



Promoting small-scale renewable energy technologies in under-served poor communities through awareness raising and educational programmes

Final report

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1 Project overview and key features

The project has been implemented starting from two main events:

- A **participatory workshop** in the community of Valente, State of Bahia, that discussed the water problems affecting the semi-arid region of Brazil and the best use of PV water pumps in tackling such problems;
- A **regional multi-stakeholder seminar** that discussed the obstacles that are limiting the diffusion of small-scale renewable energy and efficient water technologies in the semi-arid region of Brazil. The seminar also aimed to foster exchange of information between key organizations that are actively engaged in the economic development process of the semi-arid region of Brazil.

In doing this, the key objectives of the project were always kept in mind. More specifically, the project unfolded to guarantee sustainability and replicability at a much larger regional and eventually global scale.

Many lessons have been learnt during this process. The following report is a detailed summary of the activities that took place during the implementation phase of the project. Some general considerations on the effectiveness and sustainability and replicability of the project are also included at the end of this report.

1.1 Key features of the project

The project has been developed starting from specific aims, activities and expected outputs that are reported below as they appear in the original final version of the bid that was sent to the REEEP secretariat.

1.1.1 Aim

As stated in the original project description, the project aim was:

“to strengthen and deepen the REEEP network through existing and new REEEP partners. This project is a pilot to develop best practice for raising awareness about renewable energy technologies such as PV water pumping in small and medium size rural communities. If successful, the project will be replicated in partnership also with the LEAD network”.

The long-term goal was:

“to launch a local/ regional/global communication initiative to increase the accessibility of small-size renewable energy technologies to poor rural communities through micro scale financing and community ownership”.

1.1.2 Planned activities

As stated in the original project description, the project was conceived to develop from four main activities:



1. *Development of an educational and awareness raising methodology on PV water pumps;*
2. *A training workshop on the correct use and benefits of PV water pumps;*
3. *A regional (North-East) seminar to discuss the benefits and overcome the financial obstacles that limit the uptake of PV water pumps and other renewable energy technologies in the region;*
4. *Monitoring and dissemination of information and replication.*

1.1.3 Expected outputs

The outputs of the project were expected to be:

1. *An educational methodology for community awareness raising on PV technology, including material from project radio programs, written publications, and a video based on the PV Pumping experience of Branquinha (Alagoas). The material produced will be made available by LEAD (Brazil and International) to be replicated in other countries and communities.*
2. *A local community training workshop on the use of PV pump technology*
3. *A regional multi-stakeholder seminar aimed at promoting awareness on the benefits of PV pump solutions, and focused on actively engaging financial institutions, decision makers and local community leaders.*
4. *Lessons to be shared with the international community in the form of a replicable model for increasing the uptake by poor rural communities of small-scale renewable energy technologies.*



2 Training Workshop on PV Water Pumps in Valente, State of Bahia

As it has been mentioned earlier, the project had the training workshop at the core of its activities. The workshop took place in Valente, Bahia state, 24th-27th November 2004.

Originally the workshop was planned to take place in the community of Branquinha, state of Alagoas. However, the workshop had to be relocated to Valente, in the state of Bahia, because:

- Heavy rains flooded the area around Branquinha in the spring of 2004 and made the area not easily accessible;
- Branquinha is a small community and is located in a fairly remote area. Therefore there was a limited potential to engage a group of people large enough to make the training workshop truly effective;
- The installation of the PV water pump in Branquinha seemed to proceed slowly and it should have not been ready at the time of the seminar.

The seminar was therefore relocated to the community of Valente, Bahia state. Valente is a small community of about 10,000 people. The community was chosen between a few other possible locations (Traira and Marinho) because:

- **Valente is already engaged in renewable energy.** Many homes and farmers are using already solar energy to get electricity for home appliances. The community is therefore already acquainted with the technology.
- **Valente has a radio and a communications infrastructure.** One of the results of the participatory communications exercise was to create a radio program that could promote the use of PV water pumps through radio.
- **Valente has a strong civil society organization (APAEB) that has facilitated local economic growth.** APAEB is a cooperative of local farmers and small producers. Each producer in the area sells the greatest majority of his/her products to APAEB, which results to be the main driver for the local economy. The project was therefore developed in close collaboration with APAEB and APAEB's main activities, bringing more local credibility to the project.

2.1 The workshop

A total number of 31 people attended the workshop. The majority of them – about 70% to 80% - were young students of age 17-25. The very minority of them had a long or solid experience in farming.

The participants were predominantly women (around 80%). Women's participation was deemed to be a priority issues because of the important role that women has in farming and in water management in the Northeaster region.

The seminar was divided into sessions. Each day covered a different topic.

