisioned to be private sector driven, its unique nature holds the potential to stimulate a cost-effective pathway toward lower carbon futures. But what would it entail of the private sector to invest in this mechanism?

We believe the CDM can help bridge the gap between industrialized and developing countries, and benefit both. For developing countries, it can facilitate the transfer of clean technology and contribute to sustainable development and poverty alleviation.

But we must recognize that CDM projects will have to compete with other corporate investments, and hence require stable and predictable frameworks, and yield adequate returns.

Therefore there is a high expectation amongst business developers that CDM rules do not impede, but in fact facilitate business involvement into new initiatives that contribute to the overall objective of combating climate change.

Host-country approval is also key to guarantee a smooth implementation of the mechanism. We believe that more efforts and resources have to be deployed to build local capacities in this area.

In a long and continuous journey since 1998, the WBCSD has been providing a business perspective on issues and options related to the design and operationalization of the CDM. Our first report published in 2000 analyzed the framework conditions for CDM; this report documents the lessons learnt from the practical implementation of a small scale CDM pilot project in Brazil.

Our efforts to promote the CDM and the values it carries are ongoing, despite the current regulatory uncertainty, especially relating to the Kyoto Protocol. The WBCSD continues to stimulate private sector engagement in the mechanism, to inform policy processes and to harmonize climate initiatives worldwide.

Björn Stigson
President, WBCSD

Executive summary

Economic development in industrialized countries has been historically based on energy derived from fossil fuels. Considering that major future energy demand is expected from developing countries, and were they to replicate this development trend, ensuing carbon emissions would be substantial. The challenge facing us today is: how can this trend be altered in such a way that development needs and energy demands are met without threatening the earth's climate? The CDM of the Kyoto Protocol lies at the heart of this challenge – designed properly, it can propel a shift toward lower carbon futures whilst engaging both the North and the South.

The CDM is envisioned to be private sector driven. But what would it entail of the private sector to engage in this distinct mechanism? With this in mind, WBCSD got involved in studying the CDM in 1999, beginning with a (theoretical) commercial analysis* of the CDM and progressing to implementation in 2001.

Engaging the private sector in the CDM utilizes two approaches:

"Learning-by-doing" – a small-scale solar project implemented in rural Brazil was used as a pilot case. The project was implemented by BP in association with PRODEEM, a rural electrification initiative of the Brazilian government. Its reductions are minimal, and hence commercial CDM benefits small; it was used exclusively for learning purposes. The project provides energy access to some of the poorest communities in the world, and therefore has a large sustainable development facet. But its implementation was faced with unclear rules and procedures on the CDM, and confusion and uncertainty among private and public sector participants on whether or not ratification of Kyoto would occur. Lack of clarity and guidance on CDM procedures also resulted in its *additionality* being questioned on desktop validation. The project faced disproportionately high transaction costs, but since its motivation was *learning*, an in-depth economic analysis was not made.

It is imperative that the CDM design recognizes the sustainable development benefits of such projects, its rules and procedures are clear and simple, and its framework stable and predictable in order to facilitate private sector engagement. Host country procedures should also be established and well defined.

"Learning-by-sharing" – www.cdm-connect, an online knowledge management system was set up to stimulate discussion on the CDM. Two electronic conferences were set up, facilitating an exchange of information across the world. This was particularly useful to gain insight from individuals in developing countries who would otherwise be monetarily restricted to attend in-person meetings. The most important issue discussed was project financing and reducing transaction costs. Low carbon prices and lack of local institutional support greatly increase projects costs. Technical and financial assistance is therefore essential, at least in the early years of the CDM. Capacity building on the CDM is also key – there is a clear need to standardize and streamline CDM processes.

CDM must also be integrated into business planning and national programs in order to ease processes and derive the most value. Not only would this ensure consistency, but would also contribute toward a larger awareness of the CDM potential.

Overall remarks: This collaborative initiative has clearly revealed that (swift) host country approval is not just *crucial* to CDM development, but *critical*. Clearly defined processes and approval through a single point of contact could ease the process significantly. But the CDM still holds a vast potential to "incentivize" private sector engagement. As it is integrated into mainstream business processes, a value for carbon (reductions) will be recognized as increased project revenue. It could then be used to tip companies' internal processes to allocate capital toward projects that could take on CDM components, which would otherwise not have been considered. This will increase the number of real projects and thereby total carbon reductions. As is equally important, this may legitimize the idea amongst corporate decision makers that failing to account for possible CDM components may carry opportunity costs.

If eligibility requirements (for CDM projects) are based on the Mechanism being the sole motivator for projects, the number of CDM projects being developed will be limited. The CDM must be recognized as a broader instrument; one that provides additional incentives for cleaner technologies in order for it to truly catalyze a shift toward lower carbon futures.

* Moorcroft, Dave; Koch, Jasper; Kummer, Kija (2000). "Clean Development Mechanism: towards a blueprint". WBCSD.

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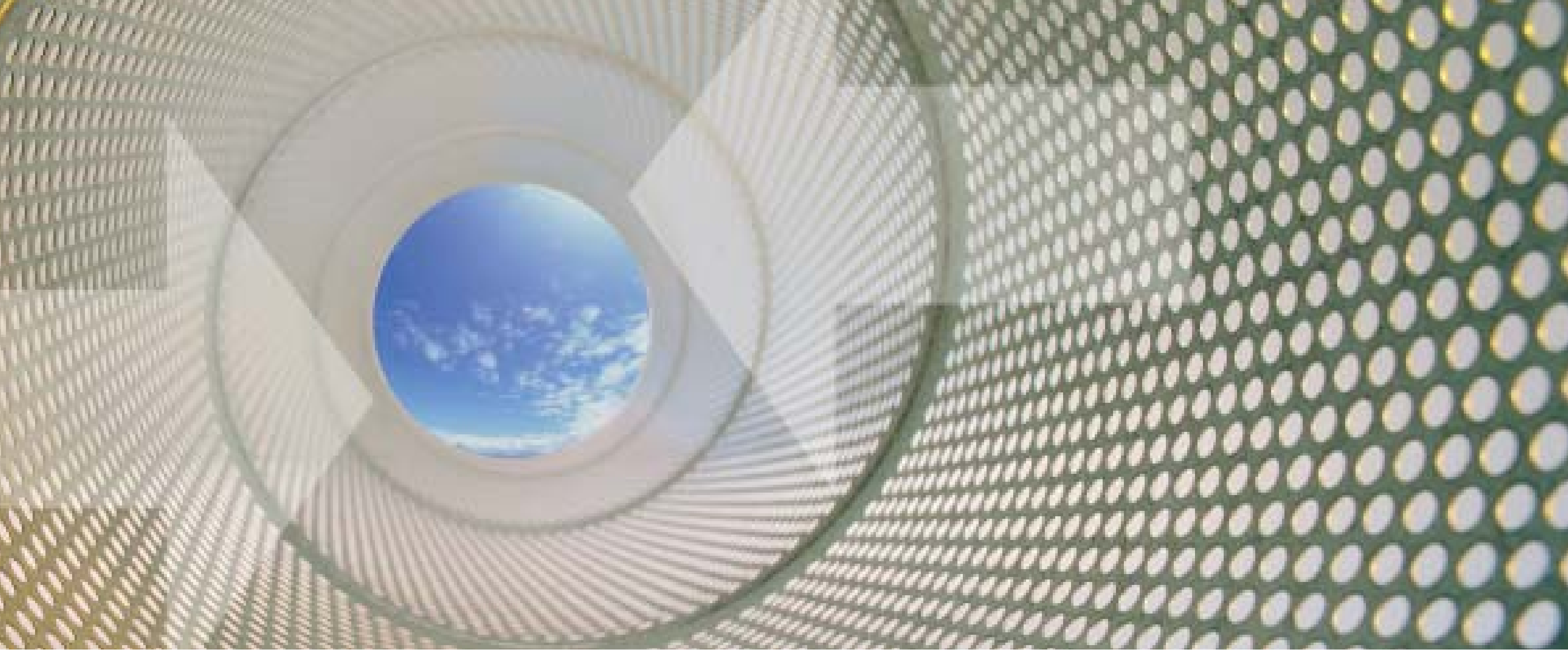
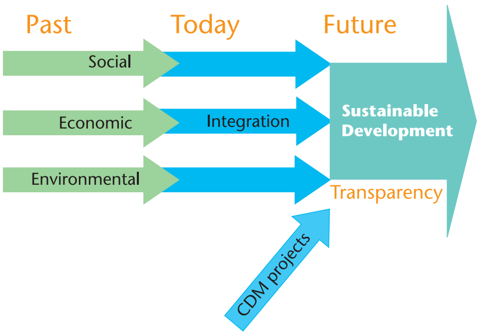


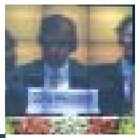
Introduction

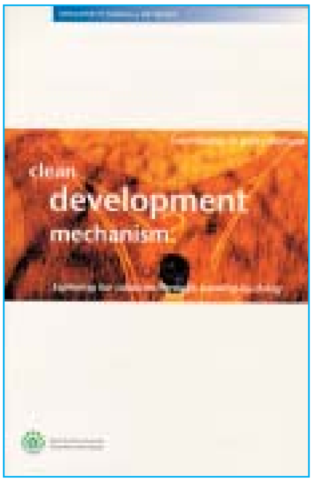
Economic growth currently relies heavily on an energy infrastructure built on carbon-intensive fossil fuels. Not surprisingly, industrialized countries have contributed most significantly to atmospheric carbon dioxide emissions over the last century. Major future energy demands are expected from developing countries, as they face pressures to expand their economic development. Should historical development trends continue, the rise in carbon emissions would be substantial. In order to reduce the impacts of climate change that such development trends would cause, this trajectory must change. Cleaner and less energy-intensive pathways must emerge. The challenge is: how can this shift be stimulated?

The Clean Development Mechanism (CDM) embodies issues that lie at the heart of this challenge – environmental improvement, economic and social development. It holds the potential to expand the scope of cost-effective options for mitigating climate change. Designed properly, it could stimulate a shift toward lower carbon futures, promote investment in developing countries and contribute to overall sustainable development.

