

**Case study on  
Gender Mainstreaming of off-grid  
Micro-hydro Sector in Sri Lanka**

**FINAL REPORT**



Submitted to  
**ENERGIA**

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# Case study on Gender Mainstreaming of off-grid micro hydro sector in Sri Lanka

## 1. Introduction:

### 1.1 Background about the Gender mainstreaming activity

Capacity Building is one of the core intervention strategies of the Energy Access Programme of ETC Foundation which is funded by DGIS under its MFS Programme. Under the MFS programme, ENERGIA's capacity building strategy in Asia aims to strengthen the capabilities of project managers such that these individuals are able to design and implement gender sensitive rural energy access projects. In 2007, the capacity building process was launched, starting with identifying a specific capacity building need, namely to develop skills among project practitioners to mainstream gender concerns into energy projects; development of an approach paper; identifying a partner (UNDP); providing capacity building inputs on a sustained basis starting with an e-learning course on basic concepts on gender and energy; followed by a 5-day training course that brought together energy project practitioners and trainers in October 2007. As part of this training course, the participants developed specific action plans to mainstream gender concerns into their projects.

As a follow up to the 5 day training course, ENERGIA has been providing long distance coaching to practitioners who attended the October 2007 training course. Coaching is aimed at supporting practitioners to carry out their action plans aimed at mainstreaming gender in energy projects. This case study was conducted by the trainee who represented Energy Forum of Sri Lanka at the training course.

Fulfilling the Electricity needs of people living in remote rural areas outside the main power grid in Sri Lanka is a national need. People living in those areas take steps to establish small hydro power plants when there is a potential to generate power from streams that flow through their villages. They join together to form community organizations for this purpose, and obtain technical assistance from outside agencies for establishing these plants which are built with their own funds and labour. The plants are designed after analyzing the electricity needs of the members and the potential of the stream, and have capacities in the range of 3 kW - 100 kW. Each of these schemes is owned and operated by a society entitled Electricity Consumer Society (ECS), which also look after the operation and maintenance of the plants.

There are about 50,000 families in Sri Lanka who are unable to obtain electricity from the main power grid but who have the potential to obtain power through micro hydro-power projects. Out of these, over 10,000 families have already obtained electricity from about 300 off-grid community based village hydro schemes in Sri Lanka. These schemes are currently catering to the electricity needs of over 50,000 people. One half of the beneficiaries are women.

These societies have however been facing problems in maintaining these plants. These communities have formed the Federation of Electricity Consumer societies in order to face these challenges collectively.

Despite the fact that there are currently over 50,000 people powered by the micro hydro schemes, there was no emphasis on the gender implications of these schemes, thus it was decided to conduct a proper case study to investigate the gender issues and ways and means of gender mainstreaming in the village hydro sector in Sri Lanka. Any outcome of this study will not only benefit about 25,000 women living in these villages but also the women living in villages with the potential to utilize off-grid micro hydro electricity in the near future.

The Energy Forum of Sri Lanka received the assistance of the Federation of Electricity Consumer Societies in implementing this project.

## **1.2 About the organization**

The Energy Forum (EF) of Sri Lanka which was established in 1999 is an NGO working to promote renewable and distributed energy options to alleviate poverty, to address energy capacity deficiencies, and to protect the environment. The Energy Forum works in the areas of provision of renewable energy services to Sri Lankan off-grid communities; creating awareness of renewable energy at the community level; capacity building of off-grid energy technology providers; introducing rural economic development activities utilizing off-grid energy technologies; research and development initiatives to assess cross-sectoral applications of renewable energy; acting as a partner for local and global renewable energy initiatives; and promotion of national sustainable energy policy.

The Energy Forum has thus far conducted a number of projects funded by European Commission, USAID, World Bank, Asian Development Bank etc.

The EF established the Federation of Electricity Consumer Societies (FECS) in 2002, with a membership of only 6 Electricity Consumer Societies, to address the issues faced by the micro hydro electricity consumers. At present there are 200 active member societies, serving 10,250 families and facilitating the supply of electricity to some 51,000 persons in total. The FECS conducted a number of activities to strengthen the ECSs.

Log books for maintenance of power plants were printed and distributed by FECS to all societies. Steps were taken to reactivate over 15 inactive power plants. Thirty-four Economic Enterprises were established within 20 hydro powered villages, using electricity that was previously surplus to requirement during the day. 17 Residential workshops were conducted and the skills of 545 activists from 170 Consumer Societies have been developed thus far. 10 Provincial committees to address provincial level issues have been established and maintained.

FECS provided the technical training required to supply permanent concrete posts and mini grids to 97 schemes in the Sabaragamuwa province and assisted 46 societies in obtaining nearly Rs. 3 million in the first round.

### **1.3 About the projects selected for gender mainstreaming:**

As part of the gender mainstreaming activity, Energy Forum initially selected two ECSs, with whom it had an initial brainstorming session. However later on one of the villages selected for the gender mainstreaming project namely Koshena Panvila Electricity Consumer Society (district Ratnapura, province Sabaragamuwa) which had a 6.5 kW power plant electrifying 70 households, received grid electricity therefore the EF discontinued the project in Koshena Panvila village and selected another village for the gender mainstreaming project.

Accordingly EF worked on a process of capacity building on gender issues in rural electrification with the following two ECSs:

- Niri Ella- Umandadola Electricity Consumer Society
- Kudawa Pitakale Electricity Consumer Society

#### **1.3.1 Niri Ella- Umandadola Electricity Consumer Society**

This village is located in the Ratnapura District of the Sabaragamuwa Province in Sri Lanka. Grama Seva (GS) Division is number 173, Pahala Karavita, Niriellawatta. The GS division covers following villages: Lokadeniya, Paranawatta, Kurundu-Kolaniya, Henyaya and Diganakanda.

At present, only five families in the village have obtained electricity from the main power grid. Three other families in the village use solar panels. The rest of the families are expecting to get electricity from the micro hydro power plant which is currently under construction. This village hydro scheme is to establish a 6 kW power plant to electrify 28 households.

The construction of the Umandadola Niriella Power house has now been completed. Construction of a dam across the stream and the laying of pipe lines bringing water to the power station have not yet commenced due to a delay in securing government approvals.

Male villagers are mainly employed in jobs connected with gem mining. Women are engaged in occupations connected with State plantations whilst villagers also earn an income from small plots of tea belonging to them.

#### **1.3.2. Kudawa- Pitakele Electricity Consumer Society**

The Kudawa Pitakele village is situated in the buffer zone of the Sinharaja rainforest which is well known as an extraordinary rainforest in South Asia. Frequent rainfall is characteristic of the village. This village which is fed by the waters of canals, streams and rivers emerging from the Sinharaja forest, is a haven for the construction of small scale hydro power station.

The village of Kudawa - Pitakele has not received electricity from the main power grid. This village is situated 6 Km away from the main power grid. Since the residents of this village have not been able to obtain electricity from the main power grid, they have, under the

guidance of Samanala Agencies, initiated action by forming the Kudawa- Pitakele electricity consumer Society.

The work on this power station which was commenced at an auspicious time on 27<sup>th</sup> Jan 2007 was completed and inaugurated in February 2008. The total capacity of electricity generated by this power station is 10 kW. The total distance of the cable system is 3 km and the number of wooden poles installed is 66. A family can obtain approximately 230-250 W of electricity from this power station. Even though three other families had been invited to join the Consumer Society at the time of commencement of this power station, they had not joined stating that this developer was incapable of erecting a power station. Thus the number of beneficiary families connected with the Kudawa - Pitakele Electricity Consumer Society is 21.

Financing for the micro scheme was raised from following sources:

- Individual share money Rs. 30,500/- x 21
- Sabaragamuwa Provincial Council Rs. 237,000/-
- Ministry of Rural Industries provided goods-cables and pipes worth Rs. 400,000/-
- World Bank grants Rs. 450,000/-
- Loan- Sabaragamuwa Development Bank - Kalawana

### **Gender gaps in the two selected schemes**

The following gender gaps were identified, which form the rationale and basis for the gender mainstreaming effort:

(a) Neither of the two projects selected had a concrete gender goal. The projects have not considered the aspirations of the women and how they should benefit from having electricity.

(b) The projects are not designed to improve women's welfare (reducing drudgery, improving health), productivity (income generating activities) and empowerment/equity, equality (their participation, decision making and self confidence).

## **2. Gender mainstreaming process**

### **2.1 Objectives of gender mainstreaming**

Gender mainstreaming was planned with the following objectives:

- Building in specific gender objectives into the objectives of the ECSs, aimed at improving women's welfare (reducing drudgery, improving health), productivity (income generating activities) and empowerment/equity, equality (their participation, decision making and self confidence).
- Assisting the ECSs to design concrete activities to address women's energy needs
- Assisting the ECSs to develop business plans for income generation for women.

### **2.2 Activities undertaken for gender mainstreaming**

The Gender mainstreaming process consisted of five steps.

### **Step 1: Conducted gender sensitization discussions with ECS key officials**

One combined focus group session was held with five officials of each ECS (Koshena Panvila and Niri Ella- Umandadola) in attendance (ten attendees in total). The Chairman, Treasurer and Secretary plus two committee members attended from both the Umanda-dola ECS and the Koshena Panvila ECS. 50% of the participants were female.

The gender sensitization exercise was carried out with all attendees present with the aim of making them reflect on how gender concerns might currently be neglected in the energy project planning process and how these might be addressed in future.

The initial situation assessment was carried out with all attendees present and the group responded to the relevant questions posed to help EF build a clear picture of the progress with the energy projects and the situation on the ground.

The following topics were discussed with each ECS, with a special emphasis on gender aspects:

- Situation Assessment
- Scheme Details
- Demographic Background
  - Educational levels
  - Income sources
  - Income levels
- Village Societies
- Electricity Consumer Society Composition
- Uses of Electricity
- Stakeholders
  - Sub stakeholder groups
  - Other stakeholders
- Current Social Problems Identified
- Proposals for Income Generation

Finally, the groups were separated into two groups, one of men and one of women to discuss what things they thought could be improved with regard to women's lives and their livelihoods.

- Improvements Identified for the development of the family and the village
  - Improvements Identified by the Women's Group:
  - Improvements Identified by the Men's Group:

### **Step 2: Conducted a workshop each for the two ECSs**

The workshop was conducted with the participation of all ECS members. Additional sessions with female beneficiaries were conducted. The process identified participants' needs in relation to using electrical equipment and income generation using electricity.

**1. Identified Stakeholders** - Conducted a plenary discussion with the society members and identified all sub groups in target community – men, women, different social groups, occupations etc.

**2. Identified Stakeholder Priorities for Improvement**

Gender Disaggregated Needs Assessment

Define Gender Goals

Resource Mapping

Design Activities to address Women’s Energy Needs

Develop Indicators

**Step 3: Identified the income generating activities for women**

The following information was gathered from the potential entrepreneurs.

- Business
- Owner
- Experience
- Start up capital
- Owner's contribution

**Step 4: Developed business plans for income generation**

Business plans were developed by discussion of the following themes with the selected entrepreneurs.

- Name of the owner of the business & the address
- Product / service
- Business Name
- Reasons for selecting the business premises
- Legal status of the business
- Employees, skills and salary
- Customers
- Competitors
- Distribution method
- Promotion

The following estimations were used to develop the business plan:

**Capital Investment**

1. Start up capital
  - Business Premises
  - Machinery & equipment
  - Pre operative expenses
2. Working Capital
3. Source of start-up capital



**Monthly Production cost**

1. Direct material costs
2. Direct labour cost
3. Indirect costs - Rent, Tax, Insurance, Electricity bill, Telephone bill, Water bill, Promotion, Transport, maintenance, Depreciation, Loan repayment (loan/months) and Loan interest

**Monthly Income** - One day items, Preserve items, Ordered items

**Step 5: Analysed the information and compiled the report**

After completing the workshops the data were analysed, and the report compiled, based on the formats and guidelines given by the ENERGIA.

### 3. Outcomes of the gender mainstreaming process

#### 3.1 Project level outcomes:

##### 3.1.1 Sub Project 1: Umandadola

The Workshop was held with the members of the Umandadola Niriella Electricity Consumer Society on 30th October 2008.

