


Practice - Policy Connect: Access to Rural Electricity Services


WORKSHOP PROCEEDINGS

May 13, 2010, Raipur

Organized by

WINROCK INTERNATIONAL INDIA

In collaboration with

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Embassy of Switzerland
Swiss Agency for Development and Cooperation - SDC

Content

ANNEXES:

Abbreviations

CREDA	Chhattisgarh Renewable Energy Development Agency
CSR	Corporate Social Responsibility
DA	Development Alternatives
DDG	Decentralized Distributed Generation
DISCOMS	Distribution Companies
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
MoRD	Ministry of Rural Development
MoP	Ministry of Power
MCB	Miniature Circuit Breaker
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MNRE	Ministry of New and Renewable Energy
NTPC	National Thermal Power Corporation
RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojana
REC	Rural Electrification Corporation
RERED	Rural Electrification through Renewable Energy Development
SDC	Swiss Agency for Development and Cooperation
TERI	The Energy and Resources Institute
UNDP	United Nations Development Program
VEC	Village Energy Committee
VESP	Village Energy Security Program
WII	Winrock International India

1.0 BACKGROUND OF THE WORKSHOP

Promotion of standalone decentralized electricity generation enhances the access to electricity services to the households and the habitat in rural areas. Decentralized distributed generation (DDG) can reduce the burden on both electricity supply shortfall and the urgency of immediate extension of grid electricity. DDG also has the potential for supplying affordable, clean and reliable electricity with minimal losses through effective maintenance and local cost recovery. But at the same time it has also been observed that DDG is used as a stop gap arrangement and are primarily constructed in an ad-hoc manner till the village is connected by the grid. The future of DDGs and its convergence with the expanding grid infrastructure is unclear from the present dynamic rural electrification scenario in the country.

Winrock International India has electrified a remote tribal village in the state of Chhattisgarh by using straight vegetable oil (Jatropha curcas). The objective of the pilot initiative was to demonstrate the technical and financial viability of running a small, decentralized power plant using non-edible vegetable oil as fuel in place of conventional diesel to provide rural electricity. The project village is located in Kawardha district of Chhattisgarh. The remote village of Ranidehra consists of 107 households primarily belonging to 'Gond' and 'Baigga' tribes. The biofuel based decentralized power plant has been running successfully, with zero down time, for the last 37 months and catering to the entire village. There is almost 100% collection of service charges from the beneficiaries – a rare feat in a rural electrification project. This project has been implemented by Winrock International India with financial support from the Ministry of New and Renewable Energy, Government of India and British High Commission. Since December 2007, support from Swiss Agency for Development and Co-operation (SDC) through the project titled "Hand-holding and backstopping support for long-term sustenance of the remote village electrification project" has allowed the much needed space to ensure proper capacity building of the local village level operators and the village energy committee to facilitate techno-social integration for smooth running of the project.

In order to share the project experience with relevant stakeholders, WII and SDC organized a workshop at Raipur on 13th May 2010. The objective of the workshop was to share the knowledge generated from the project and also to discuss the larger policy issues regarding the role of DDGs in meeting the village energy needs as well as exploring the synergy between DDG and grid connectivity.

2.0 RECORD OF DISCUSSIONS

The workshop started with the welcome address by Mr. Somnath Bhattacharjee, Vice President, Winrock International India. Mr. Bhattacharjee while welcoming all the participants outlined the objectives of the workshop. It was mentioned that in addition to sharing the learning from the Ranidehra DDG project, the workshop was also intended to provide a platform for sharing of experience amongst SDC partners and other stakeholders and also an occasion to discuss and analyze the role and relevance of DDGs in improving access to energy for rural India. He mentioned that the workshop participants have extensive experience in operating and managing DDG projects and hoped that the workshop would encourage lively and critical discussions on the role, relevance and the challenges of operating DDGs under the changing rural electrification policy scenario and its possible convergence with the ambitious grid expansion programme that the country has embarked into. Sustainability of DDG projects is an important issue and the inability to replicate even the successful models is quite frustrating at times. It was hoped that workshops/policy discussion forums like these would help the stakeholders to better appreciate the intricacies of running a DDG project and aid in drafting practical and effective action plans to help DDGs play their complimentary role in addressing the issue of energy security.