Sustainability is a journey enhanced by the CDM





However, rules and procedures developing on the CDM around the time that the WBCSD first got involved seemed to be at odds with its overall objectives – theoretical studies being developed seemed incompatible with the practical realities of the CDM. Moorcroft et al (2000)[1] explored this with a commercial analysis lens and shared some insights from work in a number of companies exploring potential CDM projects. The ensuing report identified key critical issues that "must be taken into account in any 'blueprint' that intends to attract private sector investment and 'know-how' in the CDM".[2]

Building on the findings from this report, the next step was to *implement* a CDM project in an effort to understand these key issues at a practical level and disseminate the lessons to the wider business community and other stakeholders. The WBCSD's involvement in this exercise was part of a larger initiative titled *"Engaging the private sector in the Clean Development Mechanism"*, started in 2001, coordinated by the United Nations Development Programme (UNDP) and supported by the United Nations Foundation. Other stakeholders in this initiative included the United Nations Industrial Development Organization (UNIDO) and the United Nations Conference on Trade and Development (UNCTAD), each working on separate projects. The WBCSD acted as a platform for the business community to collectively engage in the CDM, express its concerns, work with other stakeholders on improving its rules and procedures and contribute toward policy processes.

Recognizing that the CDM was (and still is) a relatively new concept, and businesses have little experience of its functioning, this initiative used two approaches: "learning-by-doing" and "learning-by-sharing". Under the first approach, a rural solar energy project was implemented in Brazil[3], in partnership with BP. Under the second approach, workshops and electronic conferences were conducted, including feedback given to the CDM Executive Board, member companies and the publication of this report.

1. Moorcroft, Dave; Koch, Jasper, and Kummer, Kija; "Clean Development Mechanism – towards a blueprint", World Business Council for Sustainable Development, 2000.

2. See above

3. Following discussions in earlier Project Developers' Forums, Brazil was selected as the host country as it presented the best potential for hosting CDM projects – in terms of market conditions and CDM know-how.

This report documents the activities carried out under the initiative from June 2001 to June 2003, describes the key lessons learnt from this involvement and suggests possible options for increasing private sector engagement in the CDM. This report also documents and builds on experiences of a number of companies having implemented CDM projects.

This project was selected because of its larger contribution to sustainable development. BP's objective was to provide a working business example of a small-scale CDM project and provide practical tools for further engagement in the CDM. By using a bottom-up approach involving business, governments and NGOs, it would drive the rule-making process for the CDM, build capacity within governmental institutions in Brazil and the wider business community.

Also, it is a small-scale[4] CDM project with a small amount of reductions, minimal returns on investment from carbon credits and hence not typical of projects that are most likely to attract private sector investors. It was used exclusively for learning purposes, particularly for understanding the rules and procedures that CDM projects entail. Hence, its business case may appear diminished, and subsequently, transaction costs may appear to be disproportionately high.

This report is based on analysis of a single project in isolation, and therefore conclusions drawn from this project may not be universally applicable to all CDM projects. However, most conclusions presented in this report do resonate with findings emphasized in the earlier report.

4. Small-scale projects are those whose maximum output capacity does not exceed 15MW of power.

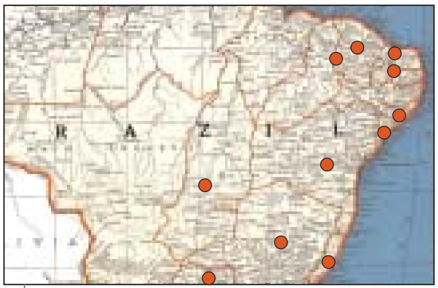
Learning-by-doing

BP/PRODEEM solar project

Project description

In association with PRODEEM[5], a governmental program in Brazil to promote renewable energy in rural areas, BP won a Brazilian government contract to install photovoltaic panels in 1852 rural schools in 12 states of Northeastern Brazil, spanning an area of 2.3 million square kilometers. Lasting an installation period of about one year starting in May 2002, the BP/PRODEEM project installed 11,112 panels each producing 120 Watts of power with an estimated emissions reduction of 1722 tons of CO_2. The schools were chosen by the Brazilian government on a poverty index following discussions involving multi-stakeholder governing committees at the state and district levels; the indices were based on criteria such as distance from the nearest economic center and the community's economic status. The project produces electricity for lighting, television, computers and refrigeration (for vaccines) in the schools and buildings, and benefits about 60,000 children. The total cost of solar panels and their installation, estimated at US$10 million, was financed by the Brazilian federal government.

States	Nº Schools
Alagoas, Paraiba, Sergipe, Rio Grande do Norte	421
Piaul and Ceara	558
Espirito Santo, Goias, Minas Gerias and Parana	327
Bahia	546



States where solar panels are installed

1852 schools with over 60,000 children

A total of 11,112 panels each of 120W

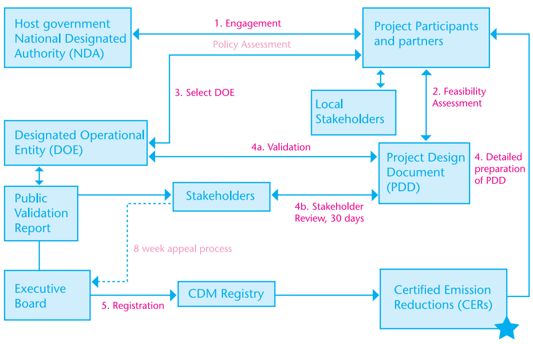
1722 tCO2/yr (diesel baseline)

Partners' roles

BP's objective was to provide a working business example of a CDM project that its business units could learn from, and provide tools and guidance for CDM project implementation. By engaging in a bottom-up approach involving business, governments and NGOs, it would contribute toward the rulemaking process for the CDM, build capacity within governmental institutions in Brazil and the wider business community.

BP[6] is responsible for maintenance and upkeep of the solar panels for three years from the date of installation of the last panel. The WBCSD provided a broader private sector perspective, and its financial contribution was used to cover the costs of BP developing the Project Design Document (PDD), sharing progress at CDM forums, and producing a documentary film that explains the importance of early stakeholder involvement and sustainable development benefits of the project. The film was made in partnership with the Brazilian Business Council for Sustainable Development (CEBEDS).

CDM projects pass through a set of formal stages beginning with the initial idea, then flowing through implementation, and ending with periodic certification of emission reductions.



Status of the project

At the time of writing this report, the Brazilian government had taken a decision to not approve CDM projects until the Kyoto Protocol has entered into force. As a result, it was not possible to attain host country approval. The farthest this project was able to reach was the formulation of the Project Design Document, which was sent to Det Norske Veritas for *desktop review*[7] in May 2003. The desktop review thus marks the culmination of WBCSD activities in the first phase of the initiative; this project is unlikely to be sent for complete validation or subsequent registration to the CDM Executive Board.

5. PRODEEM stands for Programma de Desenvolvimento Energetico de Estados e Municipios. It is a program of the Brazilian Ministry of Mines and Energy, initiated in 2001, aimed at providing sustainable energy to schools and community buildings in rural areas of the country.

6. This project is currently in operation, where BP is still responsible for the maintenance and upkeep of the panels.

7. Desktop review is a preliminary assessment of the design of the GHG reduction project. Validation is a full-fledged assessment and is a requirement for all CDM projects; validation endorses whether the project (if implemented as planned) will fulfill CDM requirements.

Lessons learnt

Indicated below are some of the specific lessons learnt from implementing the project. This builds on observations made in Moorcroft et al (2000) regarding project investment and emerging CDM concepts that were taken forward and tested in practice.

Stakeholder involvement:

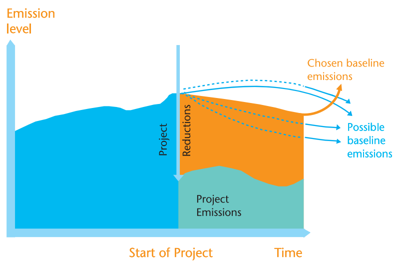
This project is unique because of its long-term nature involving successive rounds of tenders for the provision of solar systems. Stakeholder engagement was designed to be an integral part of the design, planning, review and execution of each round of tenders. Hence, stakeholder consultation meetings were carried out by local authorities of the Brazilian government. Although local institutions are said to be the most appropriate for stakeholder consultations (as they tend to be most familiar with prevalent and historical conditions), the lack of appropriate capacity and CDM awareness at this level creates hurdles for project developers.

Technical dimensions of solar panel installation, replacing batteries and other maintenance requirements had not been addressed sufficiently. Under this project, a contractor was hired to conduct training sessions, and industry meetings and workshops were conducted to build local technical capacity. Engineers from BP provided training to ensure high standards of installation and maintenance.

To promote this learning-by-doing project as widely as possible, a documentary film was produced to create awareness. It is available in English and Portuguese. Note that this is not a requirement of CDM projects and would not normally be done – it was a special case since the emphasis of this initiative was on learning and sharing.

Additionality and baseline:

Additionality is a qualitative concept requiring that the reduction in emissions from a (CDM) project must be "*additional to any that would occur in the absence of the certified project activity*" (Article 12. 5 (c), Kyoto Protocol). The scenario that represents what would have happened in the project's absence is the baseline. Baseline setting is an inherently subjective (and consequently complicated) process since it is counterfactual – the project prevented it from occurring.



Determining the baseline scenario of a project is subjective and based on past trends and assumptions of future activities. It involves a selection of the baseline from a range of possible courses of action.

This project used recommended baselines developed by CERUPT (2001)[8] for small-scale projects in developing countries – the baseline scenario was determined to be diesel. Also, discussions with various stakeholders in Brazil suggested that the use of a standardized diesel baseline would be appropriate, and that diesel would have been the fuel source since extending the grid to this region is too expensive. Calculation of leakage[9] was not required[10].

Determining "what would have happened" is based on a "best guess" extrapolation from past trends and present activities, and is dependent on the country's social and economic trends. As defined, the additionality question has no real answer; since by definition, the project prevented the baseline from occurring. Additionality is thus intrinsically linked to the baseline. Although diesel was selected as the baseline for this project, intuitively, the additionality question here is: "*what would have happened in the absence of the BP/PRODEEM project to install solar panels?*"

PRODEEM had been issuing public tenders for the *procurement* of solar panels. But to actually realize their *installation*, BP initiated a change in the description of the tenders to read installation of solar panels. In other words, had the change in the nature of tenders not been made, the schools would probably not have received solar power. However, this detail was not elucidated clearly enough in the Project Design Document.

The additionality of this project was thereby questioned upon desktop review[11]. Although PRODEEM has a deliberate policy that favors renewable energy, in reality, the policy only became operational when BP won a contract to participate in, and mobilize the scheme. The 'operationalization' of many such policies, particularly in developing countries is often constrained by numerous "external factors" that are not always captured by rules around additionality determination. These external factors can act as barriers and impede project implementation. To conclude that solar power would be the baseline scenario simply because of an existing policy that promotes it does not capture the entire context within which some of these projects are implemented.

Had the project's contextual details (including conducting a barriers assessment test) been conveyed sufficiently lucidly in the PDD, its additionality might have been different. But the PDD was only subject to *desktop* validation and reviewed against the information provided in it; formal validation is likely to have revealed more clarity following the possibility of including additional information.