#### Participants list

	<b>Name</b>	<b>Position</b>
1.	Mr. D. M. Bandara	President
2.	Ms. K. M. Gnawathi	Secretary
3.	Mr. Nimal Dissanayake	Treasurer
4.	Ms. M. Nayani Irosha	Asst. Secretary
5.	Mr. K. M. Peter	Committee Member
6.	Ms. Soma Ranasinghe	Member
7.	Ms. Sriyawathi Menike	Member
8.	Ms. Nadeesha Lakmali	Member
9.	Ms. Maheshwari	Member
10.	Ms. Silawathi	Member
11.	Ms. Gnawathi	Member
12.	Ms. Mallika	Member
13.	Ms. R. M. Paligumenike	Member
14.	Mr. Wijedasa	Member
15.	Mr. H. D. Gunapala	Member
16.	Mr. K.A. Palitha Perera	Member
17.	Mr. S.A. Premasiri	Member
18.	Mr. A. Dayananda	Member
19.	Mr. K. Dharmadasa	Member
20.	Mr. Nimalasiri	Member
21.	Mr. Somadasa	Committee member
22.	Mr. A. V. Benate	Member
23.	Ms. Wathsala Herath	Energy Forum
24.	Mr. Asoka Abeygunawardana	Energy Forum
25.	Mr. Y. P. Dasanayake	Federation of Electricity Consumer Societies

Among the participants 10 were female and 12 were male. At the plenary following features were highlighted.

- The life of plantation workers is tough. They are less educated, hard working and earn low wages. Plantation workers both male and female are employed.
- Male villagers are mainly employed in jobs connected with gem mining. Villagers also earn an income from small plots of tea belonging to them.
- Female villagers are educated and were complaining about unemployment.

Based on the above mentioned observations the participants were divided into the following four sub groups during the workshop:

1. Male plantation workers
2. Female plantation workers
3. Male villagers
4. Female villagers

**Findings of the workshop are summarised under following headings**

1. General developmental problems (Obstacles/ Problems affecting the progress of the village)
2. Benefits that would result from obtaining electricity from the power station
3. Women's contributions towards domestic chores
4. Problems encountered by women
5. Resource mapping for income generating activities

**1. General developmental problems (Obstacles/ Problems affecting the progress of the village)**

During the plenary session participants came up with following issues they are facing.

- **Lack of licenses for lands**

The Villagers had originally settled down in houses provided at Niriellawatta. With the growth of families these houses were not sufficient and they have taken up residence in the 100 ft reservation between Niriella watta and Umandadola stream.

Even though 40 years have elapsed since these villagers took up residence in the reservation attached to the stream, they have still not received title to these lands. The villagers living in the vicinity of the reservation neither possess title to these lands nor receive any other assistance from the Government. E.g. Flood relief, Drought relief. Even though their houses were destroyed when Umandadola overflowed during heavy rains, they have not received flood relief.

Samurdhi<sup>1</sup> officers (Niyamakass) serve in areas connected with Niriellawatta. But the villagers do not enjoy any Samurdhi entitlements. Some villagers have received Samurdhi assistance through the Samurdhi officer who visits the estate. Attempt to obtain licenses for lands by making the Divisional Secretary aware and establishing residence.

- **Lack of drinking water**

At present water is being obtained from Umandadola (stream) along the pipe lines that have been laid. The water from the stream to the village cannot be used as drinking water as it becomes contaminated when flowing through the line rooms. Therefore

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<sup>1</sup> Samurdhi is a government subsidy program for providing rations for the poorest people in the village. Samurdhi officers are responsible for selecting low income people in the village, provide information to the Samurdhi authority and get approval for the Samurdhi beneficiaries and provide subsidy for the people.

boiled water is used for drinking purposes. Some villagers obtain their drinking water from wells. However wells get filled up with water when the stream overflows.

Since the houses are situated below the level of Umandadola there is no need to pump the water. The water is clean at the water source. Therefore if a tank is erected at the water source, water could be obtained for the houses. There wouldn't be a need to pump water using electricity from the power station.

There is a possibility of constructing a tank in the reservation area up stream to get non contaminated water.

- **Poor condition of roads within the village**

The roads in the interior of the village are in a poor condition. The roads in the interior of the village are spread over a distance of 14 km

- From Kurundu Kolaniya to rubber division - 2 km
- The Digana bridge - rubber division, Umandadola - 2 km
- Kurundu Kolaniya to Horakele bridge through school 1 1/2 km.

The above roads need urgent repairs.

The culvert in the rubber division is broken. This culvert can be repaired by installing two concrete cylinders of diameter 2 1/2 Ft and concreting them.

- **Breaking of the Horakele bridge**

In 2002 this bridge which was 3 feet in width and 150 ft in length had broken down. Due to this children go to schools carrying bathing attire. They cross the river and thereafter wear their uniform. The distance from the village to the schools is about 1 1/2 km. Avoiding this river crossing would require a 7km bus ride to the school.

If the bridge is being repaired, it should be constructed to enable even a three wheeler of about 6 ft width to travel along it.

- **Lack of a cemetery**

When a villager dies the superintendent of Niriella estate is informed and the body is buried in the land belonging to the plantation company. This is a tragic situation. There isn't even a place to bury a villager when he dies.

- **Lack of community hall**

There isn't a place where the villagers can assemble for a meeting. Even the workshop was held in the house of a villager. Land should be obtained from the Plantation Company to erect a community hall.

- **Lack of a playground**

There isn't a playground for the village children. The plantation company has allocated land for this purpose.

- **Lack of facilities for vocational training**

Village youths are mainly engaged in occupations allied to gem mining outside the village. There are no facilities to receive professional level training. The main obstacle is the poor transport facility from Karavita to Ratnapura.

## **2. Benefits that would result from obtaining electricity from the power station**

During the group work following observations were made by the participants.

- **Dispelling the darkness in the home and receiving light**

Once the micro hydro project is established the people will get electric bulbs. There is a possibility of generally obtaining 8 to 10 light points for a home. Members can obtain at least 05 light points. One plug point and two light points are installed in the kitchen. The womenfolk would find it easier particularly in cooking meals in the night as one light point is fixed in the kitchen to light it up whilst the other is fixed near the chimney designed as an outlet for smoke from the fireplace. Both men and women groups highlighted the need of having light points in the kitchen. This is the general practice in micro hydro schemes in Sri Lanka.

- **An impetus to the children's education**

The school children can engage in their studies easily as a result of providing electricity. They can devote more time to studies than they used to do with the kerosene oil lamp.

- **Reduction in fuel costs**

About 3 lamps are generally used in a house hold.

1 chimney lamp and 2 kerosene oil lamps (bottle)

About 4 litres of kerosene oil are purchased at a time and this quantity is sufficient for one week. The cost of kerosene oil for a month is about Rs. 1500/-. They can save on the cost of kerosene oil by obtaining electricity. This is an economic advantage.

- **Reduction in kerosene bottle lamp accidents**

Accidents caused by toppling of bottle lamps can be prevented with the introduction of electricity. Furthermore the house too could be kept in a better condition by the prevention of smoke damage from kerosene oil lamps. Providing electricity would help the people to save the time spent on pouring kerosene oil in to the bottle lamps.

- **Opportunity to use electrical equipments**

### **Electric iron**

The school uniforms of the children can be ironed well so that they could go to school in a manner that would compare well with other children. At times clothes get burnt by pieces of charcoal falling from the coconut shell iron. The use of an electric iron prevents all these hazards. The clothes too have a better appearance as a result of being ironed well.

### **Television**

There would be an impetus to the education of children as a result of their being able to view educational television programmes.

Channels that could be viewed - ITN and Rupavahini

Viewing television news casts and tele-dramas from 7.30 pm to 9.00 pm

Batteries have to be charged to view television programmes. On an average, a battery has to be charged once in 3 weeks. It is an arduous and costly task. The battery has to be carried 2 km on foot and transported 4 km thereafter by three-wheeler in order to be charged. A sum of Rs. 100/- has to be paid for the three wheeler whilst Rs. 200/- has to be paid for charging the battery. The cost of charging the battery can be saved whilst reducing the effort required by being given the opportunity of using electricity to view television programmes.

- **Fostering family unity**

Cordiality between children and parents would grow further. Member of the family have a tendency to go to other houses having television sets charged by batteries due to lack of electricity in their own homes. At times the males who are employed in the gem mining and gemming industry return home at about 8.00 pm after viewing television in someone else's home even though their occupations are over by 5.00 pm.

- **Making kitchen chores easier**

Kitchen chores can be accomplished more easily due to the availability of electricity. When one returns from work outside the home during daytime, she can attend to her tasks at home more easily and efficiently. Boiling water and ironing clothes are such tasks.

- **Energy cost reduced**

Electricity can be obtained at a lesser cost and at more competitive prices than from the main power grid of the electricity board. Sometimes it is possible to obtain continuous supply of electricity from mini hydro power stations even though there are power cuts in electricity provided by the electricity board.

- **Protecting the cleanliness of the home**

There is no indoor air pollution due to the elimination of smoke from kerosene bottle lamps. The cleanliness of furniture and interior surfaces of the house is improved.

- **Possibility of using power for village functions**

Electricity is obtained for functions and funerals in villages by using generators operated on kerosene oil. There are 3 kerosene oil generators in the village at present. The generator can be operated for 2 hrs on three bottles of kerosene oil.

- **Providing means of income generation**

People with certain talents can commence income generating activities by installing and operating a small cereal grinding mill either individually or collectively once electricity is made available.

e.g.;

- Sewing
- Grinding chillies and cereals- At present they have to travel 6 km to the 'Palawela' town for grinding of chillies.
- Carpentry- The excess electricity generated during the day time could be utilized to operate multi-purpose machinery in order to facilitate carpentry as an enterprise.

- **The possibility of charging batteries and torches as well as cellular phones.**  
The families living in the Umandadola village use car batteries to operate television sets at present. The time and the money spent on this will be saved with the availability of electricity in the village.
- **The possibility of having a batteries charging centre**  
The families living on hill tops in the forest reservation do not have electricity. The Umandadola Project, will not be able to provide electricity to about 100 families living on hill tops in the reservation. There is a possibility to commence an income generating activity to establish a battery charging service using Umandadola micro hydro power to cater to the battery charging need of this community.
- **Strengthening the security of the village**  
When 21 families in the village obtain electricity, houses and surrounding areas would be lit up, thereby creating a more secure environment.

### 3. Women's work profile

**Female plantation workers and villagers have two different lifestyles.**

#### ❖ Females who work in the plantation

##### **Lifestyle**

1. Cooking meals in the morning - from 5.30 am to 6.30 am
2. Cooking meals at night- at about 5.30 pm

Some women working in the plantation go out side plantations to do the night shift work after finishing the morning shift. As there is no transport facility they travel by the plantation's company lorry which transports tea leaves to the factory.

Children take their lunch with them when going to school. The women who work in Niriella Estate have to go to work at 7.00 am, for tasks such as tea plucking and rubber tapping. Women working in the plantations cook the midday meal along with the morning meal. The work in the plantations is over between 12.00 and 1.00 pm.

Youths and husbands who go to work in the mines take their lunch with them when setting out to work at 7.00 am. Work in the mines is over at 5.00 pm. When gems have been excavated there is a security duty once a week. Some return from work in the mines in a state of intoxication.

#### ❖ Females who stay in the village and do not go to work in plantations

##### **Lifestyle**

##### **Cooking**

- |                                             |                               |
|---------------------------------------------|-------------------------------|
| Cooking the meal in the morning (breakfast) | - 5.30 am to 6.30 am          |
| Cooking the midday meal (lunch)             | - between 11.00 am to 1.00 pm |

Cooking the meal for the night (dinner)

- between 5.00 pm to 7.00 pm

### **Washing clothes**

About 1 to 1 1/2 hrs are spent on washing clothes.

Washing of cooking ware and clothes is done after returning from work in the plantations.

Women used go to the stream to wash the clothes because it is easier than using a well.

### **Searching for firewood**

Rubber wood and tea wood are used to light the hearth. They have to spend 2 to 3 hrs searching for the firewood required for a week. In practice the woman attends to the task of searching for firewood. Splitting firewood is also done by women. Smoke is properly emitted because there are chimneys in the kitchens.

## **4. Problems encountered by women**

- **Lack of rest**

She lacks rest as she is engaged in tasks such as rising early and cooking meals, assisting in the husband's work, taking children to school and attending to other household chores. She is busy from morning till night.