Ms Sybille Suter, Country Director, SDC welcomed the participants and mentioned that she was impressed to see the Ranidehra power plant and found the interaction with the villagers in general and the village energy committee in particular as lively and interesting. She mentioned that the project demonstrates a classic example of multi-stakeholder engagement to ensure smooth running of the DDG. The project also demonstrates how the productive use of electricity can bring about a change in the lives of the indigenous people. Ms Suter mentioned that there is a strategic shift in SDC India's country program. SDC's primary focus now is on comprehensiveness and robustness of policy framework to ensure integration of measures for reducing climate risks and adaptation into national planning processes. Under the RERED programme, SDC has entered into a MoU with NTPC to strengthen the sustainability of DDGs in select states. The complexities of operating these DDGs were clearly visible during the field visits she undertook in states like Orissa, Sikkim and Chhattisgarh. The challenge which she foresees is regarding the future of DDGs against the expanding grid connections. It was felt that good examples from the field need to be highlighted, and policy makers at the national and state level engaged to ensure that projects like Ranidehra become realities across the country.

2.1 First Technical Session: Learning from Ranidehra

While sharing the learning from the field, the project team at WII, chose the three most critical issues that profoundly influence the sustainability of any biofuel based rural electrification projects. These are related to; (i) feedstock management, (ii) the role of community engagement, and (iii) technical challenges of running an engine on straight vegetable oil. Brief presentations were made to cover each of the above themes, followed by interesting discussions as highlighted in this section. The presentations are enclosed as Annexure of this report.

➲ *Experiences of Jatropha plantation and the issues, opportunities and lessons learnt*

Nilanjan Ghose of WII made the presentation, which covered the details about the process of site selection for plantation of Jatropha, sourcing of saplings from within and the other neighboring states and different ways and means of involving beneficiaries in the plantation activity. More importantly, the presentation captured the experience and learning as far as Jatropha yield is concerned, and many myths associated with it.

The presenter highlighted the local resource utilization and the institutional linkages forged between the village energy committee and the local level government institutions, and the ability of the project team to mobilize resources through convergence of other government programs. The presentation also highlighted that the project was designed in a manner to avoid the food vs fuel debate. The bunds and boundaries of agricultural lands, the areas between the agricultural land and unused barren lands within the village were utilized for plantation activities. Seed collection is a labor intensive and time consuming activity as it requires repeated visits to collect the ripe fruits from the saplings. In some cases, the saplings often become unapproachable at post monsoon during the time of seed collection due to growth of other shrubs. As the saplings are planted in decentralized manner, seed collection becomes more time consuming and labor intensive. It is also important to mention that only 60% of the seeds can be collected due to the reasons mentioned above. The increasing opportunity costs in terms of employment in different government programs (like MGNREGA and other infrastructure based projects within the village) has lead to a reduction in the interest levels of the communities to provide voluntary labor. The presentation ended with the most cost effective model of plantation that has emerged taking into consideration the available resource and based on the learning's from the past plantation activities.

Key points from the presentation and discussions

- Although Jatropha grows in wild, it is not yet fully domesticated
- There is a big question mark on Jatropha yield (kilograms of seed per plant per year)
- For bund/boundary plantations with minimum inputs, one can expect around half a kilo of seed per plant per year. Although this figure is low for block plantations feeding to a biodiesel plant, the level of yield is sufficient for running a DDG project
- Bio-fuel plantation activities should be started at least two to three years before commissioning of the power plant to ensure sustainable supply of oilseed.
- Preference should be given to block plantation in patches of uncultivated land after due consultation with the village community. This should facilitate improved seed collection.
- There is a need for sharing suitable knowledge with the community regarding plantation and aftercare of the saplings before undertaking the plantation exercise.
- For plantation purposes, preference should be given to collect saplings from local nursery to reduce sapling mortality.
- Seed collection is a labor intensive and time consuming activity. Suitable opportunity costs in terms of employment in different government programs may reduce the interest of the communities to provide voluntary labor.