8. Ministry of Housing, Spatial Planning and the Environment of the Netherlands (December 2001), Standardized Baselines and Streamlined Procedures for Selected Small-scale Clean Development Mechanism Project Activities-volume 2c: Baselines studies for small-scale project categories, A guide for project developers, Version 1.0. The Netherlands.

9. Leakage is a technical term coined by the UNFCCC, defined "as the net change of anthropogenic emissions by sources of GHGs which occurs outside the project boundary, and which is measurable and attributable to the CDM project activity".

10. Decisions by the CDM Executive Board based on recommendations by the Small Scale Panel.

11. See attached Preliminary Validation Report for more details.

As mentioned earlier, it is imperative that CDM theory recognizes contextual realities such as these, keeping in mind the broader development needs of such countries and the development benefits that such projects bring. Rules, procedures and baseline-setting methodologies must therefore encourage projects to be described in their contextual entirety, describing the complete investment and implementation scenarios so that specific details are appropriately revealed and projects fairly assessed.

Insufficient rules might result in numerous CDM projects, but possibly with environmental integrity compromised. Too many (and too complex) rules may constrain projects and result in very few, doing little for climate change mitigation. CDM theory must therefore aim to strike a balance where rules are adequate and environmental considerations optimal to result in good CDM projects, with real greenhouse gas reductions and atmospheric benefits.

Host country approval: assessing whether a project contributes to sustainable development is the prerogative of the host country, to be carried out a by the Designated National Authority. In theory, if the project has fulfilled the sustainable development requirements of the host country, it can be approved. In reality there are other factors that constrain host country approval. As mentioned earlier, the Brazilian government decided to pause decisions on CDM projects until the Kyoto Protocol has entered into force.

This project’s contribution to sustainable development is arguably of far greater overall value than the size of its reduction and its subsequent contribution toward reducing climate change.[12]

However, the process involved in gaining approval has been a significant bottleneck. There was little clarity in the procedures to be followed and on how to promote CDM projects, resulting in time delays and iterations that increase development costs of projects – or costs associated with initial project development – which do little to encourage private sector investment.

Monitoring: given the challenging terrain, the wide dispersion of the schools in remote areas with limited monetary resources, the monitoring and verification plan was designed with cost-effectiveness and simplicity as the primary criteria. The methodology considered most appropriate is based on self-assessment by villages, supplemented with bi-monthly reports by local companies. A “service-network” was set up to address faults. Suggestions have been made for governmental bids to be issued and maintenance contracts to be established, but details related to monitoring remain largely unclear. Random sample systems were tested prior to installation with third party validation at commissioning; strict PRODEEM technical standards will be maintained throughout.

12. 1722 tons of annual CO_2 reductions is a very small. See Annex 2 of the PDD for more details on sustainable development benefits.

The project's economics: Like most CDM projects, this one also bears risks associated with time delays and uncertainties of the Kyoto Protocol's entry into force, low market liquidity for certified emissions reductions (CERs), uncertainty and lack of clarity on host country approval processes and the real amount of final CERs depending on the performance of the project during the crediting period. But this project was a first-mover with steep learning curves; therefore the risks were compounded. Hence, estimating "normalized or standardized" costs was extremely difficult. This project was also carried out primarily as a learning exercise. Further, the magnitude of the 'unknown' in CDM processes at the time of the project's inception made the estimation more difficult. But a best estimate has been given below in order to illustrate the project's economics. Note that the (cost) economics of this project only include those incurred by BP; solar panels were paid for by PRODEEM. Despite the economics of this particular project, it is unlikely that current carbon market conditions would drive investments in small-scale solar projects. The costs associated with the CDM project cycle could easily exceed the modest revenue from CERs and this would prevent small-scale CDM projects from working as an instrument to encourage sustainable development. The CDM could inadvertently encourage the development of only large, capital-intensive projects.

It is possible that increased clarity around the rules and procedures will lower costs for preparing the project design document, but the costs of validation and Executive Board registration could still be threatening. Early integration of CDM-specifics and ensuring procedural transparency could reduce some of these up-front costs. But as mentioned earlier, this project was a "first-mover" – the costs associated with steep learning curves are bound to be high and sometimes unpredictable. With the penetration of more projects of this type, it is likely, and even inevitable that some of these costs will be reduced.

Expected revenue: with market prices of CERs between US$3-5 per ton of CO2 equivalent, the annual revenue from carbon credits expected for this project is US$ 5166-8610. This revenue was planned to be re-invested into the project for maintenance and replacement of batteries.

Cost information: The cost of preparing the project design document was US$ 30,000 and desktop review fees approximately US$ 5230. Were this to be classified as "development costs", the total cost incurred before the project started would be US$ 35,230. Comprehensive validation fees are higher than desktop review fees; and were this project to be sent for registration to the CDM Executive Board, costs would be at least US$ 40,230[13]. Monitoring and verification costs were anticipated at US$ 10-15,000 per annum – a high estimate due to the wide dispersion of schools in remote areas.

As valued, this project has little payback. But as mentioned earlier, the focus of this project was *learning*, rather than commercial returns. Hence, drawing conclusions on its commercial value from an a-typical project would be inaccurate and inappropriate.

13. Registration fee for small-scale CDM project with average tones of CO_2 reductions per year less than 15,000

Overall remarks: Numbers aside, this project lies at the heart of sustainable development, providing energy access to some of the world's poorest communities. This begs the question: what benefit does the CDM bring here? Surely, it is beyond merely 1722 tons of annual CO_2 reductions per se. For very small projects such as these, especially those trying to provide benign energy access to communities deep in 'energy poverty', the sustainable development benefits are surely of great value. Unless costs related to validation, registration, and verification/monitoring are brought down substantially and rules and procedures are clarified, projects such as this are unlikely to see sustained private sector engagement. This puts its own sustainability at risk, questioning and possibly jeopardizing the ability of the small-scale CDM to contribute toward a shift toward lower carbon futures.

Learning-by-sharing

“www.cdm-connect” and project developers’ forums

Moorcroft et al (2000) stressed the need to “*encourage as much learning-by-doing to create positive sharable experiences throughout the early stages of the CDM, and to build capacity*”.

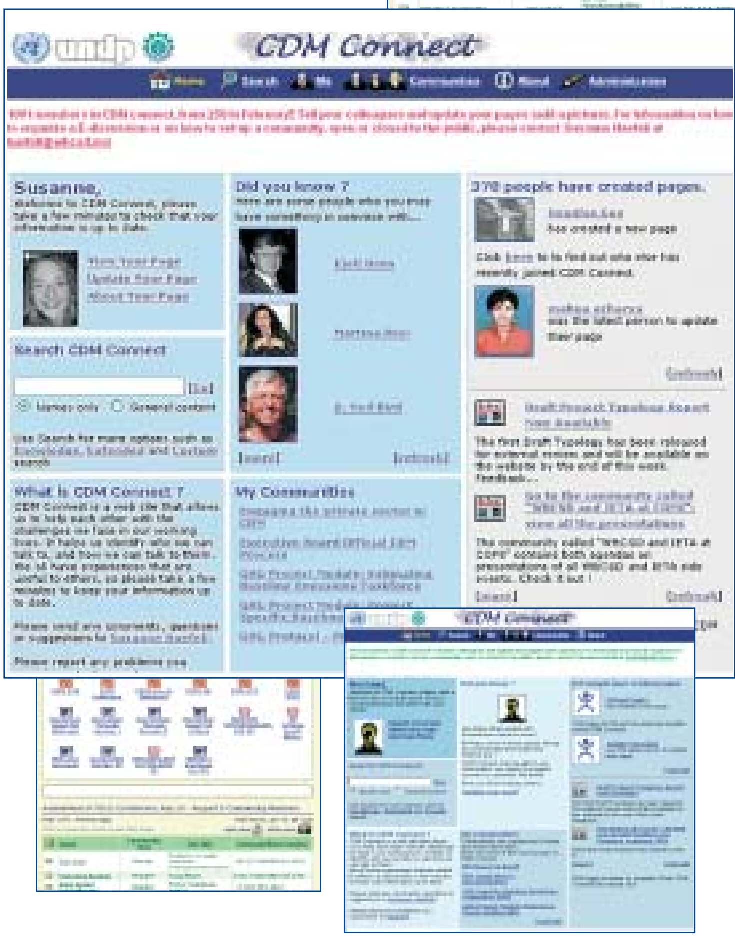
Building on suggestions from previous work, the WBCSD created two forums for open dialogue on the CDM, designed to stimulate discussion and generate increased understanding: (i) an online knowledge management system, www.cdm-connect.org was set up to for persons interested in and having experience on the CDM, and (ii) project developer forums were conducted to bring together businesses and government in an open exchange of ideas and experiences and create a platform to share experiences of different stakeholders.

www.cdm-connect.org was established to share knowledge, promote understanding and learning around the CDM. Its features were designed to encourage easy networking of individuals. And most importantly, such a system overcomes a significant barrier to representative discussion. It saves costly airfares and allows stakeholders from afar to participate, particularly those from developing countries who cannot attend in-person meetings.

User pages

User pages can be filled in when registering with CDM-connect. They contain contact details, knowledge and experience, personal networks and *communities (see below)*. There are currently 1228 active users registered in CDM Connect, representing 200+ organizations. The database receives about three new members a week, and a third of the membership is from developing countries.

Welcome page of cdm-connect.org



Communities

Communities are virtual "meeting places" for people to share ideas, internet links, documents, pictures and other files. They were created to identify users by areas of expertise and generate focused discussions around some issues. Communities are either open to all users or closed to community members – depending on the issue area covered. Communities also helped identify other members with similar expertise in a certain location, including an indication of issue-area overlap amongst the membership. This created significant interaction amongst members and helped spread awareness of similar initiatives. The most active communities were *BP project in Brazil* – this offered updates on the project, including latest thinking around some of the concepts evolving at the time. *CDM Executive Board* presented important developments in the CDM rule-making process, minutes from EB meetings and decisions made.

Innovative search features

Innovative search features of the system allow for easy identification of experts, and links to other organizations further expand networking.

Lessons learnt from e-conferences and project developers' forums

Taking advantage of the easy accessibility that such a system provided, two "electronic conferences" were organized. Details of these discussions are available at http://www.cdm-connect.org/under titles 'E-conference: CDM in South Africa' and 'Assessment of sustainable development'.

1. **CDM in South Africa, April 15–26, 2002** focused on roles of different stakeholders in the CDM process, identifying bottlenecks in the CDM project cycle, reducing transaction costs and setting up host country institutional frameworks. The aim of this conference was to generate a dialogue between the business community and other stakeholders, particularly governmental authorities. The e-conference also focused on identifying possible projects/project types and attracting foreign investment in South Africa.