- **Lack of employment to match their education**

Educated women can not be sent for work in plantation. They do not get opportunities of going to work outside the village due to the difficulty of roads and transport difficulties.

- **Extra effort for the children's education**

Small children have to be accompanied to nursery schools and also brought back. Since the children are small they can not walk long distances on the road. At times children have to be accompanied on foot for a distance of about 5km- 6km. Parents have to accompany the children as the bridge on the road leading to the school is broken.

- **Work on tea plantations**

It is the female who has to pluck the tea in their own plots of tea. She also attends to the care of the tea plantation. Females who work on state plantations do not have time to pluck tea in their private tea plantations after returning from work.

- **Lack of capital to commence self-employment**

A problem confronting women is the lack of capital even though they have the potential to engage in self-employment.

- **Safety of the house**

It is the female who remains at home that has to attend to the tasks of the safety of the house and the children as well as protection and care of their plantations. Women have to be even more vigilant about the safety of the house and children due to the houses being situated far apart.

- **Dependence on the husband**



A female who does not go to work has to ask for money from their husband in order to meet her personal needs.

- **Inadequacy of wages in the plantation sector**

Females engaged in work on plantations do not get a wage proportional to their labour. Daily wage is Rs. 270/- .

- **Females and children are harassed by drunken husbands**

- **Inadequacy of mental freedom**

- **Transport difficulties**

This is a big problem. Educated women are unable to go out of the village in order to engage in an occupation of their choice due to the lack of transport facilities. This is a great obstacle to carrying out tasks such as shopping and sending children to school.

## 5. Resource mapping for income generating activities

After identifying the issues the villagers' face, with a special emphasis towards women and the benefits that can be obtained from hydro power scheme, a discussion was conducted to understand the human resources availability to address these issues. Most of the issues faced cannot be resolved by the villagers themselves without getting the support of the external agencies such as central government officers, provincial council and NGOs.

So the discussion was narrowed down and was limited to income generation activities that can be started by the females who participated the workshop as the program with the ENERGIA is limited gender sensitization.

### Future Business opportunities of female

Only one female was in a position to start a new enterprise and expressed her willingness to be an entrepreneur.

Business - Starting bakery to produce wheat flour food items  
 Owner - D. M. Sriyalatha  
 Experience - 8 yrs  
 Start up capital - 150,000.00  
 Owner's contribution - 25%

### Details of the business

1. Business	Production of bakery items
2. Name of the owner of the business & the address	D. M. Sriyalatha, Diganakanda Post Office, Niri-EllaWatta, Ratnapura.
3. Product / service	Produce & Deliver of bakery items
4. Business Name	Not yet finalised

5. Reasons for selecting the business premises	<ul style="list-style-type: none"> <li>• Her own house</li> <li>• Convenient to work long period,</li> <li>• Located at the centre of the village,</li> <li>• House is situated near the road,</li> <li>• Convenient to get electricity.</li> </ul>
6. Legal status of the business	Individual
7. Employees, skills and salary	<ul style="list-style-type: none"> <li>• Family members,</li> <li>• 8 yrs working experience at bakery,</li> <li>• ability to produce/ make all kinds of items.</li> </ul>
8. Customers	<ul style="list-style-type: none"> <li>• Niriella Estate upper, lower and middle division, 400 families,</li> <li>• Boutiques in the area and</li> <li>• Tea-shops in the town.</li> </ul>
9. Competitors	Ratnapura
10. Distribution method	Deliver to boutiques
11. Promotion	Through labels and providing good service

### Financial Plan

Scheme	Umandadola Electricity project		
Business	Wheat flour food from a bakery		
	(Rs)	(Rs)	(Rs)
<b>1. Start up capital</b>			
<b>1.1 Business Premises</b>			
<b>1.2 Machinery &amp; equipment</b>			
Bakery oven	140,000.00		
<b>Sub total</b>		140,000.00	
<b>1.3 Pre operative expenses</b>			
Business Registration	1,000.00		
Transport	2,500.00		
Name Board	-		
<b>Sub Total 1.3</b>		3,500.00	
<b>Sub Total 1 (1.1, 1.2, 1.3)</b>			<b>143,500.00</b>
<b>2. Working Capital</b>			
Wages	8,000.00		
Loan repayment	4,194.00		
<b>Sub Total 2</b>		12,194.00	
<b>Required Start-up Capital (1 &amp; 2)</b>			<b>155,194.00</b>
<b>Source of start-up capital</b>			
Owner equity		10,000.00	
Bank Loans		100,000.00	
Grant- FECS/Energy Forum		20,000.00	
Other grants		24,194.00	
<b>Start-up capital Total</b>			<b>155,000.00</b>

Monthly Production cost	(Rs)	(Rs)	(Rs)
<b>1. Direct material costs</b>			
Flour, sugar, eggs, butter and other	50,000.00		
<b>Sub total</b>		50,000.00	
<b>2. Direct labour cost</b>			
Wages	8,000.00		
<b>Sub total</b>		8,000.00	
<b>3. Indirect costs</b>			
Electricity bill	200.00		
Transport	3000.00		
maintenance	500.00		
Depreciation	100.00		
Loan repayment (loan/months)	4200.00		
<b>Sub Total</b>		8,000.00	
<b>Total Cost (1, 2 &amp; 3)</b>			<b>66,000.00</b>
<b>Monthly Income</b>			
<b>One day items</b>			
Bread (10x30 = 300 x 30)	9,000.00		
Buns (30x30 = 900 x 10)	9,000.00		
Fish buns (20x30 = 600 x 15)	9,000.00		
Egg buns (20x30 = 600 x 15)	9,000.00		
Vegetable Rotty (50x30 = 1500 x 15)	22,500.00		
Chicken rolls (20x30 = 600 x 15)	9,000.00		
<b>Sub Total</b>		67,500.00	
<b>Preserve items</b>			
Cakes (5 x 250)	1,250.00		
Sponge cakes (100 x 15)	1,500.00		
Sawbara (300 x 5)	1,500.00		
Gal Bans (25 x 15)	375.00		
<b>Sub Total</b>		4,625.00	
<b>Ordered items</b>	2,000.00	2,000	
<b>Total Income</b>			<b>74,125.00</b>
<b>Gain</b>			<b>8,125.00</b>

## 6. Progress since the workshop was conducted

### 1. The Bakery

Mrs. D. M. Sriyalatha is a lady who makes and sells meals with a great effort. She sells 950 pieces of vegetable rotis, cutlets and rolls daily. She expects to buy an electric oven to expand her business once the power plant is commissioned. She expects to produce bread, buns, fish buns, egg buns and etc.

The price of the electric oven would be about Rs. 100,000. The Energy Forum has decided allocate SLRs. 25,000 from this project to assist Mrs. Sriyalatha to purchasing an oven. She will get a loan to bridge the gap. At present quotations have obtained for the purchasing the electric oven. The EF/FECS will monitor the progress of the income generation activity. Since Umandadola power station is not yet commissioned, it is too early to discuss about further activities.

## **2. Day care centre**

As a follow up of the workshop, the Niriella plantation company agreed and set up a day care centre and a children's park for the Niriella plantation workers and Umandadola villagers. Women who work in the estate as well as others in the village can leave children under the age of 5 years at this centre during the day. The services of two female employees have been obtained to look after the children. All equipment required (swings, see-saw etc) for playing and sleeping facilities for the children is provided.

## **3. Grinding mill**

The capacity of the power station during day time is sufficient to operate a grinding mill. But the members of the society are of the view that setting up a grinding mill as a business would not be profitable. Therefore their view is that the most appropriate course of action would be to use domestic grinding machines.

## **4. Battery charging centre**

As a result of workshop Niriella Plantation company realising the importance of having a battery charging centre and has started a battery charging centre connected to the main grid. The employees of the Niriella Plantation Company can get their batteries charged and the cost is deducted from their salaries at the end of the month. Others in the village too can get their batteries charged for a fee. The objective of the plantation company is to make this service available at a concession rate.

## **5. Good remedy for lack of adequate leisure time**

It is the view of the members of the society that it would take about 3 months to obtain electricity to the village from the Niriella -Umandadola power station. The power house is currently under construction. The machinery required for the power house is being manufactured at a workshop.

The festive season is ahead. Construction work will not take place especially during the Sinhala & Hindu New Year.<sup>2</sup> Thus when electricity is available in the village in 3 months time, the tasks of the women folk will be easier and they will have time to rest.

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<sup>2</sup> Even though the dawn of the New Year according to the Western system is in January, Sri Lankans celebrate new year in the month of April when the sun travels from the constellation of Pisces to Arises in the zodiac.

As a result of the availability of electricity the task of cooking from 5.30-6.30 am in the morning and 5.00-7.00 pm in the evening would be quicker and easier than doing so with the aid of bottle lamps. By the installation of two light points in the kitchen the task of cooking can be achieved in a quicker, easier and more efficient manner. Furthermore equipment such as rice cookers can be used after electricity is supplied. The task of women folk can be achieved more easily and quickly by using electric water heaters and electric irons.

By being able to use grinders the women folk could save the time spent in going to Palawela for grinding their grain and milling their flour. The task of the women folk will become easier with the use of rice cookers and heaters and less firewood would be required. The time spent on gathering firewood could also be saved.

Therefore supplying electricity to the village would be a good remedy for the lack of adequate leisure time for the women folk of the village.

## **6. Other income generation activities for women**

The Energy Forum is not in a position to further support the Umandadola Village beyond above mentioned activities as this project is limited to gender sensitisation. The next step would be to pick certain women in the village, build their capacity and assist them to start income generation activities. If EF were to continue its activities it is necessary to raise funding through a new project as a follow up program.

## **7. Possibility of women taking up some of the functions in the micro hydro plant**

There are five society officials, two of whom are female including the secretary of the ECS. Of the seven committee members, one is female. It was explained that more women were not willing to be committee members as they did not feel comfortable or secure carrying out some of the expected duties of committee members. If there was a power cut due to households using electrical equipment which they were not supposed to use at certain times of day, committee members are required to reprimand those householders. Women did not feel confident to reprimand other villagers and there are also often large distances to travel between houses which the women would not be happy to cover. They also felt unsafe working after dark.

At the ECS meetings, around 40% of attendees are female. It was explained that meetings were arranged for the afternoons when most women are less busy so would be able to attend the meetings. As the power plant is not commissioned yet it is not possible to discuss possible further improvements at present.

### 3.1.2 Sub Project 2: Kudawa

The Workshop was held with the members of the Kudawa Pitakkele Electricity Consumer Society on 16th December 2008.

#### Participants List

	<b>Name</b>	<b>Position</b>
1.	Mr. K. D. Prachnaratne	President
2.	Mr. K. D. Piyasena	Secretary
3.	Mr. K. D. Yasaratne	Vice President
4.	Mr. B. Sunil Shantha	Asst. Secretary
5.	Ms. K. D. Indra Manel	Member
6.	Ms. S. W. Anulawathi	Member
7.	Ms. K. D. Asilina	Member
8.	Ms. P. Rosalin	Member
9.	Ms. K. D. Nandawathi	Member
10.	Ms. K. D. Gnawathi	Member
11.	Mr. K. D. Jayasena	Member
12.	Mr. K. D. Dayaratne	Member
13.	Mr. P. Ginadasa	Member
14.	Mr. P. Thilakaratne	Member
15.	Mr. P. Gunasekara	Member
16.	Mr. P.L. Senaviratne	Member
17.	Ms. Wathsala Herath	Energy Forum
18.	Mr. Asoka Abeygunawardana	Energy Forum
19.	Mr. Y. P. Dasanayake	Federation of Electricity Consumer Societies

Among the participants 6 were female and 10 were male.

The participants were divided into the following three sub groups during the workshop:

1. Middle and High monthly income group
2. Women's group
3. Low monthly income group

#### The findings of the workshop are summarised under following headings

1. General information
2. Reasons for the male domination at the society level
3. General problems identified by three groups
4. Problems faced by female identified by three groups
5. Benefits that would result from obtaining electricity from the power station
6. Resource mapping for income generating activities

## 1. General information

There are five hamlets belonging to the Kudawa Grama Niladhari Division of kalawana Divisional secretary's area in the Rathnapura District of the Sabaragamuwa Province. They are as follows: Pethiyakanda, Buthkanda, Ketala Paththala, Pitakele and Kudawa.