➲ *The role of mobilizing the local community for effective governance of DDG projects*

In her presentation, Shehnaz Parveen of WII covered different aspects of social mobilization undertaken as part of the project. The presentation highlighted the "process" of identifying the village, establishing rapport with the community, taking the Panchayat and local civic administration into confidence and the process of formation of the village energy committee. The greatest challenge was to build the trust of the community so that the project could utilize the unprocessed Jatropha oil to generate electricity. There was also the fear that allowing the setting up of this DDG project would disqualify the village from being connected to the grid.

It was very important for the project team to understand the socio-cultural and political dynamics within the village. There has been stiff opposition from the local *Sarpanch* who refused WII to set the power plant in Bairrakh village. He was able to convince the people of his village that he will manage to bring grid connection within next few months and therefore allowing this off-grid system would act as a disincentive for the government to bring in grid electricity to the village. But the people of Ranidehra, a hamlet under the same village agreed to go ahead with the power plant.

The presentation primarily highlighted the different stages of community mobilization, different challenges faced, consultation process of setting up of the tariff structure

and the involvement of the beneficiaries in plantation, aftercare and seed collection. The presentation also touched upon the institutional linkages that were developed between the VEC and forest department, local rural bank, panchayat etc. The VEC has been registered under the Chhattisgarh Societies Registration Act and have been regularly submitting their audited accounts to the concerned department.

Key points from the presentation and discussions

- For any DDG project, social mobilization plays a key role to ensure successful participation and co-operation of the project beneficiaries. Lack of engagement of local villagers/their indifferent attitude, is one of the most common reasons of failure of such initiatives.
- Building the faith of the community that the project can utilize the Jatropha oil (from plants growing in their backyards) to generate electricity was a key challenge.
- Understanding and respecting the socio-cultural norms of the concerned community is necessary.
- Selection of right candidates (who commands a level of respect from the villagers and is prepared to offer voluntary services) is essential for smooth functioning of the Village Energy Committee (VEC)
- For such initiatives, women could be the key dialogue partner as they are most positively affected by such interventions
- Linking up the VEC with other institutions/ongoing Government programmes is essential for leveraging support and for long-term sustenance
- Linking up provision of energy with livelihood activities/enhanced income for villagers is key to sustenance of such initiatives

➲ *Experience of Technology development for use of SVO in diesel engines*

For any DDG project, technology is the backbone. A sturdy, reliable technology coupled with intensive social mobilization to ensure participation of the local community is the key to successful running of a DDG.

Fuel for powering engine under this project was “Straight Vegetable Oil”, which is a much lower grade of fuel than the conventional diesel. Therefore, the choice of engine to burn this inferior grade of fuel was extremely important. After a careful assessment, an engine was chosen which has very low RPM and an indirect injection engine. It was also decided to not partner high profile engine manufacturers as they would not be interested in investing their time for this experimental project which possibly wouldn’t present an immediate commercial value.

PM Diesels, Rajkot emerged as a suitable choice of engine supplier, keeping the above parameters in mind. Professionals from WII worked in collaboration with PM Diesels to modify and fine tune the engine for this project. It may be noted that PM

Diesel, while working hand-in-hand with WII professionals for engine modifications/testing has gone much beyond there mandate to support and facilitate smooth running of the project. Somnath expressed his gratitude to them for their contribution and support.

Apart from the engine, the other technological challenge was of choosing a suitable lubricating oil. The lubricating oil for this project required to be reformulated. WII found an able partner in Castrol India Limited. Castrol India, visualizing this project as a corporate social responsibility (CSR) activity decided to join hands with WII for providing suitable lube oil. It is important to mention that Castrol has been providing the lubricating oil for the last couple of years and has also expressed its interest for supporting the project in future also. WII has already applied for a patent for the above application.

