

# Sharing Workshop on **GENDER CONCERNS IN RENEWABLE ENERGY OPTIONS OF SOLAR AND BIOMASS SYSTEMS**



Organized by UNIFEM (now UN Women), South Asia Sub-regional Office  
and Heinrich Boll Foundation (HBF) India

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## 1. Background

A sharing workshop meeting was organized as part of a collaborative project on **Gender Concerns in Renewable Energy Options of Solar and Biomass Systems** undertaken by UNIFEM (now UN WOMEN) with the Heinrich Boll Foundation (HBF) to understand and contribute towards social knowledge and policy development, on the ways in which women and men use, conserve and participate in the benefits of two renewable energy systems: Solar & Biomass.

The workshop participants included 20 people from HBF, Self-Employed Women's Association (SEWA), The Energy and Resources Institute (TERI), ENERGIA-ASIA, Rajiv Gandhi Mahila Vikas Pariyojna (RGMVP), Appropriate Rural Technology Institute (ARTI), Technology Informatics Design Endeavour (TIDE), United Nations Development Programme (UNDP), and Programme on Women's Economic Social and Cultural Rights (PWESCR) and UNIFEM (now UN Women). The workshop was intended to be an interactive and informal session where all the participants were expected to share their experiences and concerns on the subject area. The forum provided a valuable opportunity for participants to seek critical inputs and perspectives from grassroots organizations on the subject of gender dimensions in renewable energy.

## 2. The Opening

Anne F. Stenhammer, South Asian Regional Director of UNIFEM (now UN Women), opened the discussion. With her prior experience as the Deputy Minister for Development in Norway, she shared her insights on some major areas of concern about gender equality and women's empowerment in development.

Welcoming participants to the Consultation Meeting on Gender Concerns in Renewable Energy Options of Solar and Biomass System, jointly organized by Heinrich Boll Foundation and UNIFEM (now UN Women), South Asia Sub Regional Office, New Delhi, Anne Stenhammer highlighted three pillars of UNIFEM's (now UN Women) work:

1. Strengthening women's economic security and rights including renewable energy and climate change.
2. Reducing violence against women and HIV/AIDS
3. Achieving gender equality in democratic governance in times of peace and conflict

Interestingly, in the recent Cancun negotiations, renewable energy has emerged as one of the three strategic concerns in addressing climate change impact, the other two concerns are bio energy and eco system services. UNIFEM (now UN Women), while recognizing the importance of renewable energy as a mitigation measure, has begun intervening to ensure that gender dimensions are not overlooked in climate change policy and praxis efforts.

This, rather informal and interactive meeting aims to learn from participants' work and

studies in the background of UNIFEM's (now UN Women) field observations in the three states (Gujarat, Maharashtra and Karnataka) of India on the following: how women are engaged in controlling indoor air pollution; in building and using smokeless stoves; and in management of solar and biomass energy systems.

The workshop was intended to be a sharing forum to discuss major concerns in renewable energy sector particularly those related to understanding gender roles in renewable energy policies and women's engagement with use and management of energy infrastructure.

While acknowledging that any discussion on climate change and renewable energy was invariably too complex and nuanced to be conclusive, Anne Stenhammer emphasized the need of active and uninhibited participation from all the members at the meeting. Periodic deliberations on climate change and renewable energy resources are important for drafting relevant policies, and the involvement of women in such negotiations is very important in ensuring that policies are gender sensitive to the constraints and compulsions of a woman's daily existence. The ongoing efforts to draw women into mainstream discussions on climate change and its effects on their livelihood were seen as welcome change.

Shalini Yog (HBF) stated that HBF endeavors not only to highlight the causes of crises arising out of globalization but also to look for solutions to these crises. Paying special attention to the gender perspective in various scenarios, the HBF's work in the field of globalization primarily looks into food security, climate change and resource policies. Among these, the focus on climate change covers the twin aspects of mitigation and adaptation to new and renewable sources of energy. With climate change manifesting itself rapidly, inequalities are increasing and so is degradation of the environment. Therefore the pursuit of climate justice has put foremost the issue of gender justice as an integral policy of HBF's work around the world.