- **Kick start (Day 1, Tuesday the 24th of November).** The workshop started with an evening reception where the partners of the project met the workshop participants. This kick start



gave a brief introduction of the workshop and allowed the participants to meet each other and have a general understanding of the content and objective of the workshop.

- **Introduction (Day 2, Wednesday the 25th of November):** The whole day focused on the importance that water has in our everyday activity, especially in a semi-arid climate. Community problems associated to the drought, the semi-arid climate, water scarcity, water harvesting and limited agriculture productivity were discussed. Discussions and participative sessions alternated each other, including physical interaction, mental exercises and traditional songs. All the exercises allowed the participants to develop ownership on the themes that were discussed.
- **Overview on renewable energy (Day 3, Thursday the 26th of November):** APAEB introduced its history and the way it evolved. General talks were given on solar energy and the financial and feasibility aspects of such projects. Techniques for water management (such as maringa) were outlined together with gender issues. PV solar water pumps were discussed in some details and were presented as a good option to conventional pumps.
- **Writing a radio program (Day 4, Friday the 27th of November):** The whole day was dedicated to understand how to produce and write the script for a radio program to discuss water management solutions and the PV water pump as a good water management practice. The people attending the seminar were divided into groups. Each group was assigned a specific topic to discuss and that had to be developed as a script for a radio programme. At the end of the day the groups met again to assemble the different parts of the radio program.
- **The radio program (Day 5, Saturday the 28th of November):** In the morning, the radio programme that was written the day before by the workshop participants was aired from the local market place of Valente. The local radio of Valente broadcasted the program live. The core of the program was a popular story that discussed the problems of the semi arid and promoted the use of PV water pumps as a good water management practice and a potential solution to drought in the semi-arid.

Overall the workshop was carried out in a participatory way to inform the participants on:

- The problems of the semi-arid, especially water scarcity and lack of electricity;
- The high value that good practices in water management have for the economic development process of the region;
- Gender inequalities regarding access to water, and how PV technologies can help addresses those questions;
- PV water pumps as an appropriate water management solution for the semi-arid region; and
- Communications strategies to disseminate information about key water and energy issues through radio.



2.2 Evaluation of the workshop

The monitoring and evaluation of the project was carried out by LEAD and specifically by a LEAD Fellow whose fields of expertise were renewable energy and participatory processes. The evaluation has been based on:

- Level of participation of the project
- Outputs and outcomes
- Recommendations

The evaluation done by LEAD has been reported here below.

2.2.1 Level of participation

LEAD has developed a list of criteria to evaluate the level inclusion and participation of multi-stakeholder processes. Such criteria were developed within its LEAD Communicating Sustainable Development Program (see table 1) and have been developed by LEAD to identify the key components that characterize good participatory communications/planning projects.

The level of participation of the workshop in Valente has been evaluated using a revised version of these criteria.

Table 1. List of criteria that have been used to evaluate the level of participation of the workshop in Valente (modified after LEAD CSD).

Criteria 1	The project should be distinct yet also be situated within a longer-term and/or larger program of activities
Criteria 2	The project must enhance or strengthen existing local network
Criteria 3	The project must contain a participatory communication capacity-building and/or training component
Criteria 4	The project must promote, encourage, and model deliberative dialogue, multi-stakeholder collaboration, and effective conflict resolution approaches
Criteria 5	At all stages, the project must be inclusive, respectful of communities (broadly defined), and sensitive to culture and gender issues
Criteria 6	The project should promote and support creativity and innovation
Criteria 7	The project partners and communities must make a financial and human-resource contribution to the project and ensure that local people are appropriately involved
Criteria 8	The project must work towards local, regional, national and international sustainable development goals

2.2.1.1 Achievements

The workshop in Valente showed to be participative. It respected the majority of the criteria listed in Table 1 above:

- **Criteria 1:** the workshop was a distinct effort and it was situated in a longer term program of activities within Cemina, through its previous work with “Agents of water citizenship”, and REEEP’s awareness raising context;



- **Criteria 2:** the workshop gave the opportunity to enhance and strengthen local existing networks, such as APAEB and youth network of student in the local farming school of Valente;
- **Criteria 3:** the workshop taught participatory communication techniques, especially through the use of radio
- **Criteria 5:** it was strongly encouraged the participation of different stakeholders in the workshop, especially of women
- **Criteria 6:** the project supported creativity within the community given them freedom to communicate the issue of PV water pumps through radio in the way it best suited them;
- **Criteria 7:** The project partners did take a human and financial resource contribution to the project and ensured that local people were appropriately involved;
- **Criteria 8:** the workshop has a strong link to poverty reduction through improving access of water and energy and bringing economic growth to the region.