Key points from presentation and discussions

- Sturdy, reliable technology which can ensure uninterrupted supply of electricity at the pre-decided stipulated hours to the community is the backbone of a successful DDG project.
- Selection of engine is important for its use on SVO. The engine PRM has to be low, and the engine preferably an indirect injection (ID) engine.
- The main modification carried out on the engine was to devise a mechanism to preheat the Jatropha oil (from engine exhaust heat) to reduce its viscosity. This is important to maintain the injector spray pattern, which in turn affects engine combustion/deposit formation tendency.
- Apart from engine, the other technological challenge was of choosing suitable reformulated lubricating oil. WII found an able partner in Castrol India to solve this problem. Castrol India formulated a special lubricant to keep the engine clean while operating on this inferior grade of fuel.
- Selection of 6 HP engine (700 RPM), initially, was triggered by the need for having as low an engine PRM as possible. But the present field experience shows that straight vegetable oil can also be run successfully in 10 HP engine (1000 RPM), which is the most preferred/optimum size of the power pack for a 100 household village.
- WII has already applied for a patent for the above application.

2.2 Second Technical Session: Revenue Models and sustainability issues for DDGs: Experiences from the field

The second technical session provided a platform for the participants to share their experience and learning from the field while implementing DDG projects. There were 5 presentations, and the session was moderated by Dr V V N Kishore, Professor and Head, Department of Energy and Environment, TERI University. The presentations made during this session are enclosed as Annexure to this report.

➲ *Mr. Sunil Dhingra, The Energy and Resources Institute*

Mr. Dhingra presented an overview of the work being done by TERI, touched briefly on technological aspects and with the help of two case studies, presented key learning's and recommendations. Seven Villages have been electrified in Orissa, Chhattisgarh, Rajasthan and Madhya Pradesh using Biomass Gasifier by TERI. Case studies of Deodhara village in Orissa and Jamera village in Chhattisgarh were presented in detail. It was in Deodhara village that for the first time, the concept of "corpus fund" was introduced for operation and maintenance of the power plant. Presentation highlighted the need of viability gap funding to attract the entrepreneurs. He also talked about the need for exploring the possibility of linkages with MGNREGA for biomass production, collection, processing and operation of gasifier based DDG projects. He stressed the need for adequate capacity building and hand holding support to village level institutions for sustenance of such initiatives.

➲ *Mr. Barun De, National Thermal Power Corporation*

Mr. De's presentation highlighted the portfolio of DDG projects being implemented by NTPC, experiences derived from them, key concerns and challenges. NTPC has commissioned a handful of projects for rural electrification beginning from biomass based power plant at Jemara Village in Chhattisgarh and Solar Photovoltaic DG project in Jharaha-Chetwa village in Uttar Pradesh. Mr. Barun De shared about the benefits which these electrification projects have brought in the life of villagers. He talked about the institutional arrangement made by NTPC for sustainability of the projects. However from their past experience, developing the fuel supply chain still remains a major area of concern. The state government has declared some of the villages electrified by NTPC (through DDG) as "Ambedkar village" and has declared that these villages are entitled to free supply of electricity. Therefore it is becoming difficult for NTPC to collect user fee for their DDG operations from these villages.

➲ *Mr. Sharad Tiwari, Development Alternatives*

Mr. Tiwari highlighted the high cost of irrigation, lack of power for local value addition and primitive cooking and lighting solutions as key areas where rural electrification can play a positive role. He also shared experiences from some of the past projects of DA in addressing the issue of energy access. Key among them was a community solar power plant in Rampura, Jhansi. He described in detail about the creation of tariff slab for different loads to cross subsidize the poor who in general utilize a small load and have less capacity to pay. Mr. Tiwari

spoke about key challenges for the project developers. According to him, load management was the most critical part in designing rural electrification projects.

- ***Ms. Dipti M. Vaghela, Gram Vikas***

  Ms. Vaghela shared experiences of her organization with respect to community owned micro-hydro projects. Her focus was on elements of sustainability, lessons learnt and issues for the practice to policy connect based on the work done by Gram Vikas. She talked in detail about three important elements to ensure sustainability of rural electrification projects viz. sound technical performance, community participation and suitable and viable tariff structure/collection mechanism. For community participation, she shared information about "pole-making" process adopted by Gram Vikas to identify youth leaders. The key to sustaining a decentralized DDG is to ensure that there is no downtime. Quality of the materials used (or the lack of it), often comes in the way of smooth and sustainable operation of the DDG. Quality Assurance is one of the key areas which unfortunately doesn't appear to be high on priority list of government.