Sanjay Vashist of HBF, shared his experiences from the Cancun conference, which he had recently attended, and informed the workshop of some of the important outcomes arising from the conference, namely:

- The conference concretized the path to create a green fund of US \$ 100 million. The authority to release funds will lie with the UN secretariat on climate change;
- Composition of the members of the climate fund will not only be representative of both developed and developing nations, but will also be gender-balanced;
- The dispute about 'who will get what amount' seemed to be resolved; it was decided that the amount will be agreed according to the level of vulnerability and the definition of 'vulnerability' was also set. Women were prioritized as a vulnerable section of society, hence increasing the resilience of women to the ramifications of climate change was recognized as a core area requiring attention.

### 3. Setting the context

In setting the context, Govind Kelkar said that during this transition period as we are making shifts towards a low carbon economy in almost every aspect of livelihood, it is important to incorporate the gender dimension at the outset, in order to ensure sustainability of alternate technologies in the long run.

UNIFEM (now UN Women) commissioned a scoping study with the following objectives:

The scoping study has been undertaken to:

- To capture the existing scenario and programs for meeting women's energy needs in the household and for productive uses thus securing livelihoods
- To analyze the strengths and deficiencies of selected programs and projects in the solar and biomass energy space
- To identify barriers that hamper a gender mainstreamed approach to energy access at the community level
- To suggest intervention options for climate neutral energy access for reducing women's drudgery and securing their livelihoods.

The study has been limited to biomass and solar energy intervention with the focus on understanding of the issue from a grass root perspective. The methodology began with a literature survey of the current status and practices adopted in India in the area of biomass and solar energy for domestic energy and for securing women's livelihoods with attention to:

1. Undertake an historical overview of gender questions in energy research since the 1980s (oil crisis). An important aspect of this involved looking at women's work and its significance for total production, a perspective that raised the question of renewable energy source, including the energy expenditure of women's labour. It has also led to a broader shift in thinking about energy with linkages to women's gendered positions and reduction of poverty.
2. Review of literature related to gender, energy and climate change linkages, as it emerged following the COP-14 at Bali, Indonesia. Some major components of these linkages included: indoor air pollution and health and the cleaner energy for cooking, a contribution towards mitigating climate change; and policy considerations with regard to recognizing women as agricultural producers and informal sector workers, and hence promote the use of energy efficient equipment and commercial energy that directly increases women's economic agency and productivity in income producing activities.
3. A series of discussion with women and men in renewable energy field sites, such as barefoot solar engineers in Rajasthan and women's participation in distributed generation (DG) technologies and gasification of biomass in Karnataka. It is assumed that women's role in renewable energy sector may be changing over time, and in particular, it may change in the future because of increased responsibility for food production, meeting livelihood needs and agricultural changes or because of deliberate local policy centered on women's empowerment. There is, therefore, a need for a range of monitoring indicators to assess the gender dimensions of change in renewable energy, particularly in the three

domains of availability, access and end-use of renewable energy services.

Seeing women and the poor as agents of their own change requires that we pay attention to not just well being narrowly defined as the consumption of various goods and services, but also at the capabilities of these changes. Whether women and the poor are able to utilize an opportunity depends on their capabilities. For instance, their own ownership of capital, and land, their access to knowledge and their right to control and use their own income. Such crucial factors from the non-energy domain are to be included where it is felt that they are important to the outcomes being studied.

4. In the concluding sections, we move towards the critical question of renewable energy policies, as part of the larger question of alternatives for the development of global energy sources. Gender equality and empowerment of women are seen as an embedded aspect of the approach to overcoming human induced inequality and public invisibility of women's technological contributions to society and energy economy.

#### **4. Why the Study**

In the wake of growing climate change hazards and food crisis, people are shifting to renewable energy for a life that is environmentally sound, sustainable and equitable. That essentially requires the creation of a natural biodiverse system through a circular economy of cooperation and reciprocity; a system that would allow a reinvigoration and regeneration of itself. Importantly, social and gender equity in use and management of biodiverse resources, and its regeneration with transition to a low carbon economy provide an opportunity for innovation and creating new jobs and new markets for women and men. There is policy silence on the gender dimension or on women's role in management of energy.