The villagers of both Kudawa and Pitakele villages obtain electricity from this power station. The total number of families residing in Kudawa village is 45 and the Pitakele village is 47 out of which 16 families from the former and five families from the latter have obtained electricity from this power station.

### Economic background

1. The main livelihood of the Kudawa - Pitakele villagers is plantation of tea and rubber.
2. Many villagers own tea plantations. The extent of tea plantations owned by them range from 1/4 and 1/2 acre to one or two acres.
3. Tourists visit this area throughout the year (August to May) in order to have a view of this forest which is abundant in birds, plants and creepers indigenous to Sri Lanka.
4. Youth are also employed in occupations allied to the tourist industry as the Kudawa-Pitakele village is situated in the buffer zone of the Sinharaja rain forest. Sinharaja is a forest that has become immensely popular amongst local and foreign environmentalists.

These youths have registered themselves with the Department of Wildlife as Tourist guides and they are also engaged in providing accommodation to tourists. They provide accommodation to tourists in annexes of their houses, consisting of a room with an attached bathroom. Foreign tourists get an opportunity of tasting local foods whilst studying the local culture.

5. Another means of livelihood of these villagers is tapping of "Kitul" toddy. Jaggery and treacle are also manufactured from "Kitul".
6. There are also villagers who earn a livelihood as masons, carpenters and labourers.

The total number of members who obtain electricity from the small scale power station at Kudawa - Pitakele is 21. Their livelihoods are as follows.

### Source of income and income level

Source of income	Number of families	Level of income
1/4 to 1/2 acre of tea	07	Monthly profit of Rs. 2000/-
Above 1 acre of tea	04	Monthly profit of Rs. 4000/-
1/4 to 1/2 acre of Rubber	02	Monthly profit of Rs. 2000/-
Tourist industry	03	Rs 6000 x 3 Months
Masonry and carpentry	03	Monthly Rs. 11,250/-
Government jobs	02	Over Rs. 15,000/-
Labour	01	Rs.11,200/- (Rs. 400X28)

## Level of education

The level of education of members who obtain electricity from the small scale hydro power station at Kudawa- Pitakele is as follows: Only primary education facilities have been provided to children at Kudawa- Pitakele village and the village schools have many shortcomings.

### Education Level

	Female	Male
Up to GCE ( O/L)	03	04
Up to GCE ( A/L)	04+01 child	04
Up to Grades 8-9	02	01
Lese than Grade 8-9	06	08

The view of Society members was that mainly girls of the village show a greater liking to go to school.

## 2. Reasons for the male domination at the Electricity Consumers Society (ECS) level

There are 9 officials in the Electricity Consumer Society : President, Vice President, Secretary, Asst. Secretary, Treasurer, three committee members and the Auditor. However there is only one female member in the Committee whilst all others are males.

During the initial stages after the formation of the Electricity Consumer Society, only males participated in the meetings. Therefore only males were elected to office. There were certain reasons for this.

1. The membership of the society was given to the chief occupant i.e. head of the household. Therefore males attended meetings of the Society. Thus only males were elected to office.
2. The males played leading role in tasks such as initial construction of the power station, construction of dams, laying of pipes and erection of posts for drawing cables. There is no machinery work involved at this stage. It is the skilled labour that is needed for masonry work and unskilled labour for heavy work. Due to this very reason males participated more in meetings of the society. But a special feature is the equal participation of males and females in Shramadana Campaigns which covers light work such as ground clearance.
3. The Kudawa - Pitakele Electricity Consumer Society meets once a month at 7.00 p.m. This time has been fixed so that the meeting could be held when they return after work in tea plantations. Some members go to tap 'kitul' toddy between 5.00 and 6.00 in the evening. The time has been fixed to hold meetings after this time too. This too is a reason for low female participation.



4. Only the member is entitled to be elected to office according to the constitution. Therefore a person participating in a meeting representing the member is not entitled to be elected to office.
5. Since two families that hold membership live across the river, only male members of these families can participate in meetings; this is because females find it difficult to cross the river during periods of floods as there is no bridge (with the rising level of the waters).

### **Female Participation**

1. Six females attend meetings of the Society.
2. Only one female has been elected to office and that too only as a committee member. She is representing her husband who is the secretary of the society and the committee need her service as she is the only educated person who can handle documentation, in the committee.
3. There are only two female chief occupants out of the total membership of 21.
4. Decisions of the Society are taken through cordial discussions between males and females.
5. All documentation and preparation of minutes of the former Secretary of the Society was carried out by his wife.

### **Other Associations and Societies in the village**

There are seven other societies functioning in the village: Funeral Aid Society - meet monthly, Tea Small holdings development Society, Sanasa Society, Samurdhi Society, Rural Development Society, "Sumithuro" Environmental Society, Viharakshaka Society

These meetings are held with the collaboration of all Grama Niladhari divisions. There is a representation of 5 villages (Pethiyakanda Buthkanda, Ketala Paththala, Pitakele, Kudawa). These meetings are held in the village school, since a large number of people participate.

These meetings are held between 3.30 and 4.00 in the evening. There are reasons for this.

1. Meetings are being held at a public venue. Meetings held at the school should be concluded by 6.00 in the evening and the school should be handed back.
2. Members coming from distant places have to return home before it becomes too late in the night.

There is about 70% female participation in these Societies, particularly societies such as Samurdhi. The reason for this is that the time of the meeting is convenient to females and because they are keen to obtain benefits granted (Samurdhi loans).

There was good male participation in meetings of the Electricity Consumer Society as during its early stages, matters of a serious nature such as construction work, laying of pipes, construction of concrete and wooden poles were discussed and implemented.

It was revealed at this workshop that since tasks of a more serious nature are complete with the construction of concrete poles instead of wooden poles, it would be possible to give a prominent place to female in the society.

### **3. General problems identified by three groups**

#### **Group 1: Problems identified by the Middle and High monthly income group**

The problems that were listed by the first group as prevailing in the village as follows:

1. Difficulties pertaining to roads
2. Lack of clean drinking water
3. Lack of Health facilities as well as a Health Centre
4. Lack of community Hall
5. Lack of cemetery
6. Lack of clear title to lands
7. Harm caused to plantations by wild animals. [Only tea can be cultivated at present. Even though crop such as manioc and maize could be cultivated, villages have given up cultivating these crops due to harm caused by animals.]
8. Tea plantations have become infertile due to cultivation of Pines around tea plantations. The absorption of all the water on the ground in that area by the Pines trees affects the tea plantation adversely.
9. Lack of Vocational Training Centre
10. Lack of Computer Centre
11. Lack of Public Playground
12. Lack of a sales outlet for products [Fruits- bananas, cane industry allied products - baskets, boxes, Juggery and Treacle manufactured from "Kithul"]
13. Incorrect weighing and measuring of tea products (Leaf plucked). Tea purchasers failing to use correct weighing and measuring instruments.
14. Exorbitant prices of manure/fertilizer used for tea. Transport expenses are added to this.

The persons belonging to middle and higher monthly income groups had identified the problems prevailing in the village as above.

#### **Group 2: Problems in the village identified by the Women's group**

In addition to the problems of difficulties pertaining to roads, lack of a Health Centre and lack of a Community Hall and a Cemetery, the following problems prevailing in the village at present were identified by the Women's group.

1. Facilities for education being poor.
2. Facilities in schools being poor (lack of laboratory and dancing room)
3. Shortcomings in Pre-Schools: There isn't even a building to conduct the Pre-School.
4. Lack of recognition of extra curricular talents of village children (e.g. musical skill and dancing skills etc.)
5. Lack of self-employment facilities-; lack of necessary technical knowledge and equipment.

The attention of the Women's group has been focused mainly towards the educational matters of their children and securing a means of earning an extra income.

### **Group 3: Problems identified by low monthly income group**

The third group or the group with a low level of income has identified the following problems.

1. Lack of clean drinking water- this highlights the need of having a water supply scheme
2. Lack of health facilities
3. Harm to agricultural activities from animals, which is a problem identified by the first group has also been identified by the third group.
4. The third group has also identified shortcoming in facilities in schools and obstacles to self-employment which the Women's group had identified.
5. Inadequate transport facilities

### **4. Problems faced by females, identified by three groups**

The next question directed to these same groups was the problem that women in particular have and what steps should be taken for their progress.

The following were the views expressed by the three groups

#### **Group 1-Middle & high monthly income group**

- Training female for self-employment and providing them with requisite equipment.
- Testing the nutritional level of women and taking steps to improve it.
- Stopping the liquor menace.
- Taking the female members of society as well as the women in the village on picnic once a year.

#### **Group 2- Women's group**

- Relief brought to females by providing self-employment facilities and thereby deriving income.
- Women in the village are subject to severe pressure because of tea plantation duties. Mothers going out to earn money by plucking tea at the plantations must leave their children at home alone, children may be vulnerable as a result. Furthermore the women are unable to attend to the educational needs of their children when they go out to pluck tea.
- Commencement of a nutrition programme for expectant mothers.

#### **Group 3- Low income group**

A matter that we noticed at the workshop was that the third group, namely the persons of a low income level, did not answer the question pertaining to problems that women have in particular and what steps should be taken for their progress. They did not even come forward to express any views in this regard.

## 5. Benefits that resulted from obtaining electricity

21 families have received electricity from the Kudawa Power station. At present power is supplied throughout the 24 hrs. But on Tuesdays the power plant does not operate for a few hours in order to prevent the deterioration of machinery and for its sustainability.

1. Providing lighting
2. Saving expenses incurred on Kerosene oil. This varies from Rs. 500/-to Rs. 1,200/- depending on the income level. That is because people with more income spend more by using more lamps and petrol lamps etc. The low income groups use about two bottle lamps. Monthly electricity bill is Rs. 200/-.
3. Saving time - Time is spent on burning coconut shells and putting it into the iron carefully when using charcoal irons. Time is saved by using electric irons.
4. Money spent on recharging car batteries, before the establishment of the micro hydro power scheme is now saved. People used to have a car battery to watch the television and in every other week they had to carry the battery to the nearest grid connected town for recharging. The expenses for recharging the battery are around Rs. 500/- per month. Batteries have to be taken to Kalawana to be recharged.

Bus fare up and down	Rs. 100/-
Charge for taking the battery in the bus	Rs. 25/-
Fee for charging	Rs. 125/-

The bus fare sets doubled if the battery cannot be charged on the same day.
5. Boiling of water was previously done using firewood. This was very inconvenient for women to do early in the morning and when there is an urgent need of hot water. Now the villagers use an electric water heater for boiling water.
6. Grinding of condiments and flour- When there is a need to grind about 7 or 8 measures of rice, it had to be transported to Kalawana earlier which was inconvenient and costly. However people now use grinding machines for grinding cereals.
7. Improvement in children's education - They can spend a longer time for studies because of the electricity available for lighting.
8. Reduction of bottle lamp accidents.
9. Fostering unity amongst members - Acting as one to fulfil the need for electricity.
10. Equipment used
  - CFL bulbs less than 15 Watts (5w, 10w etc)
  - Globe bulbs less than 5 Watts
  - Tube lights
  - Times of viewing television - mainly evening - 7.00- 9.00/ throughout the daytime Channels viewed- Eye channel, Swarnavahini, ITN, Rupavahini channel signals poor
  - Satellite Television - There are about 4 Monthly bill and monthly instalment on easy payments terms - Rs.980/-
  - Radio cassettes - CD players - Listening to "Pirith" on Poya days
  - Telephones -15 - CDMA Phones- Lanka Bell/SLT/ Dialog
  - Concrete brick making machine - Concrete brick are used for building construction replacing clay bricks. A member of the society uses this. Its capacity is about 1 1/2 KW

- Use of the plane and router used for carpentry by 2 members
- There are no refrigerators in the village at present. The use of refrigerators, if brought to the village, has been banned from 6.00 to 10.00 pm by the constitution of the society.
- Equipment that has been banned  
The use of all equipment above 11/2 KW has been banned by the constitution of the society. There are some types of equipment that have been banned from being used from 6.00 to 9.00 pm and 5.00 to 7.00 am. They are as follows: electric heater, electric iron, rice cooker, and hot plate
- Of the 21 families details regarding equipment used are as follows;
 

Heaters	-21
Rice cookers	-15
Electric irons	-18
Blenders	-10-12

## 6. Resource mapping for income generating activities

Only one female was interested in starting a new enterprise.