2.2.1.2 Uncertainties

The workshop showed also to have some uncertainties concerning criteria 4:

- **Criteria 4:** the workshop developed mostly as a training exercise in communications for renewable energy, water management and PV water pumps. Therefore, the workshop did not foster much multi-stakeholders collaboration with concrete actions on the ground. Despite the added value of training to local people on issues that concern them the most, it was probably missed the objective of bringing the group that attended the seminar to start some collaborative actions within their community that would have resulted in the construction of one of several PV water pumps.

During informal discussions with CEMINA and the other workshop organizers, it was realized that several elements are required to accomplish that. A regional campaign would be indeed needed to address all the questions associated to project implementation, as discussed in the following sections.

2.2.2 Outputs and Outcomes

2.2.2.1 Outputs

The outputs have shown to be adequate for the specific aims of this piloting phase. The outputs of the participatory communications workshop in Valente have been:

- **Training of 31 community leaders – The Agents of Citizenship of Water.** A total of 31 community leaders have been trained in solar energy, water management and PV water pumps. These leaders are called “Agents of Citizenship of Water” after their participation to the workshop of Valente because they aim to become catalyser, i.e. agents of positive change within their communities, on PV water pumps, renewable energy and effective water management strategies.
- **A communications and education toolkit on the use of PV water pumps.** A communications and education toolkit was produced to disseminate information about the use of such technology in a participatory way. A total number of 3000 copies have been produced. The communications and educational toolkit consists of:



- **A manual about PV water pumps.** The manual uses drawings and characters representative of the local community of the northeast region to explain the best use of PV water pumps. Local communities will be able to understand the content of the manual clearly. The manual can be used for other participatory communications/planning seminars across the region.
- **A radio program.** The radio program has been produced directly by the people attending the workshop. The program touches different aspects related to drought, semi-arid climate, water harvesting and PV water pumps. The interview and the communications material that has been produced will be part of a radio program that will be distributed through the 400 hundred radio of CEMINA's radio network.
- **A video.** A video documentary explains this project and the potential that participatory planning has in spreading renewable energy technologies in poor underserved communities. The video can be used to show other communities what PV water pumps are about and the benefit of using it.
- **A t-shirt.** People attending the workshop received a t-shirt with a logo of the program and the sponsors.

2.2.2.2 Outcomes

The workshop has benefited the community through the training of the people on water management, renewable energy and PV water pumps. In addition the size of the group, the material that has been produced (manual, video, radio, t-shirts) and the knowledge that has been gained from the process, has created a solid platform for replicating this experience elsewhere in Brazil and eventually even in other countries.

On the other hand, the outcomes seem to have one main limitation. The people that participated in the workshop received mostly training in communications but did not get information on the steps that are necessary to undertake in case their community would need to install a PV water pump. Therefore, outcomes have been mostly in the form of "soft achievements". This had the positive effect of increasing the level of awareness within their community. However, a participatory planning workshop, other than raising awareness on the benefit of the technology that is discussed, would also need to facilitate access to the technology that is discussed.

In addition, the relatively small size of the group attending the workshop (31 people) does not guarantee a solid dissemination of information on PV water pumps and renewable energy unless there is a replication of such workshop across the region to link it to a broader spectrum of activities and within a longer-term program. Such program should moreover be specifically focused at helping communities of farmers and micro-enterprises to increase their productivity eventually having a productive use of solar and other type of small-scale renewable energy technologies.

In a nutshell the seminar provided a model to show the potential of people's involvement in dissemination and local campaigning.

2.2.3 Recommendations

The following three recommendations are suggested by LEAD to improve the efficiency of the program:

- a. **Train more communities in the Northeast region of Brazil on renewable energy and PV water pumps.** The workshop in Valente has been a small-scale pilot project. Replicating the workshop of Valente in other communities of the Northeast region of Brazil would ensure that there is a larger group of people and community leaders that are able to understand and discuss problems related to renewable energy, PV water pumps and water management. This would add to the long-term sustainability of the program and would help establishing a renewable energy market, especially solar, in the region;
- b. **Redefine the role and the ultimate objectives of the “Agents of Water Citizenship”**
The participatory communications model on PV water pumps of Valente has been designed mostly to raise awareness around issues related to renewable energy, PV water pumps and water management. An awareness raising campaign alone does little good to the communities if it is not coupled to some real actions on the ground. It was a bit unclear what the participants of the workshop in Valente should accomplish. It is suggested that the future participatory communications workshops train community leaders in both communications and project development. If the project participants are to become real “Agents”, i.e. catalysers for change, it is necessary that they receive training also in project development. This implies that future participatory workshops will focus also on practical aspects of small-scale renewable energy systems and PV water pumps, such as:
 - Getting directly in touch with people that can assist them in the implementation phase of PV water pumps;
 - Understand the cost-effectiveness of the technology and its benefit;
 - Understand the lines of credit that are available to the community;
 - Getting to know the organizations they would eventually need to partner with to ensure that their project is truly sustainable.
- c. **Develop specific selection criteria for the recruitment of the workshop participants.**
The greatest majority of the workshop participants in Valente were of young age (17-25). Increasing the amount of renewable energy systems in the different communities of the Northeast region of Brazil requires, on the other hand, the involvement of senior people that are in touch with the farming reality of the Northeast. This means to select future workshop participants according to specific guidelines that are in agreement with the ultimate objectives of the workshop (see point b above).