2. **Assessment of Sustainable Development, July 15 – August 5, 2002** focused on sustainable development criteria at the host country level, their stringency and the role of the private sector. This conference saw about 110 participants from twenty-two countries, generating intense discussion for three weeks.

These e-conferences served as an excellent opportunity for stakeholders to engage in discussions on specific topics, express their views and experiences, and learn from the dialogues. The most crucial issues raised were (how to access) project financing and (how to reduce) transaction costs. Low carbon prices and the lack of local and regional financing sources greatly impede CDM project development. Under current market conditions and carbon prices, it is unlikely that the CDM will be the sole incentive for projects to be developed. One of the reasons for this is economics: revenue from CERs (at current market prices) only accounts for marginal returns on investment, and hence the CDM, at least initially, will only leverage decisions at the margins of private investment. It is unlikely to turn uneconomic projects to economic ones. At least in the early years of the CDM, financial support and technical assistance for pilot CDM projects is highly essential, including finding ways to reduce transaction costs.

Learning-by-sharing: a continuous journey

Roundtable on stakeholder involvement in Amsterdam, April 2002 **The WBCSD presented the importance of integrative collaborative learning with local private sector, host country and civil society representatives at a CDM roundtable organized by UNDP.**

Asia-Pacific Workshop on the Clean Development Mechanism and National Strategy Studies on Climate Change, April 2002 **The WBCSD presented its experiences with investors and buyers of CDM projects and CERs, and contributed the private sector perspective in an expert roundtable at a workshop held in Bangkok, organized by The World Bank.**

Contribution to CDM policy processes
The WBCSD commented on initial versions of the Project Design Document provided by the UNFCCC secretariat and the CDM Executive Board. A strong point was made against the notion of "investment additionality" and the associated paragraph was removed from the Document.

CDM at the World Summit for Sustainable Development, August 2003 **The WBCSD and the UNFCCC jointly held a roundtable on CDM during the World Summit in Johannesburg. The objective was to generate constructive and progressive discussions on the CDM based on lessons learnt from test projects and this ongoing initiative. The panel, as usual, represented a wide array of expertise and perspectives – it consisted of NGOs, businesses and the CDM Executive Board.**

WBCSD Regional Networks, April 2000 and May 2002
The WBCSD benefited from its extensive regional network to organize two stakeholder dialogues on the steps required to implement the CDM. The first was held in Brazil and the second in South Africa, each focusing on country-specific issues. To stimulate additional awareness and create engagement, lessons learnt were continuously shared with it other regional partners.

WBCSD Energy & Climate working group meetings and Liaison Delegates meetings (continuous) **All ongoing work and lessons learnt in the interim were continuously shared and discussed with working group members, thus involving the larger WBCSD membership.**

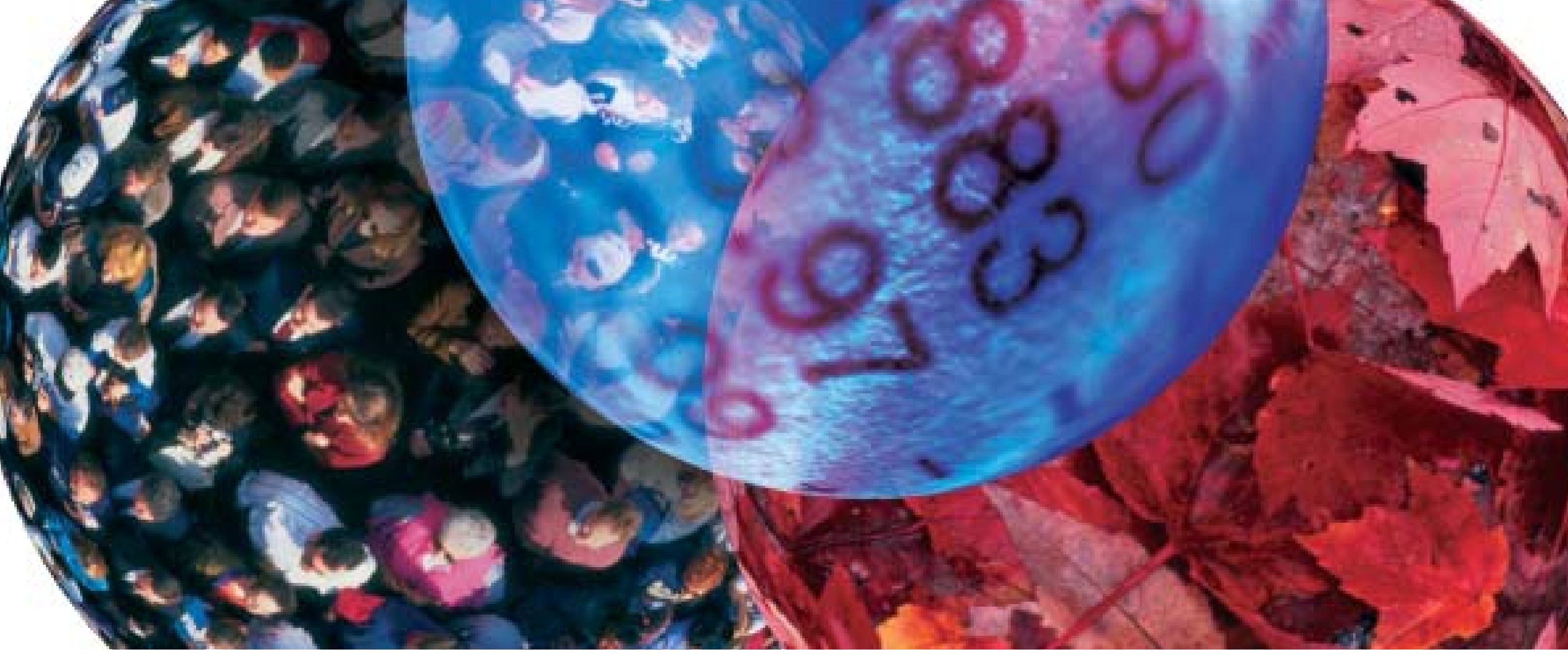
Linking CER sellers and buyers – for example, by initiating up-front purchase agreements between the buyer and project developer will reduce some of risk. Financial institutions can play a major role in bridging the gap between the time during which project developers need the income and the time when reductions actually occur, are certified and traded. Being able to secure future streams of carbon credits would allow project developers to shift a portion of the development risk to banks, and thus diversify the associated risk portfolios. Demonstration projects and benchmarks are vital to accelerate the CDM process and generate a common operating platform for stakeholders.

Reducing transaction costs is therefore crucial for CDM projects: standardizing quantification methodologies in an integrated fashion to address the multiple needs of project developers and the CDM will definitely help toward this. The WBSCD is currently working in partnership with the World Resources Institute to develop a tool for project developers to account for project-level GHG reductions in a cost-effective, streamlined and integrative way. This is being developed in a multi-stakeholder process, and is work in progress[14]. Reducing accreditation costs for Operational Entities for validation and verification procedures could contribute too.

Clearly, there is a need for local capacity building. When the WBCSD first began this work, knowledge on the CDM was, at best, theoretical awareness inconsistently existent amongst various stakeholders. At the end of two years, awareness and capacity have grown rapidly, but is still inconsistent. Skill levels are consequently varied and fragmented – they need to be aggregated, standardized and most importantly, institutionalized in order to streamline the CDM process and reduce costs. A critical mass of national expertise, especially at the state administration level and corresponding private sector levels must be built and sustained. Future capacity building work should thus focus on host country approval processes, project quantification, monitoring methodologies and project finance.

And finally, an integrated approach to climate change mitigation must be recognized. Countries accepting to host CDM projects must therefore have made prior necessary provisions to enable such activities. By integrating the CDM as an option for GHG reductions into national programs such as energy savings, local air protection, sustainable transport and the development of renewable energies, climate change mitigation is automatically "incentivized". Not only would this ensure consistency in policies, but also create extended learning and awareness within governmental departments. Governments can then contribute to reducing up-front risks and costs by indicating clear procedures and timelines and establishing sector-wide standardized benchmarks and baseline methodologies.

14. For more details, see www.ghgprotocol.org



Conclusions and recommendations

So, what would it really entail of the private sector to engage in the CDM? Answering this question draws up a gamut of issues, ranging from certainty, clarity and consistency, not only in the rules and procedures of the CDM, but also in some of its concepts. In an effort to explore this, the WBCSD participated in a "learning-by-doing" and "learning-by-sharing" exercise to *implement* a CDM project. "Engaging the private sector in the CDM" was a collaborative initiative involving UNDP, UNIDO, UNCTAD and WBCSD, supported by the UNF. It was launched in 1999[15], when the rules of the CDM were in their early years of formation. This report documents lessons learnt from the first phase of involvement in this initiative.

Rules and procedures: The BP/PRODEEM project would be at the first of six steps required in the establishment of a CDM project – it is awaiting approval from the host country. While seemingly simple in theory, host country approval process has turned out to be more onerous than often proclaimed (by many). Its delay not only creates knock-on delays on project development, but also raises costs. Swift host country approval is therefore not just *crucial* but *critical* to CDM project development. It is imperative that host country approval procedures are clear and streamlined, sustainability criteria are defined for different sectors and project types, and country goals and measures are elucidated prior to committing to host CDM projects. Approval through a single point of contact at the host country level will ease the process significantly.

Transaction costs: Moorcroft et al (2000) questioned the assumption that the value of CERs will have a decisive impact on a project's economics. The report concluded that revenue generated from CERs is not sufficient to cover the costs incurred in developing a CDM project (let alone make profits), and hence can only leverage decisions at the margins of private investment. While this may still hold true at current market prices for carbon, Moorcroft et al focused on

15. The initiative was launched in 1999; WBCSD involvement began in 2001.

Certified Emissions Reductions, and their impact on project economics at current market prices. This report, based on real implementation and experience from a number of companies having implemented CDM projects reveals a focus on *transaction costs*, and the same being disproportionately high especially for small-scale projects. Unless governments streamline procedures so that transaction costs are reduced, the CDM process will be severely constrained.

CDM in the context of sustainable development: The BP/PRODEEM small-scale project has minimal reductions, and thereby extremely low monetary returns from CERs. But this project has a large sustainability facet – it provides electricity access to some of the world's poorest regions deep in 'energy poverty'. As is often the case with small-scale projects, monetary returns from CERs may be modest, but their sustainable development benefits generous in comparison. Reducing atmospheric emissions per se may not be of immediate concern or priority due to competing development needs in these areas, and hence the CDM viewed in its context of climate protection only may not be the most efficacious lens.