Business	- Ladies ready made garments
Owner	- Ms. K. D. Indra Manel
Experience	- 8 yrs
Start up capital	- 35,000.00
Owner's contribution	- 25%

### Details of the business

Business	Tailoring shop
Name of the owner of the business & the address	Ms. K.D. Indra Manel, Petiyakanda, Kudawa, Weddagala.
Production/Service	ladies ready made garments
Business name	Not decided yet
Reason for selecting the business premises	Her own house, ability to work long period, her house is situated near the road, premises at middle of the village
Legal status	Individual
Employees, skills and salaries	Her own business 8 yrs working experience on Juki machine at Biyagama free trade zone, latter recruit an assistant
Customers	Petiyakanda, Kudawa, Veddhagala residents and the Sinharaja forest visitors
Competitors	Veddhagala, Kalawana tailor shops
Delivery	Customers will come to the premises and buy, Deliver to the shops.
Promotion	Providing good service

## Financial plan

Scheme	Petiyakanda Electricity project		
Business	Ladies ready made garments		
	(Rs)	(Rs)	(Rs)
<b>1. Start-up capital</b>			
<b>1.1 Business premises</b>			
<b>1.2 Machinery and equipment</b>			
Singer Sig sag machine	32,500.00		
<b>Sub Total 1.2</b>		32,500.00	
<b>1.3 Pre operative expenses</b>			
Business registration	150.00		
Transport	1000.00		
<b>Sub total 1.3</b>		1,050.00	
<b>Sub total 1 (1.1, 1.2, 1.3)</b>			<b>33,550.00</b>
<b>2. Working capital</b>			
Stock of raw materials -Cloths	2500.00		
Loan repayment	975.00		
<b>Sub total 2</b>		3,475.00	
<b>Requires start-up capital (1 &amp; 2)</b>			<b>37,025.00</b>
<b>Sources of start-up capital</b>			
Owners equity		10,000.00	
Bank loans		10,000.00	
Other grants		17,025.00	
<b>Total</b>			<b>37,025.00</b>

Monthly product costing	(Rs)	(Rs)	(Rs)
<b>1. Direct material cost</b>			
Cloths, buttons and thread	4,825.00		
<b>Sub total</b>		4,825.00	
<b>2. Direct labour cost</b>			
wages	4,500.00		
<b>Sub Total</b>		4,500.00	
<b>3. Indirect cost</b>			
Electricity bill	100.00		
Depreciation	100.00		
Loan repayment (loan/months)	975.00		
<b>Sub total</b>		1,175.00	
<b>Total cost (1,2 &amp; 3 )</b>			<b>10,500.00</b>
<b>Monthly income</b>			
<b>Selling the cloths</b>			
Ladies under wears - Under skirts (50 x100)	5,000.00		

Ladies under wears - Brassier	(10 x 200)	2,000.00		
Pillow case	(5 x 75)	375.00		
Baby suit	(10 x 100)	1,000.00		
Baby shocks	(60 x 200)	1,2000.00		
Sub Total			20,375.00	
<b>Other</b>		1,000.00	1,000.00	
<b>Total Income</b>			<b>21,375.00</b>	<b>21,375.00</b>
<b>Gain</b>				<b>10,875.00</b>

## 7. Progress since the workshop was conducted

### 1. Tailoring shop



Mrs. Indra Manel has purchased a "Singer" sewing machine. The Energy Forum has made a contribution towards meeting it' s cost. She is engaged in sewing using a motor operated on electricity obtained from the power house. She sews the clothes and uniforms for the village children. She was expecting new orders during the Sinhala & Hindu new year season.

### 2. Increase role of women

At present the chief occupant (head of the household) of the house has been granted membership of the Kudawa Electricity Society. There are two females who are chief occupant (women headed household). According to our information the husbands of these two females have not contributed at all in terms of labour participation in construction work of the power house. They do not even see to the affairs of their own household. These two females work as unskilled labourers earned money and obtained electricity using that money. It is these females that have contributed towards labour participation in construction work of the power house.

An outstanding feature has been the participation of women just in the same manner as men in work connected with the power station from the very outset. Women's participation has been seen in difficult tasks such as carrying sand, bricks and stones, mixing concrete, carrying the mixed concrete to necessary places, digging pits for concrete poles and laying cables along the ground for the mini grid.

The more difficult tasks such as carrying the concrete poles, sawing of timber for the roof, doors and windows of the power house are carried out by the men.

As an outcome of the workshop society officials decided to obtain female participation in affairs of the electricity consumer society. Currently there are 9-male officials, and only one female official. It was decided to change the constitution of the society so that any member of the family can represent the household and can become an elected official. Their objective is to have females elected to the principal office bearer posts at the next election of the society scheduled to be held next month. Moreover the Executive committee meetings will be held during the day time to make possible for the female committee members to attend the meetings without any difficulty.

At present the contribution of the only female member in the committee towards the work of the society is immense. The impact she creates is greater than that of the remaining 09 male officials of the society. e.g. When any equipment is used in contravention of the constitution of the society or when bills are unpaid two persons out of the main officials, president, secretary, treasurer, operator go to the house concerned and disconnect the power supply. If for any reason disconnection of supply is delayed in the case of any offense, she brings pressure with the assistance of other female members. She meets the officials and questions them.

### **Lack of drinking water**

The main source of income in the Kudawa region is tea cultivation. The chemical fertilizer used for tea cultivation gets washed down to the streams and water courses. This water is not suitable for drinking purposes. But plans have been formulated to commence a community water project to supply drinking water to about 70 families under a government project of developing rural infrastructural facilities. This is a project costing about three hundred thousand rupees. Matters such as obtaining permission from the department of wild life conservation and obtaining measurements for pipe lines are being attended to at present.

### **3.2 Organizational level:**

This case study was a very useful exercise for the Energy Forum as neither EF nor FECS has previously investigated the gender aspects of the micro hydro sector. One of the challenges faced by the FECS currently is achieving increased participation of females in the Executive Committee of FECS. However there are no short cuts to fulfill that objective as it depends on a number of other social factors.



The FECS is in a position to have a long-term plan first to increase the female participation among ECS officials and then to introduce a quota for the female in the executive committee. This two step strategy is a necessity as the FECS officials are appointed by the ECS officials from those amongst them. These points will be discussed at the next executive committee monthly meeting of the FECS. Currently the secretary and the treasurer of the FECS are females and the treasurer is happened to be the researcher of this study and the writer of this report.

## **4. Lessons**

### **4.1 Lessons for other projects for gender mainstreaming**

#### **1. Lack of opportunities for females to be leaders of Electricity Consumer Societies**

In one of the two villages there was only one female member out of nine in the executive Committee of the Electricity Consumer Society. The workshop revealed a number of reasons for this discrimination against females.

1. The membership of the society was given to the chief occupant. There are only one female chief occupant out of the total membership of 21 in Kudawa - Pitakele Electricity Consumer Society. Only the member is entitled to be elected to office according to the constitution. A person participating in a meeting representing the member is not entitled to be elected to office. Therefore males attended meetings of the Society and were elected to office.
2. The males played leading role in tasks such as initial construction of the power station, construction of dams, laying of pipes and erection of posts for drawing cables, therefore males participated more in meetings of the society. A special feature is the equal participation of males and females in Shramadana Campaigns.
3. The Kudawa - Pitakele Electricity Consumer Society meets once a month at 7.00 p.m. This time has been fixed so that the meeting could be held when they return after work in tea plantations. Some members go to tap 'kitul' toddy between 5.00 and 6.00 in the evening. The time has been fixed to hold meetings after this time too. This too is a reason for low female participation.
4. Even the geographical reasons go against female. Since some families that hold membership live other side of the river, females find it difficult to cross the river during periods of floods with the rising level of the waters. Only male members of these families can participate in meetings.

The situation in other societies in the same village is different. There is about 70% female participate in these Societies, particularly societies such as Samurdhi. The reason for this is that the time of the meeting is convenient to females and because they are keen on social work and obtaining other benefits such as Samurdhi loans. Unlike in ECS meetings these meetings are held in village school and these meetings are held between 3.30 and 4.00 in the evening. Meetings held at the school should be concluded by 6.00 in the evening as the school should be handed back and as members coming from distant places have to return home before it becomes too late in the night.

There the decisions of the Society are taken through cordial discussions between males and females. All documentation and preparation of Minutes are done by a female as the education level of female is high among youth in rural areas.

It was revealed at this workshop that since tasks of a more serious nature are complete, with the construction of concrete poles instead of wooden poles, it would be possible to give a prominent place to females in the society.

Neither the EF nor the FECS was aware of this situation at Kudawa. Similar situations may occur in other societies as well. Therefore the Federation of Electricity Consumer Society agreed to look closely into this matter in the future and monitor the situations with the other member societies as well.

## **2. Conditions of plantation female workers is critical**

Female plantation workers and villagers have two different lifestyles. The living conditions and aspirations of female plantation workers and other village females are quite different. Female plantation workers are less educated, hard working and receive low wages. Females engaged in work on plantations do not get a wage proportional to their labour. Daily wage is Rs. 270/-. Some women working in the plantation go out side plantations to do the night shift work after finishing the morning shift. They travel by tea transporting lorry even during the night.

It is the female who has to pluck the tea in their own plots of tea. She also attends to the care of the tea plantation. Females who work on state plantations, do not have enough time to pluck tea in their private tea plantations after returning from work.

Female plantation workers have fewer hopes regarding a better future and they are not in position to adopt a new lifestyle. Hence our development efforts will not be able to reach the neediest segment in the society.

## **3. Non availability of proper education, health and transport facilities affects female more than male**

The village female highlights that she lacks rest as she is engaged in tasks such as rising early and cooking meals, assisting in the husband's work, taking children to school and attending to other household chores. She is busy from morning till night. A female who does not go to work has to ask for money from her husband in order to meet her personal needs. Female and children are frequently harassed by drunken husbands. Female villagers are keen to start self employment the problem confronting them is the lack of capital even though they have the potential to engage in self employment.

Village females are educated and are not used to work under difficult conditions like female plantation workers. Educated women are unable to go out of the village in order to engage in an occupation of their choice due to the lack of transport facilities. This is a great obstacle to carrying out tasks such as shopping and sending children to school. Mothers have to accompany the children as road and bridges are not in good condition. Small children have to be accompanied to nursery schools and also brought back.

It is the female who remains at home and has to attend to the tasks of the safety of the house and children; as well as protection and care of their plantations. Women have to be even more vigilant about the safety of the house and children due to the houses being situated far apart.

## **Direct benefits to females arising from electrification**

Kitchen chores can be accomplished more easily due to the availability of electricity. When a female returns from work outside the home during daytime, she can attend to her tasks at home more easily and efficiently. Boiling water and ironing clothes are such tasks.

#### **4. Female are more keen on longer term benefits**

After the group work of the workshops it was observed that the females are much keener on longer term benefits than are males.

The female groups were highlighting the lack of education and healthcare facilities. They were concerned about lack of laboratory and aesthetic facilities in schools, shortcomings in Pre-Schools, lack of recognition of extra curricular talents of village children, lack of necessary technical knowledge and equipment for vocational training and lack of self-employment facilities.

The female group was highlighting the need for commencement of a nutrition programme for expectant mothers; testing the nutritional level of women and taking steps to improve it. The female group was concerned about mental health as well. They highlighted the need for stopping the liquor menace and taking the female members of society as well as the women in the village on a picnic at least once a year.

#### **5. Lower income group males are less concerned about the situation of females**

A matter that we noticed at the workshop was that the low income male group did not answer the question pertaining to problems that women have in particular and what steps should be taken for their progress. They did not even come forward to express any views in this regard. This clearly shows that the poor females are facing severe hardships while living with their husbands.

#### **4.2 Obstacles/ constraints faced in gender mainstreaming**

One key issue faced by the Energy Forum while conducting the case study was lack of time of the villagers to participate at the discussions. They are depending on daily income and therefore they are not in a position to miss work while attending our events. On the other hand if EF were to make a daily payment for participation then the villagers would be given the wrong impression of the project, EF and FECS. Hence in certain instances we had to shorten the module and make it as simple as possible.