3 Regional Seminar in Barra de São Miguel, Maceió, State of Alagoas

The regional seminar took place in Barra de São Miguel on the 16th-19th of August 2005. The seminar had been titled “*Renewable energies and adequate technologies for the sustainable development of the semi-arid region*”.

3.1 Rationale behind the seminar

The regional seminar developed from a very specific objective: to demonstrate that a better quality of life in rural communities of the Northeast of Brazil depends for a very large portion on the collaboration between the public and the private sector with an active engagement of local communities.

The seminar was conceived as a multistakeholder meeting place where public and non-governmental organizations should start discussing the value of entrepreneurship to foster local sustainable economic growth. The focal point of the seminar was the use of small-scale renewable energy and water technologies as a valuable means to increase the productivity of agriculture practice and small businesses to reduce rural migration to urban areas and increase the quality of life in rural areas.

Compared to the initial proposition, which focus was “*the financial obstacles that limit the uptake of PV pumping and other renewable energy technologies*”, the seminar covered broader aspects that were however yet closely related to financial obstacles. The change of program was deemed necessary to discuss a long-term sustainability strategy for the introduction of such technologies across the entire region. The financial obstacles that small-scale technologies are experiencing in the region are only part of the problem. Without taking into consideration also the other obstacles, it is unlikely that the region will be able to benefit from the positive impacts that renewable energy technologies can deliver to small communities and business.

The seminar was attended by about 45 people representing their organizations (Appendix 3). The event became also part of a series of meetings that were organized across the country and realized by SEBRAE (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas), the Brazilian Institute to Support Small and Micro Enterprises and by IC (Instituto da Cidadania), the Institute for Citizenship as a part of the National Project to Support Local Development (Projecto Política Nacional de Apoio ao Desenvolvimento Local).

The promoters of the event were CEMINA and REDEH together with the Eco-Engenho Institute.

3.2 The regional context of the seminar

The workshop of Maceió develops from a very specific regional context that can be summarized by the following points:

1. **Little integration between regional development programs and local decentralized projects.** A relatively large amount of economic resources has been flowing to the Northeast region to tackle its water and poverty problems but they may not have been used optimally. Government programs such as “Fome Zero” (Zero Hunger) is showing

inadequate to tackle the development problems of the region. Many NGOs are developing decentralized water projects in the area but there is little flow of information among them on what works and what does not work. There is also a scattered collaboration between organizations, international institutions and government programs that share similar poverty reduction objectives. As a result, the overall poverty reduction achievements and water conservation strategies in the region are likely to be more costly and lesser beneficial compared to a collaborative scenario where NGOs and other development organizations collaborate together according to a common plan of action.

2. **There is a high potential to develop productive use of renewable energy solutions in Northeast Brazil.** Studies of La Guardia Foundation, Eco-Engenho and other organizations that operate in the Northeast region have shown that in low-income rural communities of Northeast Brazil there are many opportunities to develop projects concerning the productive use of photovoltaic energy; such areas do not require necessarily access to conventional on-grid electricity to improve their economic output. They could simply need access to basic energy services and more efficient renewable technologies in both the water and energy sectors.
3. **Small-scale renewable energy systems can be profitable.** Pilot projects in the region show that investing in small-scale renewable energy technologies, such as PV water pumps, can be more profitable for farmers compared to conventional pumping and irrigation technologies.
4. **There is limited technical assistance in the region.** Rural communities of the Northeast usually do not have access to technical assistance to elaborate customized energy and irrigation projects. This represents a barrier that needs to be overcome for the dissemination of renewable energy technologies and especially for their productive use.
5. **A productive use approach is better than a grant-giving system.** Renewable energy has high initial costs. The federal government has often proposed the use of such systems for pre-electrification of residential areas, schools or commercial centres mostly on a grant-given basis. These programs can and should be extended to income generation activities to allow and stimulate users to adequate maintenance.
6. **A decentralized renewable energy planning can help the region meet its current energy needs.** Currently there is no service that helps communities determining which are the most appropriate technologies for them. However, a decentralized approach to rural electrification may suit specific community needs and could deliver some key sustainable development goals
7. **It is necessary to develop an integrated regional rural production and local trade network.** Economic development occurs also by strengthening local, regional and international trade. All the technologies that are used to develop the local community of farmers and micro-enterprises should help developing products that feed existing trade networks, i.e. through cooperatives of small producers.