The CDM must then be recognized as an instrument capable of delivering these basic needs, in an overall context of sustainable development. Approval criteria should be prioritized accordingly and it is imperative that CDM theory, its rules, procedures and associated institutions recognize this.

Integrating CDM into business strategy: Business is about creating value and making money. But the way it does is changing rapidly. The CDM holds the potential to change investment patterns and introduce new and competitive advantages for private investment. Utilized in its complete potential, it could diversify companies' means to achieve cost-effective climate change mitigation. The CDM holds the potential to 'incentivize' business to introduce cleaner technologies in the development of new markets and pursue sustainable business models. It will thus have the greatest impact when integrated into normal business planning. As a value for carbon reduction is recognized, and businesses recognize a revenue stream from investing in additional GHG reductions, the CDM could be used to tip companies' internal processes for allocating capital toward projects that could take on CDM components. This will maximize the number of CDM projects that actually occur, and thereby the total emissions reductions generated. And finally, it may legitimize the idea amongst corporate (or financier) decision makers that failing to account for possible CDM components may carry opportunity costs – i.e. planning a project without taking into account the possibility that a CDM component could be added may overlook opportunities to increase the project's revenue.

But this has implications for the long-term: once the CDM has indeed been integrated into business planning, would this then deem CDM projects as business-as-usual, and thereby not additional?

And finally, in order for the CDM to truly incentivize a shift toward lower carbon futures, it is absolutely crucial that concepts such as additionality and its rules be framed keeping in mind the investment mechanisms of the private sector and long-term sustainable development benefits. It is still necessary to stress that CDM rules and procedures are formulated capturing the wide array of needs and benefits, and the CDM's underlying concepts are assessed against their procedural requirements.

Annex 1

Project Design Document: BP/PRODEEM Solar Project

CONTENTS

Annexes of this PDD

Annex 1:
Information on participants in the project activity
Annex 2:
Description of Sustainability Indicators
Annex 3: *(not attached to this report)*
i. BP-MME Contract No.35 ENGLISH,
ii. MME Call to Bid N.02/2001 ENGLISH
Annex 4: BP-MME Technical Operating Guarantee

A. General description of project activity

A.1 Title of the project activity

BP Solar Brazil: PRODEEM Rural electrification

A.2. Description of the project activity: Purpose of project activity

In 2001 BP Solar was awarded the contract for installing photovoltaic power systems at 1852 rural schools in Brazil. The solar systems will be installed for the generation of electric energy to rural schools with no electricity, located far away from the existing electricity grid.

The objective of the project is to supply solar generated energy to 1852 schools within poor rural communities that are far from conventional electricity supplies. These schools have been identified by the Brazilian Government as a priority for electrification under the PRODEEM programme (Programma de Desenvolvimento Energetico de Estados e Municipios). The project will result in the installation of a standard solar system at each school which will deliver energy for lighting, refrigeration and television.

The schools in question, apart from being used as primary and secondary schools, are also used for local adult education and as community centres. The installed electricity supply will therefore provide electricity and subsequent benefits not only to the school, but also to the community as a whole. The equipment will be used more extensively throughout the day and the year than if providing purely for the needs of the school.

Background on project activity – PRODEEM

The Brazilian Federal Government established the Programme for Energy Development of States and Municipalities (PRODEEM – Programma de Desenvolvimento Energetico de Estados e Municipios) through a Presidential Decree of December 1994. The objective of the PRODEEM is to promote the supply of energy to poor rural communities that are distant from conventional electric systems. In such cases, the cost of extending transmission/distribution lines is high, due to several factors: large distances, vegetation, rivers, and is normally considered not economically viable, since expected energy consumption is very low.

The PRODEEM is coordinated by the National Energy Development Department (DNDE), within the Ministry of Mines and Energy (MME). The Federal Electric Power Research Centre (CEPEL) is responsible for the technical specification of the solar systems, verification of the installed systems and evaluation of the performance of the overall PRODEEM programme. The organisation of PRODEEM also includes a 'Regional Agent' within each Federal State (normally a State public officer) who is responsible for the assessment of community needs and identification of projects for solar electrification. The regional agent is also responsible for the maintenance of the solar systems over the project life.

The PRODEEM provides electrification primarily through solar photovoltaic systems, although a small number of wind and biomass projects have also been included in the programme. The first solar installation took place in 1996, during Phase I of the programme. PRODEEM is now in Phase VI, having installed 8742 solar systems to date. The systems are aimed at community based applications and are not intended for private use. Three types of solar systems have been installed by the programme as shown in table 1.

The systems are being installed throughout the 26 Brazilian Federal States, although the Northeast (semi arid – 'Sertao') and North (Amazon) regions of the country are the priority.

Contribution to Sustainable Development in Brazil

Rural electrification is a national priority within Brazil and PRODEEM was established to address this priority and provides the means to enable and/or enhance development in remote and poor areas of the country. This project is contributing to sustainable development in Brazil by addressing some of the priorities identified in the Government of Brazil's (GOB) national strategy for sustainable development (Osvaldo Soliano Pereira, UNIFACS, pers. comms, 2002). This strategy is being delivered through the various federal ministries, which each have identified priority programmes that contribute to the national strategy. These include:

> Provision of sustainable renewable energy to rural communities
> Enhancement of educational facilities in rural areas
> Increase access to basic health facilities in rural areas

Within this national framework the project is contributing to sustainable development within Brazil in the following ways:

> Providing high quality electricity to previously unelectrified areas that are unlikely to be connected to conventional energy sources in the foreseeable future.
> Enhancing the educational facilities available to children and their families within rural schools by providing access to more diverse educational resources via the installation of lighting, television and video facilities in the schools
> Promoting the application of renewable technology in rural areas
> Provision of jobs within local business'
> Building capacity within local enterprises through business development workshops on solar related opportunities, e.g. irrigation, electric fencing.
> Enhancement of rural health resources e.g. refrigeration allows storage of vaccines

It has been estimated that approximately 60,000 children within the poorest areas of Brazil will benefit from the enhancement of educational and health facilities associated with this project. However, the primary contribution delivered by the BP project is clearly the provision of sustainable renewable energy to rural communities. Consequently, for the purpose of this application, the contributions to sustainable development from this project will be assessed on this basis alone.

The GOB has prioritised the development of sustainable renewable energy services in rural areas. This ambition is detailed in a national action plan for Brazil, where the government aims to increase the number of rural

Table 1: The three types of solar applications installed through PRODEEM

Solar Type	Application
PV electric energy generation systems	Electrify public buildings, e.g. schools, health clinics, churches, community centres, FUNAI posts (Indian reservations), forest police posts, telephone posts
PV water pumping systems	Supply water primarily for human consumption, but also for animal consumption and small scale irrigation
PV public lighting systems	Provide public lighting similar to that found in electrified areas of Brazil.

Table 2

Participant	Role
1. National Energy Development Department (DNDE) within the Brazilian Ministry of Mines and Energy (MME)	Coordinates the Programme for Energy Development of States and Municipalities (PRODEEM – Programma de Desenvolvimento Energetico de Estados e Municipios)
2. BP	Responsible for the implementation of the solar systems and delivery of the Clean Development Mechanism (CDM) aspects of project
3. PricewaterhouseCoopers (PwC)	Technical advice on the planning and delivery of CDM-related aspects of project
4. Business Council for Sustainable Development in Brazil (CEBDS)	Assistance with political relationships with government ministries and other stakeholders in Brazil
5. World Business Council for Sustainable Development (WBCSD)	Dissemination of learning on the CDM process amongst the wider business community

communities installed with renewable energy from 200 in 1997 to over 2,000 in 1998 and eventually to more than 10,000 per annum within a few years[16]. The BP project will install solar systems at schools in 1852 rural communities and therefore is directly contributing to this national priority.

The Centre of Integrated Studies on Environment and Climate Change at the Federal University of Rio de Janeiro has assessed the contribution of rural solar projects to sustainable development in Brazil[17]. This study used a systematic approach which involves, both quantitative data and qualitative responses from a wide variety of stakeholders, to assess and rank potential CDM projects against eight sustainability indicators. The sustainability indicators reflect the priorities within the national strategy for sustainable development in Brazil. These indicators are listed in Appendix 2.

The University of Rio de Janeiro assessment indicates that rural solar projects are making a strong contribution to sustainable development in Brazil through the mitigation of climate change, avoidance of local air pollution, increased local employment, improving macroeconomic sustainability and the sustainable use of natural resources. However, the study also notes two negative impacts, resulting from the higher cost of solar systems compared to alternative energy systems (diesel generators) and because the solar panels are imported into Brazil, resulting both in, increased payments to foreign entities and a reliance on imported technologies. However, the report suggests that these impacts are likely to decline as the solar industry develops in Brazil.

Furthermore, replacing diesel with solar panels for lighting improves indoor and outdoor air quality by eliminating emissions such as CO, NO_x , SO_2, and particulates. The project will also reduce spills occurring from the transport of diesel fuel to rural areas.

A.3. Project participants (see above)
A detailed description of project participants' roles and contact information is provided in Annex 1.

A.4. Technical description of the project activity

A.4.1. Location of the project activity

A.4.1.1 Host country Party: Brazil

A.4.1.2 Region/State/Province
The schools are located in 12 states in the northeast/east of Brazil as depicted in Figure 1 and Table 2. The schools are primarily located in the "sertao" region of Brazil; one of the poorest regions of Brazil and an arid zone which frequently experiences droughts.

A.4.1.3 City/Town/Community: Please see Annex 3

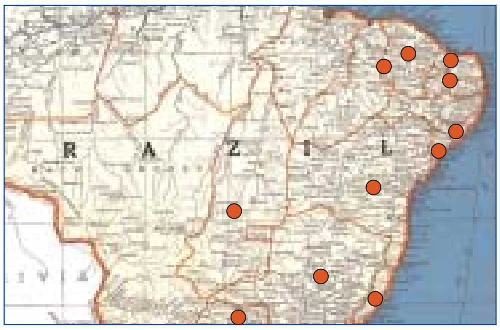
A.4.1.4 Detail on physical location and project activity:
For physical locations please refer to Annex 3.

A.4.2. Type and category of project activity and technology of project activity
The project will make use of the small-scale CDM project track as defined in the decision 17/CP.7/paragraph 6 sub-paragraph c and in the guidance note from the CDM EB

16. SMSE, July 1998, Brazil Action Plan, Developing self-sustaining markets for rural renewable energy services. Report prepared by the Sustainable Markets for Sustainable Energy (SMSE) Program within the Inter-American Development Bank (IDB), for: Programa de Desenvolvimento Energético de Estados e Municípios (Prodeem) Ministério de Minas e Energia (MME)

17. The South*South*North (SSN) Project: Final Report for Brazil, Emilio Lèbre La Rovere, Head, CECLIMA, Professor, COPPE/UFRJ, Institute for Research and Postgraduate Studies of Engineering, Federal University of Rio de Janeiro, e-mail : emilio@ppe.ufrj.br (CECLIMA – Centre of Integrated Studies on Environment and Climate Change)

Figure 1. Map of the States in Brazil where the BP PRODEEM project will install solar systems.