Involving females in decision making is much more important in development areas such as education, health, and transport as female participants were keener on those long-term benefits. As energy gives a short term benefit even males are also committed to getting things done. Hence the impact of getting participation of female in decision making in energy projects at the initial stage is not that significant. However it is very important to maintain active involvement of female leaders after commissioning the power plant mainly due to two reasons: the educational level of young females is higher in the rural areas and they are more competent in handling paper work and finances; the female members are capable of resolving and handling social issues and conflict resolution among the community that would arise from time to time at ECS meetings.

### **4.3 Suggestions for ENERGIA**

Improving the female participation in decision making in the micro-hydro sector is important. However this cannot be achieved by influencing the government officials and policy makers. Working with the officials of Central Government Ministries, Authorities and Provincial Councils will have a lesser impact on off-grid energy sector gender mainstreaming, as such institutions and officials are not close enough to the real beneficiaries.

Instead it is necessary further to strengthen the civil society networks such as Federation of Electricity Consumer Societies (FECS) and project developers and reach the target groups living in remote areas through such mechanisms. These networks can reach the target groups sooner than any other entity. The gender mainstreaming training modules should be targeted not at government officials but at the project developers and village Electricity Consumer Society leaders both male and female.

The feasibility studies of the off-grid projects are currently done by the trained project developers. No new training programs are organized to train new project developers as there is only a limited market for the off-grid sector. It is recommended to facilitate a gender training program targeting the existing project developers so that they may consider gender factor seriously while conducting their feasibility studies for the new projects. Further to add the gender factor to the existing off-grid schemes it is better to train ECS leaders through the FECS to have a significant gender mainstreaming change in the sector. Originally there were training programs for ECS leaders organized by the FECS on leadership, bookkeeping and O&M of micro hydro plants; however they have no funds to continue those training programs at present. So there is a necessity to conduct a special program for the ECS leaders on gender.

## **Annexure 1: TOR with ENERGIA**

### **TERMS OF REFERENCE**

#### **Incorporating gender concerns in Energy Forum project on electrification through micro hydro schemes in the Koshene Panvila and the Niri Ella Electricity Consumer Societies**

##### **1. Background**

In 2006, ETC Foundation received approval for continued support to the Energy Access Programme for the period 2007-2010, from DGIS under its MFS Programme, one of the intervention strategies of the gender mainstreaming component of the Energy Access Programme being Capacity Building.

Under the MFS programme, ENERGIA's capacity building strategy in Asia aims to strengthen the capabilities of project managers in a manner that these individuals are able to design and implement gender sensitive rural energy access projects. In 2007, the capacity building process was launched, starting with identifying a specific capacity building need, i.e. to develop skills among project practitioners to mainstream gender concerns into energy projects; development of an approach paper; identifying a partner (UNDP); providing capacity building inputs on a sustained basis starting with an e-learning course on basic concepts on gender and energy; followed by a 5-day training course that brought together energy project practitioners and trainers in October 2007. As part of this training course, the participants developed specific action plans to mainstream gender concerns into their projects.

Building up on this, ENERGIA proposes to provide long distance coaching to a set of projects being implemented by practitioners who have attended the October 2007 training course. Coaching will be aimed at supporting practitioners to carry out their action plans aimed at mainstreaming gender in energy projects. The project-specific, bilateral coaching will be further supplemented by setting up of an electronic based forum (*community of practice*), specifically meant for collaborating and sharing information and knowledge. Practitioners can place forum postings, and upload files to a forum, and review each other work.

##### **2. Introduction to Energy Forum's project to mainstream gender concerns in two electricity consumer societies using hydro power: Niri Ella (Umandadola) and Koshena Panvila**

The Energy Forum (EF) of Sri Lanka is an NGO working to promote renewable and distributed energy options to alleviate poverty, to address energy capacity deficiencies, and to protect the environment. The Energy Forum works in areas of provision of renewable energy services to Sri Lankan off-grid communities; creating awareness of renewable energy at the community level; capacity building of off-grid energy technology providers; introducing rural economic development activities utilizing off-grid energy technologies; research and development initiatives to assess cross-sectoral applications of renewable energy; acting as a partner for local and global renewable energy initiatives; and promotion of fair and sustainable energy policy.

As part of the World Bank's Energy Services Delivery Project, EF established the Federation of Electricity Consumer Societies (FECS), and Micro-hydro Manufacturers Association to address the issues faced by the micro-hydro electricity consumers.

### **3. Objective of gender mainstreaming in the project**

This project proposal from Energy Forum has emerged as an outcome of the ENERGIA supported training on "Gender mainstreaming in energy projects" in October 2007. The following gender gaps were identified, which form the rationale and basis for gender mainstreaming effort:

- (a) As of now, neither of the projects have a concrete gender goal. The projects have not considered the aspirations of the women and how they should get benefited from having electricity.
- (b) Consequently, the projects are not designed to improve women's welfare (reducing drudgery, improving health), productivity (income generating activities) and empowerment/equity, equality (Their participation, decision making and self confidence).
- (c) In addition, in Niri Ella site, most of the villagers are small-scale tea and pepper planters and estate workers. Both men and women engage these works and project has not considered mainstreaming the gender concerns in this village hydro project.

As part of the gender mainstreaming activity, Energy Forum has selected two ECSs, with whom it will work on a process of capacity building on gender issues in rural electrification: Koshene Panvila Electricity Consumer Society, Panwila, Mitipola, Eheliyagoda, and the Niri Ella (Umandadola) Electricity Consumer Society.

Gender mainstreaming is planned with the following objectives:

- Building in specific gender objectives into the objectives of the ECSs, aimed to improve women's welfare (reducing drudgery, improving health), productivity (income generating activities) and empowerment/equity, equality (Their participation, decision making and self confidence).
- Assisting the ECSs to design concrete activities to address women's energy needs
- In particular, assist the ECSs to develop business plans for income generation for women.

#### **Details of the two projects are as follows:**

1. Project name: Koshena Panvila Electricity Consumer Society (district Ratnapura, province Sabaragamuwa) to establish a 14 kW power plant to electrify 70 households

Project stage: Existing plant's capacity is 6.5 kW and expected capacity was 14 kW. This capacity is not sufficient for 70 households. It is being planned to increase the plant capacity.

2. Niri Ella (Umandadola) Electricity Consumer Society (District- Ratnapura, Province- Sabaragamuwa) to establish a 6kW power plant to electrify 28 households.

Project stage: Implementing stage, the project feasibility study has finished and expected capacity is 6kw electrical power for 28 house hold. Project developers are waiting for the Environmental approval to start the construction work.

#### **4. Activities and time frame**

In both the ECSs, the following activities would be carried out (further details and time frame are included in the table):

- To conduct discussions and gender sensitization with ECS key officials
- Capacity building on gender issues in electrification for ECS officials
- To conduct a workshop with the ECS members with separate sessions with the women beneficiaries and identify their needs in relation to using electrical equipments and income generation using electricity.
- Analyze the collected data and identify the income generating activities for women
- Develop business plans for income generation

It is proposed that based on the outcomes of this gender mainstreaming work, a national level workshop would be conducted for relevant stakeholders, including micro hydro developers, for which a separate proposal and budget would be developed and funds raised.

#### **5. Support from ENERGIA**

Support from ENERGIA would be required both financially and to comment on the evolving gender mainstreaming process. ENERGIA would also provide gender expertise and inputs especially for reacting to the ground realities, and for discussions in the community and with the ECS members. Specifically, EF has voiced the need for Inputs from ENERGIA to finalize the workshop module, to be held with the ECS members. The EF team would also work in collaboration with NANEGE, the national focal point of ENERGIA in Sri Lanka and Prof. Anoja Wickramasinghe for technical support.

The Energy Forum will bear the costs involved with conducting the assessment. Financial support of Euros 2000 per project, totaling to Euros 4000 would be provided by ENERGIA. This would be used for process documentation, travel, video and photo documentation, meetings and awareness programmes, as well as contribute towards development of business plans for any income generation activity proposed by women. 50% of this amount would be paid as advance, upon receiving the formal letter from Energy Forum, and the balance after completion of all activities.

**Duration:** April 2008-March 2009

#### **6. Project deliverables**

- A brief status report emerging from a review of existing feasibility study reports of the Koshena Panvila ECS, & Niri-Ella ECS- 20th April, 2008
- A brief report outlining the outcomes of discussions and capacity building programme for the members of the two ECSs, and the gender-sensitive needs assessment process. -15th May, 2008
- Training modules on gender mainstreaming in rural electricity provision -30th May, 2008



- Business plans for income generation activities identified for the two sites-1st August, 2008
- Photo documentation-15th Aug, 2008
- A brief report on the gender-disaggregated assessment of gender mainstreaming process, and the income generation activities being undertaken-30th Sep, 2008
- A summary of the mainstreaming process in the case study format provided to EF by ENERGIA. -Nov 2008

## 7. Budget

Item	Unit	No of Units	Unit cost (Euro)	Total (Euro)
Gender Sensitization for ECS officials	Discussion	02	30.00	60.00
Conduct Workshops for ECS members	Workshop	02	80.00	160.00
Develop Business plans	Plans	02	140.00	280.00
Travelling /Food & logging	Trips/Visits	10	100.00	1,000.00
Stationary			100.00	100.00
Income generating activity	Activity	02	1,200.00	2,400.00
<b>Total (Rs.)</b>				<b>4,000.00</b>

## 8. Payment schedule

The first payment to EF will be an advance of Euro 2000 to be transferred after receipt of a letter from EF's Executive Director acknowledging the organization's commitment for mainstreaming gender as per these Terms of Reference. The balance Euros 2000 will be paid upon completion of all deliverables as per this TOR.

## 9. Commitment and contractual relations

The relationship between EF and ENERGIA will be governed by the articles of this ToR, which will be contractually binding to both organizations.

## **Annexure 2: Modules**

### **Incorporating Gender concerns in Energy Forum projects on electrification through micro hydro schemes in the Koshene Panvila and the Niri-Ella Electricity Consumer Societies**

#### **Module to design activities to address women's energy needs**

##### **Contents**

Module to design activities to address women's energy needs  
Gender Disaggregated Needs Assessment  
Define Gender Goals  
Resource Mapping  
Design Activities to Address Women's Energy Needs  
Develop Indicators

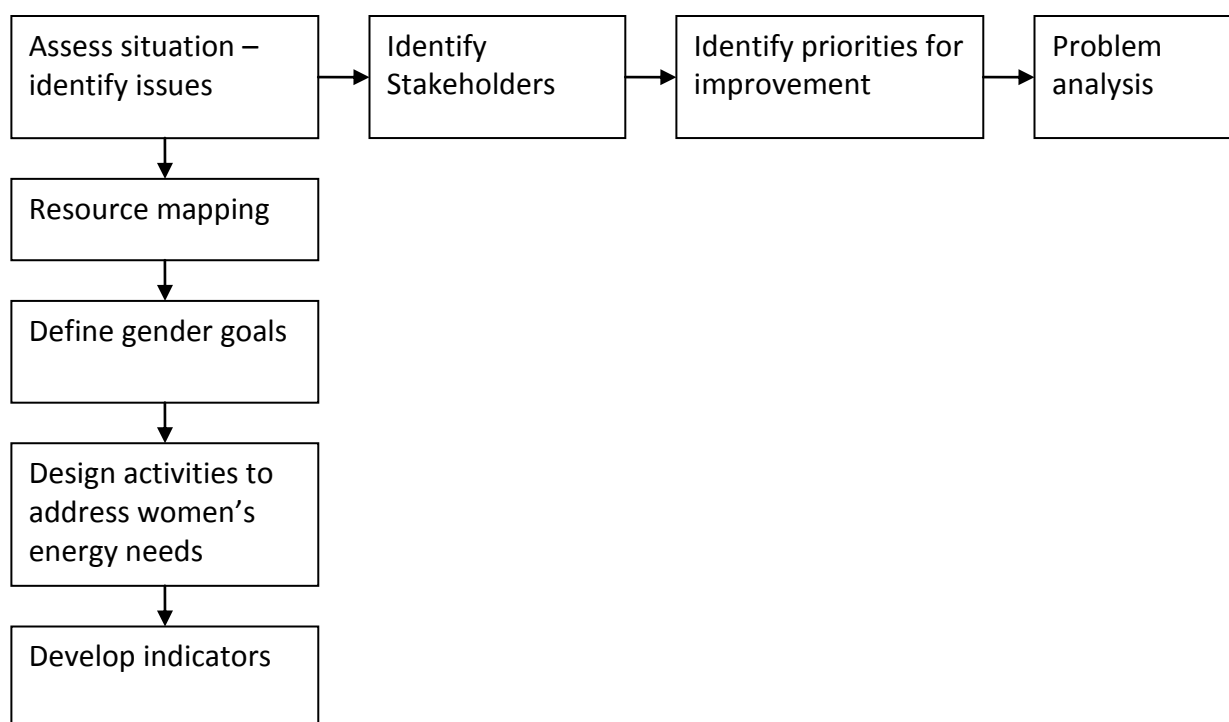
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Energy Forum**

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Gangodawila, Nugegoda  
Sri Lanka**

## Module to design activities to address women’s energy needs

### 1. The flow diagram



### 2. Gender Disaggregated Needs Assessment

Selected ECS members will be trained in the needs assessment module so that they can assist and fully participate in the process. The module will be translated into the local language.