3.3 The structure of the seminar

The seminar took place in three days. Each day had a specific aim.

- **Kick start (*Day 1, Tuesday the 16th of August*):** The seminar started in the evening with a general introduction on the objectives of the seminar and a brief presentation of the general coordination team and participants. Each participant was also asked to express publicly his or her own expectation for the seminar. This was deemed necessary to create a common vision and share common objectives among the participants.
- **Overview of the projects and opportunities in the semi-arid region of Brazil (*Day 2, Wednesday the 17th of August*):** The whole day was dedicated to understand some of the most successful project typologies and regional programs that have been developed for the semi-arid region of Brazil.

In the first part of the day, seven demonstration projects were presented. This included a wide range of technologies such as irrigation technologies (Mandalla, water cisterns and PV pumping) and micro-systems irrigation for the semi-arid. The second part of the day was dedicated to present on-going policies and program that are currently supporting the development of communities of the semi-arid region. Both sessions were followed by an open discussion. This day was specifically planned to give participants a general overview of the actions that are taking place in the region.

- **Working groups for the identification of barriers and possible solutions for development projects in the semi-arid region (*Day 3, Thursday the 18th of August*):** Five thematic areas were identified as being the key issues to foster or limit sustainable development and economic growth in the semi-arid region of Brazil. The participants were equally divided into 5 groups. Each group was associated to one of the following thematic area:

1. Projects, actions and basic infrastructures (water, energy, health, etc...)
2. Projects of education, capacity building and information and access to public policies
3. Productive use (market and micro-credit with local management, etc...)
4. Source of funding (types of financing mechanisms, financing categories, etc...)
5. Strengthening the agents of local development

Each group had to answer the following two questions:

- **What are the primary barriers for the sustainable development of the semi-arid?**
- **How to optimise the development and the use of resources that are currently available?**

To identify barriers and possible solutions, the following methodology was used:

- Each participant could formulate up to three barriers and possible solutions;
- Each barrier and solution was then written on a board and openly discussed within the group
- The group discussed each barrier and solution to eliminate double-counting and identify core problems with their solutions



- The five groups then came again together to present results and discuss them publicly.

3.4 The results of the seminar

The key results of the seminar were the identification of the barriers and possible solutions that could foster sustainable development and economic growth in the semi-arid region of Brazil. At the end of the session, each working group come up with a number of parameters that are listed here below.

3.4.1 Group 1: Projects, actions and basic infrastructures

BARRIERS	POSSIBLE SOLUTIONS
Not adequate information and education	Include information about the semi-arid in the school's curricula
Limited organization within the community	Strengthening the human and social capital of remote communities of the semi-arid
Poor capacity to planning, developing projects and collect resources	Developing capacities for the elaboration, negotiation and participatory management of projects
Limited access to source of financing	Building local leadership to develop business plans
Limited public investments in infrastructures	To propose the creation of a public fund that invests in the semi arid
Poor knowledge on appropriate technologies	Semi-arid Institute: to strengthen and developing actions and information
Not sufficient capacity to push public power	To create Public Information Centres on Social technologies for the semi arid
Discontinuity in public policies	To create a mechanism that exchange experiences
Limited access to a continuing technical assistance	Federal government should guarantee technical assistance to small farmers

The general propositions that were publicly discussed after the presentation of this thematic group were:

- Strengthening the competencies and human experiences, cultural and social of remote communities in the semi arid



- Developing mechanisms to exchange experiences (success and failures)
- Intensification and expansion of the program “Agents of water citizenship”

3.4.2 Group 2: Projects for education and information and access to public policies

BARRIERS	POSSIBLE SOLUTIONS
Formal education is dissociated from the reality It is difficult for the youth to conciliate work and school	Education put in the context of projects for local development Concrete information on the practical benefits and financial opportunities Change in school calendar Regional production of didactical books Technical dwelling schools Handcrafts workshops. Community gardens in the schools
Devaluation of education	Programs to value human capital and individual training Valuing local culture and potentials
Religious resignation	Diffusion of a methodology that is able to generate social empowerment To offer concrete perspectives of community organizations and development, including individual development
Lack of information and formation of managers and educators of local reality and of exiting actions and programs	Creation of partnerships Network for Social Technologies (RTS) Dialogue with public organizations
Lack of technological alternatives as tools for education and training	Radio, schools and Telecentres Production of didactical tool kit for schools and children with the support of financing entities Digital inclusion Technological units to outreach remote communities