States where solar panels are installed

The distribution of schools across the states included in the project

States	N° Schools
Alagoas, Paraiba, Sergipe, Rio Grande do Norte	421
Piaul and Ceara	558
Espirito Santo, Goias, Minas Gerias and Parana	327
Bahia	546

Meth Panel. It will be registered as a Type 1 A category small-scale project: “Renewable Energy Projects / Electricity generation by the User”, as defined in Annex B in the note “Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories”.

In 2001 BP Solar was awarded the contract for lots 1-4 of Phase V of PRODEEM. The BP PRODEEM project will install standard ‘solar systems’ at 1852 schools in Brazil. The solar systems will be installed for the generation of electric energy to rural schools with no electricity, located far away from the electricity network. The systems shall have the following technical characteristics: energy consumption of 1,820 Wh/day, at a voltage of 120 ACV or 220 ACV, based on an annual daily average solar radiation of 5,000 Wh/m^2 (Table 3).

Each school will be installed with an identical solar system. The systems will prioritise the lighting of classrooms and enable the connection of a school TV kit and a refrigerator as detailed in table 4.

Table 3: General characteristics of the project’s solar systems[18]

Number of systems	Characteristics of the Energy System						
	Power Consumption in AC (Wh/day)	Maximum Load (W)	Autonomy (days)	Rated horsepower (HP)	PV System Voltage	Number of Inverters per Output Voltage	
						120 ACV	220 ACV
1852	1820	470	2	–	24 DCV	661	1191

Table 4: Standard electrical installation at each school

Description	Qty.	Utilization (hours/day)	Power per Unit (W)	Consumption (Wh/day)
Lighting 18 W/20W fluorescent lamps				
Classroom	6	4	20	480
Boys’ bathroom	1	1	20	20
Girls’ bathroom	1	1	20	20
Secretary’s room/support room	2	2	20	80
Circulation area/corridor	1	4	20	80
Pantry/kitchen/cantina	1	2	20	40
Equipment				
Refrigerator (“fridge-bar” type)	1	10	80	800
TV Kit/Video/Antenna	1	2	150	300
Total Consumption (120/220 ACV voltage)				1820

18. Annex 3ii MME Call for Bid N.02/2001

The installation of the solar systems will be completed over 12 months from May 2002. All of the systems will be installed, commissioned and independently verified by the MME within this timeframe (see section D). The commissioning of the systems will include a technical inspection to ensure full compliance with the requirements established in ‘Part “B” – Technical Specifications for Installation of Photovoltaic Systems’ as mandated by the PRODEEM program (see annex 3 for further details).

A.4.3 Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed CDM project activity.

The use of solar systems will meet a currently unmet electricity demand where the alternative electricity sources involve fossil fuel combustion that generate GHGs.

The 1852 schools are remote and geographically dispersed and therefore extending the existing electricity grid to these areas would be logistically challenging and costly. Consequently, there are no plans to extend existing electricity grid infrastructure and the BP project thus meets a currently unmet demand for electricity. The use of solar systems to meet this unmet electricity demand will avoid the need to install conventional diesel combustion engines that consume fossil fuels and emit GHGs.

A.4.4. Public funding of the project activity

The equipment and maintenance of the PRODEEM programme is funded entirely by the Federal Government of Brazil. The MME, administrators of the PRODEEM programme, issued a public tender to meet the schools’ energy demand through the provision of solar systems. The total value of the BP PRODEEM project is $US 10,444,700 paid for by the GOB through the Ministry of Mines and Energy (MME).

The International Development Bank (IDB) provides a small additional grant that supports the federal management of the programme and the measurement of the impact of the programme. An additional grant of $US 90,000 was allocated to the BP PRODEEM project by the WBCSD. The purpose of this grant is to cover the CDM transaction costs of this project and to share learning concerning the CDM process with the business community.

A.4.5. Confirmation that the small-scale activity is not a debundled component of a larger project activity

Given the large number of individual installations in the project it is apparent that the project is not part of any larger project activity. The project and its installations are clearly defined in the PRODEEM tender.

B. Baseline methodology

B.1 Title and reference of the methodology applied to the project activity

The project will apply for the methodology described in point 6 for off-grid small-scale renewable projects included in the category TYPE 1 A: “Renewable Energy Projects – 1.A. Electricity Generation by the User”.

B.2. Project category applicable to the project activity

Small-scale

The project activity delivers 1.3 MW[19] of solar power to 1852 off-grid schools. Hence, the project qualifies under decision 17/CP.7/6c/(i): “Renewable energy project activities with a maximum output capacity equivalent of up to 15 megawatts”.

Off-grid

The PRODEEM criteria for the PRODEEM V programme was based on national poverty indexes and the existing plans for grid expansions in rural Brazil[20]. The schools included in PRODEEM V were partly chosen because of their distance from the existing grid and their exclusion from any expansion plan. Hence, the project activity qualifies for an off-grid methodology.

Renewable energy

The project supplies renewable energy in the form of solar panels to a rural area.

Diesel baseline

The solar panels are assumed to replace future electricity production by small-scale diesel generators. The project therefore overcomes an investment barrier and avoids the situation where a financially more viable alternative to the project activity would have led to higher emissions. The use of the diesel baseline and the financial advantage of small-scale diesel generation over solar generation has been proved, among others, by BOSI[21].

19. See Annex 3 for the PRODEEM delivery agreement defining the total size of the project.

20. Personal Communication with Dr. Marcello Poppe, Director, DNDE (Departamento Nacional de Desenvolvimento Energético), Ministry of Mines and Energy, Brazil, 2002.

21. Bosi Martina, Fast-tracking Small CDM Projects: Implications for the Electricity Sector, OECD and IEA Information Paper, Paris, October 2001.

B.3. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity

The project activity is a part of the Brazilian Government's plans to bring power to the poor and remote areas of the country. The PRODEEM programme focuses solely on renewable energy. The tender for PRODEEM V (of which the project activity is a part of) was for renewable energy sources only (Please see 'Call to Bid N.02/2001', Appendix 3). Consequently, conventional non-renewable electricity supply options were not eligible to participate in the tender. If the tender had been open to all forms of electricity provision, it is likely that diesel generators would have provided the cheapest and most easily available option for small-scale electricity generation.

In the outlined baseline case the project activity and PRODEEM V would not have provided solar power to the 1852 schools and power would have been brought to the schools by other means. It is reasonable to assume that the overall cost of the system would have been the main selection criteria for the schools. In the absence of the project, small-scale diesel generation would have provided the schools with the cheapest option. Hence the project removes an investment barrier (Barrier (a) in Appendix A to Annex B) and avoids the situation in which a financially more viable electricity generation alternative would have led to higher emissions.

Given the above financial and technical conditions for the baseline, the likely generation option for the schools in the absence of the project would have been diesel generators. The direct cost-advantage (all indirect costs were not included in the comparison) of diesel generators for rural electricity supply in Brazil is documented in a recent study by SouthSouthNorth[22].

B.4. Description of the project boundary for the project activity

The project activity is strictly confined to the supply and installation of solar panels to community schools. All schools are separate buildings and the electricity supply is for the schools only. In light of the boundary recommendation in Annex B to attachment 3 the project scope for Type 1-A renewable projects is confined to the physical and geographical site of the generating unit and to the equipment that uses the electricity. Using this definition the project boundary is restricted to the schools, to the erection and installation of the solar panels and the use of the electrical equipment.

Using the above definition it means that leakage through the emissions from the transportation of solar panels to the sites has not been included in the emissions calculations. However, along the same lines, emissions that would have occurred from transporting the diesel to the sites for consumption without the project activity in the baseline case have also been excluded from the emission calculations.

As the project activity is not replacing existing generators there is no risk of leakage through re-location of diesel generators to other locations.

B.5. Details of the baseline and its development

B.5.1

The proposed methodology assigns a standardised off-grid baseline for small-scale renewable projects. The methodology provides project developers with a uniform figure to calculate the baseline emissions associated with the utilisation of a small-scale diesel generator (in kg CO_2e/kWh).

In the baseline scenario it is assumed that the same amount of electricity (as in the project case) would have been delivered to the 1852 schools with diesel generators. All 1852 delivered installations were identical: same number of panels, same system requirements and the same load requirement. As a result the same methodology has been applied to all installations.

In this project the baseline scenario is the total kWh per site, as required by the Brazilian Government tender (1820 Wh/day) multiplied by the emissions coefficient for diesel times the number of modules. The emissions in the baseline scenario have been calculated by using the default value for diesel generation units as given in Annex B.

The figure 0.9 kg CO_2e/kWh has been used to calculate the baseline emissions by multiplying the annual output (in kWh), being the sum of all 1852 installations, with the above CO_2 emission coefficient for small-scale diesel generators.

22. The South*South*North (SSN) Project: *Final Report for Brazil*, Emilio Lèbre La Rovere

B.5.2 Date of completing the final draft of this baseline section
20/06/2003

B.5.3 Name of person/entity determining the baseline
Giles Mackey, BP

C. Duration of the project activity / Crediting period

C.1 Duration of the project activity
C.1.1. Starting date of the project activity: 9th January 2003
C.1.2. Expected operational lifetime of the project activity: 20 years
C.2 Choice of the crediting period and related information (Please underline the appropriate option (C.2.1 or C.2.2.) and fill accordingly)
C.2.1. Renewable crediting period *(at most seven (7) years per period)*
C.2.1.1. Starting date of the first crediting period (DD/MM/YYYY)
C.2.1.2. Length of the first crediting period (in years and months, e.g. two years and four months would be shown as: 2y-4m)
C.2.2. Fixed crediting period (at most ten (10) years): 10 years
C.2.2.1. Starting date (DD/MM/YYYY): 09/01/2003
C.2.2.2. Length (max 10 years): 10y

D. Monitoring methodology and plan

According to clause nine of the BP-MME solar contract[23], BP is obliged to ensure the continuous operation of the 1852 installed solar systems for a period of 36 months from the date when the last solar system is installed. BP has designed an ongoing maintenance service which is being delivered via regional service centres operated by local enterprises that are required to respond to faults and defects in the operation of the equipment. The schools report faults via telephone to the regional service centre that subsequently dispatch a team to correct the fault. If the regional service centre fails to respond and/or correct the fault, the schools can notify the Regional PRODEEM Coordinators, who will contact BP to discuss the problem and/or invoke penalty clauses within the BP-MME contract. BP and its subcontractors are required to provide evidence of reported operational problems and the time taken to address the fault.