- ***Mr. Sharda Gautam, Winrock International India***

  Mr. Gautam presented the revenue model of Ranidhera Project. Revenue model tried to encapsulate effect on this project's operation on revenue streams of beneficiaries, village energy committee and village as an independent economic unit. Base case which did not consider cost of Jatropha seeds made evident that project was financially viable. Delving further, he presented an analysis of revenue structure through different simulations which accompanied changing costs of feedstock and tariff. This analysis highlighted that even when the cost of Jatropha was accounted with adoption of different tariff structures, beneficiaries, village energy committee and village as an independent economic unit remain financially viable.

Dr Kishore in his concluding remarks highlighted that there is a need to find solutions to address the sustainability issues. The revenue model for a DDG project is of utmost importance, and he concluded that perhaps one can think of organizing a full day workshop purely around this issue. Dr Kishore stressed the need to finalize the proceedings of the workshop quickly and share it with people who matter and have an interest on the subject.

2.3 Third Technical Session: Moderated Discussion on Grid-DDG Interaction: Issues for policy development

The moderated session was chaired by Mr. Srinivas Krishnaswamy of Vasudha Foundation. In his opening remarks, Mr. Krishnaswamy set the tone for the panel discussion by asking some key questions like (i) why are DDGs not replicated in spite of the increasing demands for electricity in the rural and peri-urban areas, (ii) what are some of the key factors which determine the success and sustainability of a DDG, (iii) what is required to ensure that DDGs are looked as more than just a stop gap solution before the village is electrified by the grid, and (iv) the need to go beyond lighting and linking up livelihood opportunities etc. The panel discussion tried to address the issues as highlighted by the Chair.

- ***Mr. R. Gyani, CREDA***

  Mr. Gyani in his presentation, touched upon the essential elements for ensuring the success of DDGs. He shared the activities that CREDA is currently undertaking to provide rural electricity. On a lighter note Mr. Gyani used "Pan-ki-Dukaan" as metaphor for DDG where hundred's of varieties exist with none of them being exactly similar. VESP as a scheme probably has fallen short of what it was expected to achieve but it has provided some valuable leanings which needs to be nurtured and developed further. While taking up a DDG project, instead of merely looking at it's economic viability, life cycle costs must also be taken into account. It's equally important to ensure that DDG operators are well trained and become competent enough to address operational problems. CREDA is already working in more than 1000 villages and these villages are being electrified by SPV. In his opinion, the solar option is yet to receive the kind of success it should have, primarily because the industry has failed to provide customized services. CREDA is also using DDG technology in urban grid connected areas. It has already launched the innovative *mera ghar meri bijlee* campaign. CREDA is also initiating the process of developing DDG projects under RGGVY along with Ministry of Power.

- ***Dr. V. V.N. Kishore, TERI University***

  Dr Kishore in his remarks emphasized the need to realize that all DDG technologies are not at the same level and this must be understood before promoting DDGs. Before initiating any DDG project, it's imperative to understand exact demand of the beneficiaries. More often than not over-capacity plants have been designed and commissioned which became dysfunctional over a period of time because of a shortage of fuel. It is also clear from the presentations that DDGs works successfully were there is a direct link with the income generating

activities. Linking DDG projects to livelihood opportunities needs mores serious attention. Examples of such wealth creating loads could be setting up of cold storage units, ice making for fishing villages, power looms etc. It is important to have different approaches towards rural electrification through DDG in case where the village has been excluded from grid and in case of villages that are connected to the grid but are energy- starved.