3.4.3 Group 3: Productive projects - market and micro-credits with local management

BARRIERS	POSSIBLE SOLUTIONS
Lack of knowledge about the market (commercialisation)	Support and stimulate sustainable initiatives
Little entrepreneurship of the communities	Stimulate and support sustainable productive processes (extraction, agriculture and manufacturing) and compatible with the environment and the market
Disconnection of production from the local identity and skills of the community	Selection of the compatible cultures with the local environment and market Analysis of the local potentialities
Disconnection between production and market	Analysis of the market potential and capacity
Difficulty to access centres	Organizing the producers
Fair trade markets do not exist in the region	Developing capacity for the certification of products
Absence of availability of energy in the production and commercial chain	Creation of a fair trade network of production and commercialisation
Lack of organization in the production chain	To install systems of alternative energy
Production/delivery/transportation	Building capacity in the planning of production processes
Irregularity in the production	Infra-structure for production delivery / transportation
Quality of the product	Planning for harvest and production
Low scale of production	Access to new methods of production and processing
Inadequate format of the lines of financing that are available	Integration of producers to increase the scale of production
Difficulty for woman to access lines of financing	Revision of the public policies in relation to the credits
Bureaucratic difficulties to access the	Capacity of the communities in relation to the

credit	credits that are available
The public does not know the forms of access to credit	Capacity in the management of finances
Difficulties in the management of the credit that has been received	Developing a model of local micro-credit that considers also gender issues

The general propositions that were publicly discussed after the presentation of this thematic group were:

- Simplification of the bureaucratic processes to access the credit
- Reviewing public policies
- Discuss again the micro-credit system
- PRONAF for Youngsters conditioned to a technical course
- PRONAF for Women connected with other credit lines

3.4.4 Group 4: Source of financing – types of financing mechanisms, financing models, etc...

BARRIERS	POSSIBLE SOLUTIONS
Necessities not easily reconcile between financiers and people receiving the finance for projects that concern also local social development (remuneration of capital versus social justice)	Decentralization of the process of financing through local mechanisms
Absence of private risk capital to upscale the production of adequate equipments for the semi arid	To promote the integration of the different actors through the strengthening of leadership, establishment of flows and integrated communications
Fragmentation of the regional and local realities expressed in the actions of both financiers and people receiving the financing	Development of innovative source of financing (partnerships)
The bidding processes are inadequate vis a vis the their offer and the social needs and communities specificities	To include the recovery of degraded environmental protection areas as a “reason” for rebate



There should be capital resources allocated for the institutional building of the civil society organizations in each endowment	Create the conditions that are necessary to replicate the use of renewable energy systems (biomass, solar, eolic, bio-fuels...)
Exploit the opportunity of financial resources coming from the Federal Government that are not invested at the end of the year – Develop concept notes for projects before the term	Constitution of an opportunity fund to reduce the risks of investments and redistribute the risks of ventures of technology for the semi-arid
To articulate studies and projects to create law propositions for the creation of fiscal incentives for local development projects	

The general propositions that were publicly discussed after the presentation of this thematic group were:

- NGOs need to develop more empathy with the different sources of financing
- Possibilities of using public resources, SEBRAE and changing of assistance funds for applications more efficient
- Creating project banks

3.4.5 Group 5: Strengthening the agents of local development – gender, youth, etc...

BARRIERS	POSSIBLE SOLUTIONS
Shortcomings in the approach and motivation methodologies	Developing a dynamic educational policy
Shortcomings in the process of basic formal education	Formulating/executing/disseminating sustainable educational models
Agricultural policies not adequate for woman and youth	Application of the federal political plan for the woman - 2004-2007 (MS)
Lack of continuity of different projects that have been initiated	To focalise the actions in units of reference
Political interferences from different	To promote a political-institutional formation

parties	
Lack of / shortcomings in the government's rural extension program	To support and strengthen the 3 rd sector for technical assistance
A culture of assistencialism	To stimulate the social and environmental counter parties
A dominant patriarchal culture	Developing policies of gender and income-generation
Lack of co-ordination between projects of local development	To identify local projects/programs and develop synergies Interaction with institutions
Mobilize local population by sectors	To mobilize and involve all the segments
Individualist culture	Associative projects
Low auto-esteem	To apply projects that generate income Emotional seminars

The general propositions that were publicly discussed after the presentation of this thematic group were:

- Strengthening and intensification of the National Policy for Rural Reform
- As proposed by the rural social movements and institutions which support their fight for land, water, credit, public and free technical assistance, education, health, energy, housing and other continued policies for inclusion and social justice



4 Sustainability of the project

As the project developed, the long-term sustainability of the project was always discussed within the project team. The project tried to address sustainability at two different levels:

- Local level – by ensuring sustainability of the PV pumping workshop in Valente;
- Regional level – by creating a strategic infrastructure as a follow up to the regional seminar in Barra de São Miguel, that fosters the dissemination of efficient renewable energy and small scale technologies.