D.1. Name and reference of approved methodology applied to the project activity
New methodology based on a technical operating guarantee and maintenance contract

D.2. Justification of the choice of the methodology and why it is applicable to the project activity
The CDM Executive Board Guidance states that monitoring should consist of:
(a) Metering the electricity generated by all systems or a sample thereof where the simplified baseline is based on the electricity produced.
OR
(b) An annual check of all systems or a sample thereof to ensure that they are still operating (other evidence of continuing operation, such as on-going rental/lease payments could be a substitute

Metering is financially prohibitive for a large number of small systems that are dispersed over 1000's of kilometres of remote and challenging geography without easy access. Most of the schools are not accessible by surfaced roads and a GPS is usually necessary to locate each school. For the same reasons, annual monitoring of a sample of systems poses considerable logistical challenges and significant financial expenditure, which was deemed inappropriate for the PRODEEM programme. Consequently a simpler, cost effective and pragmatic approach was adopted to ensure the continuing operation of the solar systems at all 1852 schools. This utilises a network of regional service centres that respond to reported faults from the schools and issue an immediate response from local maintenance providers.

For these reasons, metering of electricity use was not part of the technical requirements defined within the BP-MME contract. The BP-MME contract pre-dates the Executive Board guidance on monitoring and the specification of the two crediting period options. Consequently, BP-MME have adopted a technical operating guarantee for a defined period of 36 months. The remaining seven years of the crediting period fall outside current contractual obligations, however, BP and MME are discussing similar commercial agreements which provide the same level of assurance for continued operation of the solar systems.

23. Annex 3: MME – BP Solar System Contract: AGREEMENT Nº 35/2001

Table 5 **ID number** *(Please use numbers to ease cross-referencing to table D.6)*	**Data variable**	**Data unit**	**Proportion of data to be monitored**	**How will the data be archived? (electronic/ paper)**	**For how long is archived data to be kept?**	**Comment**
N/a	Faults reported	number	100%	Electronic and paper	3 years	
N/a	Nature of fault reported	description	100%	Electronic and paper	3 years	
N/a	Speed of fault rectification	hours	100%	Electronic and paper	3 years	
N/a	Percentage of faults rectified	% of total reported	100%	Electronic and paper	3 years	
N/a	Repeat reports (repeat fault from same school)	number	100%	Electronic and paper	3 years	

D.3. Data to be monitored

Further detail provided in Annex 4.

D.4. Name of person/entity determining the monitoring methodology

Giles Mackey, BP

E. Calculation of GHG emission reductions by sources

E.1 Formulae used

E.1.1 Selected formulae as provided in Annex B

Formula for emission baseline provided in Annex B/1.A../ Option2:

$E_B = SO_i / (1\text{-}l)$, where

E_B = annual energy baseline

S = number of installations in programme

O_i = the estimated (verified) output of each separate solar system installed in program (in Kwh)

l = average technical distribution losses that would have been observed in diesel power mini-grids installed by public programs or distribution companies, expressed as a fraction.

Diesel fuel emissions coefficient provided in Annex B/1.A../6: Default IPCC emission coefficient value for diesel generation units is 0.9 kgCO2/kWh

Emission reductions from project = E_B * Diesel fuel emission coefficient

(E.1.2 Description of formulae when not provided in Annex B)

E.2 Table providing values obtained when applying formulae above

Table 6: Electricity demand calculation

System output	Unit	
Number of schools, S	pcs	1,852
Modules per school	pcs	6
Number of modules	pcs	11,112
Max power per module	WP	120
Total capacity	MW	1,333
System energy/demand	Wh/d	1,820
Days in a year	d	365
Annual power requirement per installation, O_i	kWh	664,3
Total annual power requirement, $S{*}O_i$	kWh	1,230,284
Distribution loses, l, assumed to be O as the installation is not connected to amini-grid		1
Energy baseline, $E_B = S{*}O_i/(1\text{-})$		1,230,284
Emission calculations		
Diesel fuel baseline emissions		
IPCC diesel default emission coefficient	$kgCO_2$	0.9
Baseline emissions p.a., $B_E{=}E_B{*}$ diesel coefficient	$t\ CO_2$	1,107
Project length	years	10
Project emissions, P_E	$t\ CO_2$	0
Total avoided CO_2 emissions, $P_E - B_E$	$t\ CO_2$	11,072.6

F. Environmental impacts

F.1. If required by the host Party, documentation on analysis of the environmental impacts of the project activity. Not required by the GOB

G. Stakeholders comments

G.1. Brief description of the process on how comments by local stakeholders have been invited and compiled: GOB representatives carry out stakeholder engagement on behalf of the entire PRODEEM program. This engagement process is managed by the GOB and has continued throughout the design and implementation of each phase of PRODEEM. The engagement process works at both the macro and micro levels. At the macro level, the GOB carries out strategic consultation with academic institutions, technical experts, government ministries, state departments, regional PRODEEM committees and NGOs to understand the performance of the program and develop it accordingly. At the micro level, multi-stakeholder State management committees govern the program. These committees are linked to municipalities and the local communities by regional PRODEEM coordinators, who consult directly with state municipalities and local communities to identify community needs and schools where solar systems are required.

Consequently BP had no direct involvement in this consultation process.

G.2. Summary of the comments received

A summary of comments is not available, although a number of reports have been compiled assessing the success of the PRODEEM program[24].

G.3. Report on how due account was taken of any comments received

By necessity the consultation process is extremely broad and therefore it has been difficult to identify specific comments which can be attributed to the BP-MME project. The above description of the stakeholder consultation process is based on conversations with Dr. Marcello Poppe from MME, and Professor Osvaldo Soliano Pereira from the Universidade Salvador (UNIFACS), as well as, discussions with regional PRODEEM Co-ordinators.

24. UNIVERSIDADE DE SALVADOR. COMPANHIA DE ELETRICIDADE DO ESTADO DA BAHIA. *Energia solar fotovoltaica na Bahia: histórico e diagnóstico dos programas implementados.* Relatório técnico elaborado pela UNIFACS no âmbito da pesquisa Desenvolvimento de Metodologia para Definição de um Programa de Eletrificação Rural para a Universalização do Atendimento. Salvador, Jan. 2002a

Annex 1

1. CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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Annex 2.

DESCRIPTION OF SUSTAINABILITY INDICATORS[25]

The contribution of rural solar projects to sustainable development in Brazil has also been assessed by the Centre of Integrated Studies on Environment and Climate Change at the Federal University of Rio de Janeiro as part of the SouthSouthNorth (SSN) Project. The SSN project used a systematic approach which involves, both quantitative data and qualitative responses from a wide variety of stakeholders, to assess and rank potential CDM projects against eight sustainability indicators. The sustainability indicators reflect the priorities within the national strategy for sustainable development in Brazil. Six rural community based solar projects in Brazil were assessed by the SSN Project[26]. These solar projects all scored a total sustainability rating of five (Table 6). This assessment suggests that rural solar projects are contributing to sustainable development in Brazil through their contributions toward the mitigation of climate change, avoidance of local air pollution, increased local employment, improving macroeconomic sustainability and the sustainable use of natural resources. These projects also incur some negative impacts because they cost more than alternative systems (diesel) and at present solar panels are imported into Brazil, resulting both in, increased payments to foreign entities and a reliance on imported technologies. However, as the solar industry develops and becomes more widely used, both globally, and in Brazil, these negative impacts are likely to decline.

Furthermore, replacing diesel with solar panels for lighting improves indoor and outdoor air quality by eliminating emissions such as CO, NO_x , SO_2, and particulates. The project will also reduce spills occurring from the transport of diesel fuel to rural areas.

Table 6: Summary of the contributions to sustainable development from a rural solar project in Brazil (adapted from the Brazil South***South***North Project Report)

Sustainability Indicator	Brief Definition of Indicator	Rating*
Contribution to the mitigation of global climate change	CO_2 avoided during the useful life of the project compared to a diesel baseline.	3
Contribution to local environmental sustainability	Other local environmental impacts, e.g. avoided local air pollutants compared to diesel powered generators.	3
Contribution to net employment generation	Local employment and training of technical people for installation and maintenance of the solar systems.	1
Contribution to the sustainability of net balance of payments	At present solar panels are imported.	-2
Contribution to macroeconomic sustainability	Increased private sector involvement and lower direct investments by the Government of Brazil in rural areas over time.	2
Cost effectiveness	Comparison of the implementation costs of solar systems versus diesel systems for the provision of energy to rural communities	-2
Contribution to technological self reliance	Expenditure incurred through technology transfers between host countries and foreign investors.	-2
Contribution to the sustainable use of natural resources	Reduction in the depletion of non-renewable natural resources – replacement of fossil fuel use with renewable energy.	2
Total		5

*Note, the highest/lowest possible ratings = +/-3

25. The South*South*North (SSN) Project: Final Report for Brazil, Emilio Lèbre La Rovere, Head, CECLIMA, Professor, COPPE/UFRJ, Institute for Research and Postgraduate Studies of Engineering, Federal University of Rio de Janeiro, e-mail : emilio@ppe.ufrj.br (CECLIMA – Centre of Integrated Studies on Environment and Climate Change)

Annex 2

Preliminary Validation Report

DESK REVIEW OF BP-PRODEEM RURAL SOLAR CDM PROJECT

REPORT NO. 2003-0897 **REVISION NO. 01**

Date of first issue	Project No.
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Trygve Røed Larsen Senior Vice President	DNV Certification, International Climate Change Services
Client	Client ref.
BP / WBCSD	Giles Mackey / Kjell Øren, Susanne Häfeli

Summary

This report summarises the preliminary findings from a desk review of the Project Design Document for the BP-PRODEEM Rural Solar CDM Project. The review has been conducted against the requirements of small scale CDM projects.
The project involves installation and commissioning of 1,852 solar panel systems across schools in Brazil, delivering 1.3MW of electricity for lighting, TVs and refrigerators. The project is in response to a government run programme (PRODEEM) which has been running since 1994, with the objective of promoting renewable energy (mainly solar power) in remote and poor rural areas of Brazil. The BP project is Phase V.
The solar systems will meet currently unmet electricity demand where the alternative would be fossil fuel combustion, generating GHGs. The proposed baseline is therefore diesel generators.
A number of clarifications and corrective actions have been identified in the initial review that will need to be resolved before evaluation of the project can be completed.