#### Step 1: Identify Stakeholders

Conduct focus group session in target community to identify all sub groups in target community – men, women, different social groups, occupations etc.

#### Step 2: Identify Stakeholder Priorities for Improvement

Conduct focus groups with separate sub groups to document what tasks they would like to improve and how they might do so:

Compile a table for each group following this activity, for example:

Women	
Main items identified for improvement	Possible energy solutions
(drudgery and health)	
(drudgery)	
(uncertain gender goal)	

(income)	
<b>Men</b>	
<b>Main items identified for improvement</b>	<b>Possible energy solutions</b>
(drudgery)	
(income)	
(uncertain gender goal)	

### Step 3: Problem Analysis

- Identify assumptions and external influencing factors
- Identify constraints to women's participation
- Identify any potential negative impacts of the project

- a. Identify the energy applications e.g. internal lighting, communal lighting, power for kitchen equipment, food dryers, tailoring enterprise, grocery etc.
- b. Identify assumptions and external factors that could influence the project.

Application	Assumptions/external factors

- c. Identify constraints to women's participation

Do/would women have access to the resources identified in the above exercise?	Y/N
Do/would women have control over the resources identified in the above exercise?	Y/N
Are women likely to feel able to speak at planning meetings?	Y/N
Are women literate and able to read materials handed out?	Y/N
Are women able to fill out forms asking their opinions?	Y/N
If needed, is it possible to call women-only meetings?	Y/N
If so, what time of day would be most suitable?	
Is it possible to interview women on their own? (is a female interviewer necessary?)	Y/N

- d. Identify potential negative impacts on women and men

Proposed Energy Intervention	Benefits		Disadvantages	
	Men	Women	Men	Women
<b>Efficiency/ Welfare</b> <i>Practical needs</i> Workload Health				
<b>Equity/Equality</b> <i>Productive needs</i> Income generation Access to credit				

Proposed Energy Intervention	Benefits		Disadvantages	
	Men	Women	Men	Women
<b>Empowerment</b> <i>Strategic interests</i> Education Social status				

### 3. Define Gender Goals

Define the gender goals of each stakeholder in each of the following areas:

	Sponsoring agency	Implementing agencies	Supporting agencies	Target Sub Groups (specify which)
<b>Women's welfare</b>				
<b>Productivity of women</b>				
<b>Empowerment of women</b>				
<b>Project efficiency</b>				

Once these have been identified and discussed, come to an agreement with the ECSs over what the specific gender goals of the projects will be.

### 4. Resource Mapping

Carry out resource mapping exercise so that income generating activities can be identified according to the available resources.

### 5. Design Activities to Address Women's Energy Needs

Design activities in collaboration with the participants in the module and any areas where women will need capacity building and/or training will be identified at this stage. It will also be decided how these capacity building needs can be met.

### 6. Develop Indicators

Gender goal	Development impacts	Possible indicator
<i>Women's welfare</i>		
<i>Productivity of women</i>		
<i>Empowerment for women</i>		
<i>Project efficiency</i>		

## **Annexure 3: Review Report**

### **Incorporating Gender concerns in Energy Forum projects on electrification through micro hydro schemes in the Koshene Panvila and the Niri-Ella Electricity Consumer Societies**

#### **Review on two selected feasibility study reports**

##### **Background**

The Energy Forum as a follow up program to the International training program on “Mainstreaming Gender Concerns in Energy Projects” organized by ENERGIA, held in Chiang Mai, Thailand on 22-26 October, 2007 is in the process of implementing a project in Sri Lanka to incorporate gender concerns in two selected Village Hydro projects.

The Energy Forum selected two Electricity Consumer Societies (ECS): Koshene Panvila Electricity Consumer Society, Panwila, Mitipola, Eheliyagoda, and the Niri Ella (Umandadola) Electricity Consumer Society with whom it is working on a process of capacity building on gender issues in rural electrification.

The objective of this review is to examine the current situation with regard to the operation of the two plants, to set out the steps required to conduct a gender disaggregated needs assessment of the two sites and finally to explore whether any women based business development activities can be undertaken.

##### **Case study 1: Koshene Panvila (Padili-Ella) Village Hydro Scheme**

Koshena Panvila is a village located in the Mitipola and Napawala Grama Nilidari Divisions of the Ehaliyagoda Divisional Secretariat Division in the Ratnapuara District in Sri Lanka. The village does not have access to national grid electricity. The villagers of the Koshene Panvila got together and formed a community based organization named Koshene Panvila Electricity Consumer Society in July 2001 for tapping the hydro electricity potential of the Nagaha ela stream flowing through the village to get electricity to the members of the society. The feasibility study for the micro hydro power plant was done by the SSEP Company Ltd.

After reviewing the feasibility study report of SSEP Co. Ltd. by the Energy Forum the following basic facts were revealed:

Number of Families	72
Total population	625 approximately
Tapped Stream	Nagaha ela
Waterfall involved	Padili-Ella
Distance to the nearest CEB grid	0.5 Km

Before the project was commissioned the villagers were using kerosene oil lamps for lighting the houses during the night. 20 families had Petrol-max lamps. 40 houses had television sets powered by a car battery. All houses had at least one radio set and certain families had more than 1 radio set. The total number of radio sets in the village was 85.

#### **Power Plant design parameters-**

Water Head	41m
Water Flow	70 L/s
Expected capacity	14kW
Total length of transmission line	8.9 km

#### **Implementation cost**

	Estimated	Actual
Civil Works	SL Rs 997,369	SL RS 1,000,000
Pelton turbine	SL Rs 230,000	SL Rs 235,000
Transmission line	SL Rs 1,234,000	SL Rs 863,426*
<b>Total</b>	<b>SL Rs 2,461,369</b>	<b>SL Rs 2,098,426</b>

\* 50 concrete poles to be completed.

#### **Financing**

Community Contribution	SL Rs 800,000
RERED Project Grants	-
RERED Project Loans	SL Rs 700,000
Provincial Council grants	SL Rs 650,000
<b>Total</b>	<b>SL Rs 2,150,000</b>

The ECS members have completed the RERED loan repayment.

#### **Gender concerns at the planning stage**

The feasibility study did not undertake a needs assessment for any of the beneficiaries therefore neither did it consider the aspirations of the women separately nor how they should benefit from having electricity. Consequently, the project is not designed to improve women's welfare (reducing drudgery and labour time, improving health), productivity (income generating activities), and empowerment/equity, equality (their participation, decision making and self confidence).

#### **Current Officials of the Electricity Consumer Society**

President	Mr. K.A. Samarasinghe
Secretary	Ms. Sandya Malani
Treasurer	Ms. A. M. Nanda Alagiyawanna

#### **Current situation of the project**

The original plan was to establish a 14kW power plant to electrify 70 households. The project was completed in June 2003. However the agency that provided the technology

failed to tap the full hydro potential and finally managed to generate only 6.25 kW. During the day, around 3kW is generated to meet off-peak requirements and the full 6.25 kW is required to meet peak needs. Despite all these setbacks the members of the ECS pay the monthly electricity bill of Rs 250/- regularly.

### **Problems arise due to low capacity**

The capacity of the power plant is not sufficient to cater to the electricity requirement 72 households. The potential electricity supply per household is 86W but in practice, this supply is not equally distributed. This means that in peak usage times, those homes closest to the power plant have sufficient energy to meet their needs for lighting and television yet they use up the bulk of the capacity so those households located further from the plant only receive a limited amount of power which is insufficient to even light three CFL bulbs.

The limited capacity means that there is not enough power per household for sufficient lighting in the evening however there is additional capacity during off-peak hours which could supply electricity for other tasks, such as income generating activities. Current off-peak activities identified by Energy Forum are using electricity for water pumps, irons, water heaters and rice cookers (however these activities were not identified in the feasibility report).

In addition, the plant requires frequent repairs, which incurs extra expenses and further limits the availability of electricity. On top of this there are frequent power failures. All these factors have led to a great sense of disappointment among the consumers.

### **Reasons for the failure of the project**

Poor project planning meant that the power plant established was only able to generate 6.25 kW as opposed to the required 14 kW. Appropriate technical consultation was not employed, further contributing to the failure of the power plant to generate sufficient electricity for the needs of the villagers.

Substandard power plant machinery was also installed by the supplier leading to the problems mentioned above, such as frequent repairs, frequent power failures (at least thrice a month), and a general lack of capacity in the plant.

Hence the Electricity Consumer Society has contacted a second technology provider named REDCO (Private) Company to increase the capacity of the power plant.

### **Stakeholders and subgroups that should be consulted for a comprehensive feasibility study**

<b>Stakeholders</b>	<b>Sub Groups</b>
Sponsoring agencies	1. Sabaragamuwa Provincial Council 2. ESD Project-World Bank
Implementing agencies	Electricity Consumer Society -Civil work
Supporting agencies	SSEP Company Limited



Target community sub group (Men/Women)	<ol style="list-style-type: none"> <li>1. Rubber planters (1/2 to 2 acres)</li> <li>2. Government &amp; other sector jobs</li> <li>3. Women headed households</li> <li>4. Male headed households</li> </ol>
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### **Case study 2: Niri-Ella (Umanda-Dola) Village Hydro Power Projects**

Niri-Ellawatta is an isolated village located in the Pahalakarawita Grama Niladari Division of the Nivithigala AGA Division in Ratnapura District in Sri Lanka. Niriellawatta village does not have access to national grid electricity. The villagers have formed a Community Based Organization named Niri-Ella (Umandadola) Electricity Consumer Society in November 2007 to tap the hydro electricity potential of the Umanda-dola stream in order to provide electricity to the members of the society. The feasibility study of the Niri-ella village hydro plant was done by Renewable Energy Development Co. (Pvt) Ltd to establish a 6 kW power plant to electrify 28 households.

The project is at the implementation stage and the project developers are waiting for environmental approval from the Central Environment Authority to start the construction work.

Most of the villagers of the Niri-Ellawatta are small-scale tea and pepper planters and estate workers. Both men and women engage in this work but the feasibility study for this village did not undertake a needs assessment either. The project has therefore neither considered mainstreaming the gender concerns in this village hydro project.

Following review of the feasibility study report of Renewable Energy Development Co. (Pvt) Ltd by the Energy Forum the following basic facts were revealed:

Number of Families	28
Tapped Stream	Umandadola
Waterfall involved	No
Distance to the nearest CEB grid	5 Km

#### **Energy cost comparison**

*For an average household*

No of kerosene bottle use per month 18

Cost of kerosene bottle SL Rs 75/-

Cost for kerosene per month SL Rs 1,350/-

There are 8 Television sets in the village powered by car batteries

Cost for battery charging SL Rs 225/- (need twice per 3 months)

#### **Plant design parameters-**

Head	51m
Flow	24 l/s
Expected capacity	6 kW
Total length of transmission line	4 km

**Break down of capital cost**

Civil Works	SL Rs 746,000/-
Turbine	SL Rs 520,000/-
Transmission line	SL Rs 450,100/-
Other	SL Rs 25,000/-
<b>Total</b>	<b>SL Rs 1,741,100/-</b>

**Reasons for the delay in completing the project-** It is very difficult to get environmental clearance from the Central Environmental Authority. Payment for environmental clearance was made to the CEA three months in advance, yet construction work cannot start until they approve the project.