4.1 The sustainability of the workshop in Valente

To ensure sustainability (i.e. the exit strategy), CEMINA planned a two-fold strategy for the workshop of Valente:

1. On one hand a partnership with Radio Valente FM was created to continue on a weekly basis a radio program in which the trained Agents will gather and further articulate their strategies. This will capitalize on the momentum that has been created by the workshop in Valente.
2. On the other hand, it was created a partnership with the organization Agendha that would act as a focus point in the Northeast to animate a network of Agents of Citizenship of Water already trained by REDEH and CEMINA in previous projects. This would include the ones trained in Valente. Redeh and Agenda are in the process of establishing a working plan in order to accomplish this.

Among the group trained in Valente many are educators and community leaders. They committed to include the dissemination of the manual in their work.

So some activities will remain even in the absence of extra funding. The current project budget does not include a continued action. The original purpose of the project was to develop a communications/planning model that could be eventually replicated.

A true sustainability can be ensured only in case all the different activities are linked to each other to form one single pragmatic and action-oriented regional program. This is the reason why, in light of this specific project, CEMINA and other relevant partners are planning and proposing a regional campaign to develop a local renewable energy market in the Northeast region, starting from PV water pumps and other solar energy technologies.

4.2 Ensuring sustainability after the regional seminar of Barra de São Miguel – a regional program

From the context that emerged from the regional seminar in Barra de São Miguel and that was presented in the previous chapter, it seems that the Northeast region is missing in several components that could create a solid platform for a regional dissemination of the most effective and efficient small-scale technologies.

To overcome the barriers that do not allow such technologies to be disseminated regionally, it seems a regional integrated development program is needed. Such program should be able to



understand the real needs of the community and assist them in making all the linkages that are necessary for a replication of the most successful projects.

Such program, that could take the shape of a joint venture between the different project partners such as public and private organizations, would need to accomplish a number of different tasks in four priority areas.

The areas and the key features that such a program should address are listed below.

4.2.1 Finance

- Have a good understanding of the productive use of renewable energy technologies;
- Identify the renewable energy technologies that suit communities the most;
- Assist communities in applying to preferential lines of credit;
- Estimate the amount of carbon credits from individual projects and sell them in the international carbon market;
- Understand the cost-effectiveness of the technology and its benefit;
- Understand the lines of credit that are available to the community;

4.2.2 Regulatory

- Communicate effectively with regional/national governments about legislations that support the establishment of renewable energy markets, i.e. tax breaks on technological imports;
- Identify market barriers and propose new strategies for the development of small-scale renewable energy systems.

4.2.3 Planning

- Develop partnerships with regional, national and international organizations, private companies and institutions;
- Understand the use of innovative technologies, such as small-scale renewable energy systems, especially solar, for productive use;
- Be responsible for assisting communities in the evaluation of their energy needs;
- Give communities support in participatory planning;
- Monitor the different projects using a set of financial, social and environmental indicators;
- Guarantee a continuity in the program;
- Support the exchange of information within/between communities on renewable energy, PV water pumps and water management strategies.
- Getting directly in touch with organizations that can assist communities in the implementation phase of PV water pumps;
- Involve local communities directly during the different stages of the project;



- Use participatory communications as a planning technique to ensure long-term sustainability
- Ensure all relevant stakeholders are included in the planning process.
- Support decentralized and bottom-up approach to development;

4.2.4 Access to market

- Identify potential for developing a local trade for agricultural and manufacturing products
- Organize a local regional collection and distribution of agricultural products;
- Give strategic support to national and international manufacturers of renewable energy technologies to establish a market and a distribution network across the region;
- Support the private sector in developing a local renewable energy markets.



5 Taking actions: Dissemination, Partnerships and the Way Forward

One of the most important outcomes of the project sponsored by REEEP is the partnership with important public policies and programmes. Three of them are among the most important current programs to support local sustainable development in the semi-arid region:

- **Projeto Política Nacional de Apoio ao Desenvolvimento Local** (Project National Policy of Support to Sustainable Development) www.desenvolvimentolocal.org.br

The project was launched last March (2005). PPNADL is currently collecting, through workshops and meetings with relevant stakeholders throughout Brazil, best practice and recommendations on how to improve the operationalization of public programs and policies to reach the poor and underserved communities. The seminar held in Barra de São Miguel sponsored by REEEP becomes one of the consultative workshops within this process. Results will be incorporated in the final document that will be officially presented to the President of Brazil and his cabinet as well as major development agencies and institutions of the country.