- ***Mr. S. Patara, Development Alternatives***

Mr. Patara highlighted on two possible scenarios of grid and DDG interaction. In the first scenario, the grid will be extended to all the un-electrified rural areas but would fall short of providing the necessary energy services. The quality and the duration of supply will be inadequate to meet the needs of the target population. Therefore there will be the need for DDGs to supplement the energy requirements. In the second scenario, there may be a dialogue between the grid and DDG operators. Discussions can revolve around technical and institutional collaboration. Innovation in business models should also happen first and progress in the other arenas will follow. This in-turn can happen when standards in service models are set and established. These standards can be setup either by the state or could also be developed by private players. Though there are proper standard for quality control, it is often not monitored by the DISCOMS. There is a need to club energy and employment as rural entrepreneurship zones to attract better participation and involvement of multiple stake holders.

- ***Mr. R. Deshmukh, Prayas***

Mr Deshmukh presented a paper based on a study conducted by Prayas Energy Group. The paper primarily looked into ten simple and practical implementable ideas that can improve access to grid based electric service delivery especially to poor rural consumers. The presentation brought out important elements in terms of the challenges faced by poor to have access to power and also in sustaining grid connections. The paper raised some hard facts relating to energy poverty in the country. It highlighted that half of India's household do not have access to electricity and this population actually constitutes one-third of the world population living without electricity.

- ***Mr. S. Bhattacharjee, WII***

Mr. Bhattacharjee highlighted the largeness of India's rural electrification programme. As per the latest estimates of MoP, there are around 5200 villages to be electrified through DDG. This clearly puts this as one of the most ambitious DDG projects in the world. Unfortunately, we are not geared for to tackle such a

complex initiative of such large magnitude. So far, only a handful of DDG projects set up in the country has attained some degree of sustainability, and it needs lot of soul searching to come out with honest answers as to reasons for failure. In order to increase the relevance and expand the presence of DDG there are two primary aspects which requires urgent attention. First DDG needs to be designed to address more of the livelihood needs of the beneficiaries and move beyond just lighting. Secondly, if the DDGs are to be replicated in large numbers, it is very important to rope in private players. It's evident from past that private players enter the arena only when there are profits and incentives available. A classic example is the case of power sector in India. It is important to work on the necessary and sufficient conditions to bring in private players without compromising the needs of the beneficiaries.

➲ *Concluding Remarks by Dr Veena Joshi, SDC*

In her concluding remarks, Dr. Joshi, thanked all the participants for their contribution and mentioned that the field visit followed by the workshop was an enriching experience. SDC India is working to develop comprehensive and robust evidence to ensure policy change in the area of energy security against the over all objective of addressing climate change. Therefore it is very important to understand the issues and challenges and the workshop coupled with the field visit has provided a window to understand these complexities. There is also a need to share and highlight the good examples on the field and it needs to be brought to the attention of the policy makers.

The greatest advantage of DDG is that it is community managed and people can customize the supply of electricity as per their needs. For example DDG can provide the increased and assured supply of electricity during a village function (like Ramlila or a village marriage). Redressal mechanism in case of non-supply of electricity is also very clear in case of DDGs. However in case of grid there is no assured supply of electricity to meet the customized energy needs of the villagers. In case of non-supply, the redressal mechanism is also very unclear and complex. She mentioned that organizing a sustainable fuel supply chain for bio energy based DDG projects remains as a key issue irrespective of the technology choice. She also highlighted the fact that the absence of a proper handing over protocol for the DDGs developed through Village Energy Security Program (VESP) of MNRE clearly leaves a void regarding the issue of ownership of the assets created.

There is also an urgent need to start a composite dialogue with the Ministry of Power and Rural Electrification Corporation to make the existing DDGs compliant

with the new guidelines. Involvement of other Ministries such as the MoRD, MSME, Ministry of Labour in the DDG policy framework, also needs to be explored

The importance of networks of experts, officials, practitioners and students is vital to continue debating and exchanging of innovating ideas. Structured and organized events like the knowledge sharing workshop aims at furthering this cause. The workshop has shown that there is a large community of DDG operators including NTPC and there is a need to finalize a process to initiate a policy dialogue with MoP. The varied experiences and backgrounds of each of the participants present at the workshop is a testimony to the potentials from such events. Dr Veena Joshi also expressed the need for continuing such policy dialogues/discussion forums, roping in more state agencies and other relevant stakeholders (including private players).