Report No.	Subject Group
2003-0897	Environment

Indexing terms

Key words: Climate Change, Kyoto Protocol, Validation, Clean Development Mechanism

Service Area: Verification

Report title: Desk Review of BP-PRODEEM Rural Solar CDM Project

Market Sector: Public Utilities

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Work verified by: Michael Lehmann

Date of this revision	Rev. No.	Number of pages
2003-07-21	01	8

CONTENTS

1. INTRODUCTION

DNV has been engaged to carry out a preliminary desk review of the BP-PRODEEM Rural Solar CDM Project.

1.1 Objective and Scope

The review has been conducted against the requirements for small scale CDM projects and has been based solely on the Project Design Document submitted by BP. This exercise does not represent a full validation of the project, but covers the first stage of the validation process.

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the stated requirements. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

DNV has employed a risk-based approach to the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The output of this preliminary review includes initial conclusions regarding the projects adherence to the CDM modalities and procedures, and a list of additional information requirements which need to be presented by BP for the full validation to be completed.

1.2 GHG Project Description

The BP-PRODEEM Rural Solar CDM project involves installation and commissioning of solar panel systems at 1,852 off-grid schools in Brazil, delivering 1.3MW of electricity for lighting, televisions and refrigerators.

The project is in response to a government run programme (PRODEEM – Programme for Energy Development of States and Municipalities) which has been running since 1994, with the objective of promoting renewable energy (mainly solar power) in remote and poor rural areas of Brazil. The BP project is Phase V.

PRODEEM has established a technical specification which defines the exact power requirements for the solar systems, based on an assumed number of hours of utilisation for lighting in various areas of a typical school, as well as consumption by refrigerators and television kits. The installation will be completed over 12 months from May 2002. BP is contractually obliged to ensure continuous operation of all the systems for a period of 36 months from the date when the last system is installed.

The project would be registered as a Type 1A 'Renewable energy projects/electricity generation by the user' under the small scale simplified modalities and procedures. The schools are remote and geographically dispersed, so extending existing electricity grid infrastructure to these areas is not planned. The solar systems will meet currently unmet electricity demand where the alternative would be fossil fuel combustion, generating GHGs. The proposed baseline is therefore diesel generators.

Due to logistical and practical difficulties it is not proposed to install meters or sample the systems annually. The monitoring methodology involves monitoring the continued operation of the systems through the establishment of a network of service centres which would be contacted in the event of a system needing repair. Records of the activities of the service centres would be kept to monitor the overall reliability of the systems. In addition, BP has provided a 36 month technical operating guarantee on all systems.

A 10 year crediting period has been selected.

2. METHODOLOGY

In order to ensure transparency, a validation protocol was customised for the project. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.

Findings established during the validation are either due to non-fulfilment of validation protocol criteria or where a risk to the fulfilment of project objectives is identified. Corrective Action Requests (CAR) are issued, where:
i) mistakes have been made with a direct influence on project results;
ii) validation protocol requirements have not been met; or
iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

Figure 1: Format/Description of Validation Protocol Tables

Validation Protocol Table 1: Mandatory Requirements

Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided **(OK)**, or a **Corrective Action Request (CAR)** is given where there is a risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.

Validation Protocol Table 2: Requirement checklist

Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various mandatory requirements in Table 1 are linked to checklist questions that the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	This section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided **(OK)**, or a **Corrective Action Request (CAR)** is given due to non-compliance with the checklist question (See below). Clarification is used when the validation team has identified a need for further clarification.

Figure 1: Format/Description of Validation Protocol Tables *continued*

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

The term 'clarification' is also used, where:
iv) additional information is needed to fully clarify an issue.

2.1 Review of Documents

The desk based review has involved examination and appraisal of the following documentation:
1) Project design document and annexes
Annex 1: Information on participants in the project activity
Annex 2: Description of sustainability indicators
Annex 3: i) BP-MME Contract No.35 English
ii) MME Call to Bid N.02/2001 English

Annex 4 contains the BP-MME Technical Operating Guarantee, but BP has advised that this is still under discussion, and Annex 4 has not been made available at this stage.

2.2 Follow-up Interviews

No follow-up interviews have been carried out within the scope of the desk based review.

2.3 Resolution of Clarification and Corrective Action Requests

A number of clarifications and corrective action requests have been identified during the desk based review. These are detailed in Section 3 for resolution by BP.

3. DESK REVIEW FINDINGS

The findings from the desk based review are described in the following sections and include the following:

1) Conclusions based on the project design document, covering project design, baseline, monitoring plan, calculation of GHG reductions, environmental impacts and comments from local stakeholders. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
2) Where DNV has identified issues that need clarification or that represent a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A.

3.1 Project Design

The required design of the solar systems is clearly defined in the PRODEEM technical specification. This includes specific requirements for ensuring robustness, such as testing requirements and acceptance criteria. A 36 month operating guarantee is also provided by BP. The electrical requirements are defined based on an assumed number of hours of utilization for lighting and other equipment for an average school.

The project appears to contribute to sustainable development, based on the priorities of the Brazilian government to supply sustainable renewable energy to rural communities and the on-going commitments of PRODEEM. Other benefits include local employment for installation and maintenance of the systems and avoidance of impacts on local air quality associated with fossil fuel alternatives.

The project does not result in diversion of official development assistance funding.

The expected operational lifetime of the solar systems is 20 years. A crediting period of 10 years has been selected. The PDD states that the systems will be installed over a 12 month period from May 2002. The start date of the project is 9th Jan 2003.

Corrective Action Requests

1) Technical operating guarantee is to be provided by BP (Annex 4 to PDD)
2) Written confirmation is required from the government

of Brazil regarding contribution to sustainable development.
3) Written approval of voluntary participation from the designated national authorities is required.

Clarification request
1) Solar system installation schedule and commissioning status is requested, including date of installation of the last system.

3.2 Baseline
The baseline methodology follows Type 1A Option 2 of Appendix B to the simplified modalities and procedures and is clearly and transparently applied. The baseline uses the same assumptions for electrical utilization as defined in the project specification and also assumes that the diesel units would function without faults.

A simplified baseline may be used for small-scale CDM project activities if the project participants are able to demonstrate that the project activity would otherwise not be implemented due to the existence of one or more barriers, i.e. investment barriers, technological barriers, barriers due to prevailing practice or other barriers.

Although financially more viable alternatives to this solar power project exist, that would lead to higher GHG emissions (i.e. diesel generators), the PRODEEM programme was established in 1994 and the tender specifications are specifically for solar power. As such, there are no barriers presented in the PDD which would prevent the project from occurring in absence of the CDM project activity. The activity appears to be 'business as usual'. Consequently, it is not clearly demonstrated that the project activity itself is not the most likely baseline scenario, given the existence and intervention of the government via PRODEEM which appears to be going ahead with or without the CDM.

Corrective Action Request
1) Further justification that the project itself is not the most likely baseline is required, as national policies/circumstances favour renewable energy, and there appear to be no clear barriers to the project (i.e. it is business as usual).
Clarification request
1) The basis for electrical utilisation assumptions needs to be more clearly justified. For example, is it realistic that the school will be lighted 365 days a year?

3.3 Monitoring Plan
BP has assumed that their monitoring methodology is new and will need to be approved by the CDM EB. However, it may comply with the definition of 'other evidence of continuing operation'. **It is suggested that clarification is sought from the Methodology Panel before submitting this as a new method.**

Due to logistical challenges and significant financial expenditure, metering or annual physical monitoring activities were considered impractical.

The proposed alternative involves two elements:
a) A network of regional service centres that respond to reported faults and issue an immediate response from local maintenance providers.
b) A technical operating guarantee which is currently established at 36 months.

BP is currently discussing the on-going maintenance arrangements with PRODEEM to satisfy the 10 year crediting period.

Monitoring Plan identifies specific parameters such as number of faults, nature of faults, speed of rectification, percentage of faults rectified etc. to be recorded by the service centres. A record retention period of 3 years is defined. This would require verification of CERs to be carried out at least once every 3 years.

Corrective Action Requests
1) Further information to be provided regarding the maintenance programme over the 10 year crediting period after the 36 month operating guarantee has expired.
2) Further information is requested on the status of the maintenance service network, including locations, competencies, resources available, working procedures etc.
Clarification request
1) Further information is required to demonstrate the community's ability to contact the service centres (e.g. telephone access).
2) The overall process for collection, aggregation and management of data specified in the Monitoring Plan needs to be outlined, to ensure complete and accurate data reporting across the service centres. To ensure future verification, data management and quality controls need to be improved, including:
- Defined responsibilities for maintenance activities and record keeping

- Procedures for maintenance activities
- Procedures for training of maintenance personnel
- Data review/audit procedures
- Project performance reviews
- Corrective action procedures

3.4 Calculation of GHG Reductions

The project emissions are zero. Baseline emissions are calculated in accordance with the approved methodology for the project type (Type 1A Option 2).

However, no provisions have been made to feed the monitoring results into the calculation of CERs, should substantial faults be reported in any of the systems.

Corrective Action Request

1) The CER calculation procedure needs to be modified to incorporate monitored data on the reliability of the systems (i.e. to discount CERs).

3.5 Environmental Impacts

An environmental impact assessment is not required. No adverse impacts are identified by the project.

3.6 Comments by Local Stakeholders

Limited information has been provided on stakeholder consultation by BP. The PDD states that stakeholder engagement is carried out by the government of Brazil representatives. Macro level strategic consultation on PRODEEM includes technical experts, government ministries, state departments, regional communities and NGOs. At the local level, multi-stakeholder State management committees govern the programme and consult directly with state municipalities and local communities to identify local needs.

No summary of stakeholder comments has been provided and it has not been possible to report specifically on how comments have been taken into account.

Corrective Action Request

1) A summary of comments is required and how these have been addressed.

3.7 Comments by Parties, Stakeholders and NGOs

According to the modalities for the Validation of CDM projects, the validator shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organisations and make them publicly available.

This requirement will be carried out on approval by BP.

4. REFERENCES

Category 1 Documents:

/1/ Project design document and annexes

Annex 1: Information on participants in the project activity

Annex 2: Description of sustainability indicators

Annex 3: i) BP-MME Contract No.35 English

ii) MME Call to Bid N.02/2001 English

About the WBCSD

The World Business Council for Sustainable Development (WBCSD) is a coalition of 170 international companies united by a shared commitment to sustainable development via the three pillars of economic growth, ecological balance and social progress.

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Our aims

Our objectives and strategic directions, based on this dedication, include:

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> to participate in policy development in order to create a framework that allows business to contribute effectively to sustainable development

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> to demonstrate business progress in environmental and resource management and corporate social responsibility and to share leading-edge practices among our members

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