- **Working Group of Caatinga.** The working group of Caatinga, - the most typical biotype of northeast of Brazil - held by the Ministry of Environment was also represented at the Barra de São Miguel seminar by the President of the Council, Dr. Alexandrina de Moura Sobreira and several other members. The group is promoting a series of actions to ensure that biodiversity is protected and that at the same time development is forged in the semi-arid region. Dr. Alexandrina suggested that the results of discussions of the seminar are taken forward through her and the working group. The main recommendations will be incorporated and presented to the members of the working group.
- **Rede de Tecnologia Social** (Network for Social Technology, www.redetecnologiasocial.net). RTS is currently the most significant program to support poverty alleviation and the efficient use of resources in the semiarid region in Brazil. Major Brazilian public donors such as Fundação Banco do Brasil, FINEP, Ministry of Science and Technology, Petrobras, SEBRAE and Ministry of Social Development, sponsor the program. The program identifies technologies that have had proven results in poverty reduction and offers the financial resources for regional replication. Organizations that qualify for the replication can apply for resources. The secretary of RTS, Larissa Barros participated in the seminar and invited the organizations that were present at the seminar to join RTS. Moreover, RTS offers the opportunity in the medium and long term to include a special section on renewable technologies that will be listed among all the other "social technologies". This will certainly represent a step forward in terms of increasing the outreach and scale of replication of some of the demonstrative projects that are being developed by the REEEP in the northeast region of Brazil, including the PV water pump.
- **A radio portal.** Through the CEMINA website: www.radiofalamulher.com, a series of programs on the Agents of Citizenship of Water is produced. CEMINA website has a radio portal which gathers radio content produced by CEMINA and by its radios partners



every week. The programs are then downloaded and broadcast by radios throughout the Northeast.

- **Regional dissemination through Internet.** The seminar of Barra de San Miguel has been disseminated in the several portals of our partners. The Project National Policy of Local Development (www.desenvolvimento.local.org.br) will be the place where all the papers and materials produced by the project and the project presentations will be made available for the public. The portal is the official place where all the events connected to the project are disseminated. It gives great visibility among public, private and civil society organizations from all over Brazil. Another portal through which the results will be disseminated is the www.redetecnologiasocial.net. All the organization present to the seminar will be disseminating the results among their own networks.
- **Keynote speech at the World Renewable Energy Conference, May 2005, Aberdeen.** Through the LEAD Network, a LEAD fellow has presented this project as a keynote speech at the 2005 WREC conference. The conference was very well attended from different organizations and representatives from all different sectors.



APPENDIX 1 – List of organizations participating in the regional seminar of Barra de Sao Miguel

5.1.1.1.1.1 NGOs	FUNDAÇÃO JOAQUIM NABUCO
LA GUARDIA FOUNDATION	FUNDAÇÃO OSVALDO CRUZ
Mov. Minha Terra (MMT)	MCT - UNEB
REDEH	CENTRO CLIMA/COPPE/SSN
CEMINA	PRIVATE
AGENDHA	APAEB
ECO-ENGENHO	GOVERNMENTAL
IDER	SEBRAE
REDE DE TECNOLOGIA SOCIAL	ABEMA/SECTIMA
LEAD	SECTIMA
THE NATURE CONSERVANCY	ADENE
AGENCIA MANDALA	BANCO NORDESTE
AMBIENTALISTA	SEMARH
SINDUSGESSO	EMBRAPA SEMI-ÁRIDO
WINROCK	SECTIMA
PINTADAS	GOVERNO DE ALAGOAS
ASA	SECRETARIA DA MULHER DE ALAGOAS
CARITAS	MULTILATERAL ORGANIZATIONS
ACB CRATO	UNDP
RESEARCH CENTERS AND UNIVERSITIES	GTZ
MCT - UNEB	USAID
CENTRO CLIMA/COPPE/SSN	

6 APPENDIX 2 – Photos from the workshop in Valente



Figure 1. The group of community leaders, woman and youth that participated in the workshop of Valente.



Figure 2. Participatory communications in Valente. Workshops, using radio and engaging the community to disseminate information locally.



Figure 3. End of the workshop of Valente.

7 APPENDIX 3 – Photos from the seminar of Barra de São Miguel



Figure 4. Getting ready to the seminar.



Figure 5. Discussing renewable energy in the semi-arid. General discussions and the working groups in action.



Figure 6. End of the seminar and social activities.