**Current achievements-**

1. Approved by the Government Agent (now known as the District Secretary)
2. Conducted five consumer society meetings. Without lighting in the village in the evenings, society members have to sacrifice valuable working hours to attend these meetings. Despite the fact that construction has not yet started, members still attend these meetings, demonstrating their commitment to the success of the project.
3. Collected the shares from the villagers
4. Opened the bank account
5. Registered under the RERED project
6. Approved the design verification

**Current Officials**

President	Mr. M. D. Bandara
Secretary	Ms. K.M. Gnawathi
Treasurer	Mr. M. Nimal Dissanayake

**Stakeholders and subgroups**

Stakeholders	Sub Groups
Sponsoring agencies	Sabaragamuwa Provincial Council RERED Project-World Bank
Implementing agencies	Electricity Consumer Society -Civil work
Supporting agencies	Renewable Energy Development Company (private) Limited (REDCO)
Target community sub group (Men/Women)	1. Small scale tea planters 2. Estate Workers

## **Recommendations for future activities**

The feasibility studies of these two micro hydro schemes have not analyzed the gender concerns of the villagers.

Hence it is recommended to:

1. Conduct discussion session on gender mainstreaming with ECS members – 6<sup>th</sup> May (already done)
2. Conduct gender disaggregated needs assessment and resource mapping
3. Assist the ECSs to identify a gender goal
4. Assist the ECSs to design concrete activities to address women's energy needs
5. If the need is apparent, assist the ECSs to develop business plans for income generation for women.

## **Annexure 4: Capacity Building Program Report**

### **Incorporating Gender concerns in Energy Forum projects on electrification through micro hydro schemes in the Koshene Panvila and the Niri-Ella Electricity Consumer Societies**

#### **A brief report outlining the outcomes of discussions and capacity building programme for the members of the two ECSs**

##### **Contents**

1. Objective of the workshop
2. Methodology
3. Situation assessment, Umandadola Electricity consumer society
4. Situation assessment, Koshena Panvila Electricity consumer society

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Energy Forum**

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## **A brief report outlining the outcomes of discussions and capacity building programme for the members of the two ECSs**

### **1. Objectives of Workshop**

Energy Forum held a workshop with officials of the Electricity Consumer Societies (ECS) from the two micro hydro schemes selected for the ENERGIA programme to incorporate gender concerns in energy projects. The Chairman, Treasurer and Secretary plus two committee members attended from both the Umanda-dola ECS and the Koshena Panvila ECS.

There were three primary objectives for the workshop:

1. Conduct gender sensitization exercise with ECS officials and explore the possibilities for incorporating gender concerns into the energy planning process
2. Identify two or three candidates from each ECS who would be interested in participating in the project and assisting with the gender disaggregated needs assessment
3. Carry out initial situation assessment and discuss what could be done to improve women's lives and livelihoods

### **2. Methodology**

One combined focus group session was held with officials of each ECS in attendance (ten attendees in total). The gender sensitization exercise was carried out with all attendees present with the aim of making them reflect on how gender concerns might currently be neglected in the energy project planning process and how these might be addressed in future.

The initial situation assessment was carried out with all attendees present and the group responded to the relevant questions posed to help EF build a clear picture of the progress with the energy projects and the situation on the ground. Finally, the groups were separated into two groups, one of men and one of women to discuss what things they thought could be improved with regard to women's lives and their livelihoods.

### **3. Situation Assessment - Umanda-dola Electricity Consumer Society**

#### **Scheme Details**

Capacity	- 6 kW
Families expecting to consume electricity	- 26
Electricity per household	- 230 W

The Umanda-dola micro hydro project was initiated in July 2007 and the plant is not yet operational. Although payment has been made to the Central Environment Authority, the members have been unable to start the construction work as they are still awaiting approval from the Central Environment Authority.

#### **Demographic Background**

##### **Educational levels**

Education level	Age	Percentage
Ordinary level exams	below 30 yrs	60%
	below 20 yrs	100%
Advanced level exams	Below 30 yrs	7% -Female 3% -Male
	Below 20 yrs	7%-Female, 3% -male

20% of the elder generation (above 50 yrs old) is unable to write or read.

### Income sources

Tea plantations of over ½ acre – both male and female workers

Estate workers – both male and female workers

Gem mining – only male workers

Laborers earn over Rs. 5000/- per month, while tea planters earn over Rs. 7500/- per month.

### Village Societies

There are five other societies operating in Umanda-dola:

1. "Dayaka Saba' society (temple development society),
2. Samurdhi society (government support facility),
3. Funeral aid society,
4. "Gemi-Diriya" society (village development society),
5. Estate workers housing cooperative society.

### Electricity Consumer Society Composition

Of the 26 families that originally signed up to the ECS, all 26 remain members. A further 23 families live in the village but they decided not to sign up to the scheme. 21 of these families live in line houses. Various reasons were cited for lack of membership:

- lack of awareness of the project
- no interest in getting electricity through the project
- a belief that given the capacity of the plant, there would be a lack of capacity if more than 26 families were members
- those working as laborers had difficulty in accessing the capital cost (SLR 5000 for construction, plus an additional loan for the machinery).

Of the 26 member households, five are female-headed. There are five society officials, two of whom are female. Of the seven committee members, one is female. It was explained that more women were not willing to be committee members as they did not feel comfortable or secure carrying out some of the expected duties of committee members. If there was a power cut due to households using electrical equipment which they were not supposed to use at certain times of day, committee members are required to reprimand those householders. Women did not feel confident to reprimand other villagers and there are also often large distances to travel between houses which the women would not be happy to cover. They also felt unsafe working after dark.

At the ECS meetings, around 40% of attendees are female. It was explained that meetings were arranged for the afternoons when most women are less busy so would be able to attend the meetings (after finishing the household chores in the morning and after making the lunch).

When asked whether there was an equal opportunity for men and women to have a say at the meetings and to take decisions, the attendees responded that women were able to speak freely at the meetings and that the men and women generally took decisions together.

### **Uses of Electricity**

There are no plans to use electricity in communal areas or for industries in Umanda-dola.

Most common uses of electricity were expected to be for CFL bulbs to light homes, irons, televisions and radios. It was expected that electricity would provide benefits by providing lighting for children to study, to learn about the world through watching television, for ironing clothes, for lighting the house (which would also make it easier to work in the kitchen), by providing security through lighting the exterior of the house and it would reduce outgoings for kerosene. There are currently 24 televisions in the village, powered by car batteries. Villagers tend to watch television between 8 pm and 9.30 pm, primarily watching news programs and dramas.

Those villagers who had decided to sign up to get electricity had generally done so at the request of their children, although the parents would ultimately take this decision together.

### **Stakeholders**

#### **Beneficiary Subgroups:**

Beneficiaries of the project were identified as follows:

Tea planters –more than 2 acres

Tea planters –about ½ acre

Estate workers

#### **Other stakeholders:**

Funding Agency: Sabaragamuwa Provincial Council

Sponsoring Agency: RERED Project (World Bank)

Developers: REDCO Private Limited

### **Current social problems identified**

1. Poorly maintained inner roads in the village
2. Lack of community hall
3. Problems arisen due to illegal liquor
4. Poor public transport links, unreliable bus services

### **Proposals for income generation**

1. Grocery store – using electricity for lighting and refrigeration
2. Food drying enterprise – jak fruit, pepper and rubber sheets
3. Tailoring shop – using electricity for lighting and sewing machines

#### 4. Situation Assessment - Koshena-Panvila Electricity Consumer Society

##### Scheme Details

Current Capacity	- 5 kW
Expected future capacity	- 14 kW
Families consuming electricity	- 70
Current electricity per household	- 70 W
Expected future electricity per household	- 100 W

Work on the Koshena-Panvila plant commenced in 2001 and it became operational in November 2003.

A number of problems with the plant were identified by the members as follows:

- Insufficient capacity generated, meaning insufficient power per household
- Frequent power cuts
- Plant is not properly secure so there is a danger of accidents
- There is no technician to repair faults
- As the main grid has been extended to the village, some members have opted to obtain a grid connection

All of these factors have contributed to generating dissatisfaction among participating households, meaning that members are less active in the project which in itself further compromises the success of the project.

##### Demographic Background

##### Educational levels

Education level	Age	Percentage
Ordinary level exams	below 30 yrs	95% - Male, 60% - Female
Advanced level exams	Below 30 yrs	50% - Male, 20% - Female

2% of those over 50 is unable write or read and 100% of the younger generation can write and read.

##### Income sources

Casual laborers, both male and female	- 75% of the villagers
Government jobs, both male and female	- 10% of villagers
Private enterprise, both male and female	- 10% of villagers
Samurdhi beneficiaries	- 5% of villagers



## **Income levels**

Monthly income below Rs. 5000/-	- 20 people
Monthly income of 5000/- to 10,000/-	- 100 people
Monthly income of 10,000/- to 15,000/-	- 120 people
Monthly income of 15,000/- to 20,000/-	- 35 people
Monthly income more than 20,000/-	- 5 people

## **Village Societies**

There are eight other societies in operation in Koshena-Panvila:

Funeral aid society, Village development society, Agricultural society, "Samurdhi" society, Community water society, Temple development society, Cooperative society, Nursery development society

## **Electricity Consumer Society Composition**

When the project was initiated, 100 households were members; this number has now dropped to 70, primarily due to the lack of power plant capacity.

A further 210 households elected not to participate in the scheme and their main reasons for this decision were that the distances between the houses and the power plant were too far and some are using solar panels to generate power.

Out of the 70 member households, 30 are female-headed. There are five society officials and three of these are women. Out of the ten committee members, three are women.

Similar reasons were cited for the predominance of men as committee members. When providing electricity for 70 consumers, it means that the area to cover between households is large. If there is a power drop or a trip at the power plant, committee members visit the houses to find out who had been using a prohibited appliance or a trained technician goes to the power house to flip the trip switch. The women were not willing to walk the required distances and were uncomfortable travelling to other households as they did not feel confident carrying out this activity and they were concerned for their safety.

At meetings of the Electricity Consumer Society, 70% of attendees are women; this is because the women are very interested in the success of the project.

When asked whether there was an equal opportunity for men and women to have a say at the meetings and to take decisions, the attendees responded that women were able to speak freely at the meetings and that the men and women generally took decisions together.

## **Uses of Electricity**

Currently there are no industrial uses of electricity in Koshena-Panvila. Electricity is used communally for lighting the village Bo Tree (part of the temple).

Electricity is used for CFL bulbs for lighting, irons, televisions, radios, rice cookers, heaters, and two private water pumps. After 5.30 p.m. it is prohibited to use water pumps, irons, heaters and rice cookers. Having electricity was useful to children for studying, for ironing clothes, lighting the house (which also makes it easier to work in the kitchen) and it reduces outgoings for kerosene. Electricity is also used for phone charging which allows access to the easiest form of communication. Torches are also charged

There are 24 televisions in the village and all family members watch programs, generally news broadcasts and dramas between 8 pm and 9.30 pm. 95% of houses own a television. Only 3 families do not own one.

All the family members together would take the decision to sign up to get electricity.

### **Stakeholders**

Beneficiary Subgroups: Key beneficiaries identified were Members of the society. It will be necessary to carry out further consultation to define subgroups.

#### **Other stakeholders:**

1. Funding Agencies: Provincial Council, Hatton National Bank-Loan
2. Sponsoring Agency: RERED Project (World Bank)
3. Developer: Udayaratne Hydro power

#### **Current Social Problems Identified**

1. Poor state of repair of inner roads in the village
2. Need a technical training centre
3. Need support to start small scale industries

#### **Proposals for Income Generation**

1. Tailoring shop
2. Communications centre
3. Hairdressers
4. Spices and grain selling – using electricity for a grinding mill and a coconut oil extractor
5. Selling dried food – using electricity for a food dryer for jak fruit
6. Concrete block manufacturing

#### **Improvements Identified**

The men and women were separated into groups and asked to identify areas where women's lives and livelihoods could be improved.

#### **Improvements Identified by the Women's Group:**

- Follow self-employment opportunities

- Construct roads and improve transport facilities
- Stop selling alcohol in the village
- Improve health facilities
- Improve the physical safety of women (also related to alcohol problems)

**Improvements Identified by the Men's Group:**

- Stop alcohol abuse
- Home-working to improve incomes
- Provide better electricity capacity to ease burden of household work and allow more time for income generating activities
- Use electricity to pump water into the house to save time and make household work easier
- Solve marital problems