Mr. Nilanjan Ghose, WII, gave the vote of thanks. He thanked SDC for providing support and strategic inputs to WII for conceptualizing and organizing the workshop. He thanked all the speakers and the participants for actively taking part in discussions and sharing their vast experience on the subject.

ANNEXURES

Annexure 1

Project Brief

– Biofuel based Remote Village Electrification Project at Ranidehra, Chhattisgarh

Winrock International India (WII) has electrified a remote tribal village in the state of Chhattisgarh by using straight vegetable oil (Jatropha curcas). The objective of the pilot initiative was to demonstrate the technical and financial viability of running a small, decentralized power plant using non-edible vegetable oil as fuel in place of conventional diesel to provide rural electricity. The project village is located in Kawardha district of Chhattisgarh. The remote village of Ranidehra consists of 107 households primarily belonging to 'Gond' and 'Baigga' tribes. The biofuels based decentralized power plant has been running successfully, with zero down time, for the last 37 months catering to the entire village. There is almost 100% collection of service charges from the beneficiaries – a rare feat in any rural electrification project. The power plant is fully owned and managed by the Village Energy Committee (VEC). The project has received active support and cooperation from Chhattisgarh Renewable Energy Development Agency (CREDA), State Forest Department, District Administration and the Local Panchayat.

The project has amply demonstrated as to how access to energy can trigger multiple developmental benefits in a remote village. Domestic electricity has resulted in productive evenings, increased mobility within the village, increased sales of the local shops and reduced dependency on fossil fuels. Number of electronic items has gone up within the village leading to better access to information and entertainment. The rice dehusking facility within the power plant has also been a big service to the village community. Computer class every evening allows the children to learn the basic skills of operating a computer and also to be acquainted to a new mode of learning. In short the rural electrification project has improved the quality of life for tribal people of a remote village through innovative use of technology.

Extended working hours for Sudhram – the village tailor

Children studying under CFL bulbs

Annexure 2

Program Schedule

May 13, 2010

Workshop at Hotel Babylon, Raipur

9:30 – 10:00 : Registration

10:00 – 10:15 : **Welcome Address and introduction to the Workshop**: Ms. Sybille Suter, Swiss Agency for Development and Co-operation (SDC), and Mr. Somnath Bhattacharjee, Winrock International India (WII)

10:15 – 11:30 : **SESSION I : Learning from Ranidehra**

Moderator: *Mr. Somnath* Bhattacharjee, WII

- Experiences of Jatropha plantation and the issues, opportunities and lessons learnt: Mr. Nilanjan Ghose (WII)
- The role of mobilizing the local community for effective governance of DDG projects Ms. Shahnaz Parveen (WII)
- Experience of technology development for use of SVO in diesel engines Mr. Somnath Bhattacharjee (WII)

11:30 – 11:45 : **TEA BREAK**

11:45 – 13:30 : **SESSION II: Revenue Models and sustainability issues for DDGs: Experiences from the field**

Moderator: Dr. V.V.N. Kishore TERI University

- Experience of Project developers/ Implementing agencies Presentations by:
  1. Mr. Sunil Dhingra, TERI
  2. Mr. Barun De, NTPC
  3. Mr. Sharad Tiwari, DA
  4. Ms. Dipti M. Vaghela, Gram Vikas
  5. Mr. Sharda Gautam, WII

13:30 – 14:30 : **LUNCH**

14:30 – 16:30 : **SESSION III: Moderated Discussion Grid ⇆ DDG Interaction – Issues for policy development**

Moderator: *Mr. Srinivas Krishnaswamy, Vasudha Foundation*

Remarks:

Mr. R. Gyani, CREDA

Dr. V V N Kishore, TERI University

Mr. S. Patara, DA

Mr. R. Deshmukh, Prayas

Mr. S. Bhattacharjee, WII

16:30 – 16:45 : **Concluding remarks: Dr Veena Joshi, SDC**

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Presentations

The Presentations are enclosed in a separate file.