The National Solar Mission of India has the goal of establishing the country as a "global leader in solar energy" by installing 20,000 MW in solar generation capacity in a short period of 10 years, by 2020 and as much as 100,000 MW by 2030. These efforts are directed to making solar energy achieve parity with coal-based thermal power, which currently accounts for 70 percent of electricity generation in India.

The biomass energy generation programme largely implemented by the Ministry of New and Renewable Energy (MNRE) has the main objective of promoting technologies for optimum use of the country's biomass resources for grid and off-grid power generation. MNRE provides a subsidy of 90 percent of the cost of various renewable energy devices for the Remote Village Electrification Programme.

In a visible scenario of renewable energy developing in the country, a recent "Gender Analysis of Renewable Energy Policy in India" (IRADE-ENERGIA, 2009: xi) noted that the renewable energy policy related to sources such as wood lots, biogas, LPG and solar energy, "needs to be supported by programmes for gender equality and social relations enacted through appropriate institutions at the micro- and macro-levels." Further, questioning the budgetary outlay of 12.67 percent of the total MNRE outlay for women's

specific energy needs, the above document noted, “One of the reasons for the imbalance in intra-household inequities, with various surveys showing that women are not even equal beneficiaries of grid electricity as they do not read and have too many work pressures to enjoy the benefits of electricity.”

Prior to the Gender Audit of National Renewable Energy Policy in India (2008-09), the World Bank sponsored EnPoGen studies in India (2008-09) (<http://www.worldbank.org/astac>) recognized the inter-linkages of energy, poverty and gender problematic. Despite such concern about the complexity of inter-relations and acknowledging the need for inclusion of women’s interests and needs in energy policies and programmes, a great deal of research has concentrated on energy related problems, excluding gender analysis in the methods of studies and limiting itself to a techno-economic focus. There was no attempt made to focus on small-scale, management-intensive activities done by women, with participation of women in local renewable energy programmes, and sensitivity to the significance of indigenous knowledge and practices in energy conservation and use.

Engendering of energy policies began in the 1980s with the energy / oil crisis. It was during this period where the role and involvement of women as workers and end-users started to be more closely examined. It is important to realize that at grassroots level, women and the poor are agents of change, and in some way or the other, involved in the generation and regeneration of energy. However, both women and the poor do not possess requisite capabilities to do this effectively. This is a vulnerability factor and the focus now, therefore, should be to develop those capabilities in women by encouraging access to knowledge and the right to earn and control their income. It is vital to include the vulnerability of women into the energy-generating domain. Women should be increasingly regarded as managers and generators of energy instead of mere consumers.

The main aim of today’s discussion is on Gender Concerns in Renewable Energy Options of Solar and Biomass, that is to comprehend and make a contribution towards creating social awareness on how energy is used and how it can be conserved and recycled. Participation of both women and men is essential for availing benefits of the renewable energy systems. Our field visits have looked into the two major questions:

1. Gender dimensions of renewable energy policies;
2. An assessment of the existing realities of gender roles in renewable energy systems.

Whilst agreeing that energy and time-efficient cook stoves are important elements in delivering gender justice, Kelkar stressed efforts should not be limited to women’s use of stoves and as end-users of energy. Instead their role as managers and producers of energy be explored, small-scale management intensive activities done by them be captured and their indigenous knowledge as well as practices in energy conservation/ use adopted by them be investigated and recognized

An intended outcome of the proposed research on gender and renewable energy is a set of policy recommendations for gender equitable distribution of socio-economic benefits in areas of health, schooling and productivity in agriculture and micro enterprises, increase in women’s capabilities for food security and governance of sustainable energy use.

**Field Visit Insights:** During field visits conducted for the proposed study, it was seen

that:

- There is noticeable resistance from men in buying biomass for cooking and improved cook stoves.
- Self-help groups (SHGs) have been reported as enabling institutions for increasing women's negotiating powers at home for biomass equipment and solar panels
- Labour costs of women are not fully realized, for example, when women are engaged in family-owned agricultural work, and cooking and caring for the family, such tasks do not come under the domain of income-earning tasks
- Caste factor is embedded in the gender question—a woman making smokeless *chulahs* would not take the product to a lower caste house, as then she would not be allowed to enter a higher caste household.
- Wood has to be considered as fuel, however, regeneration of wood also has to be kept in mind
- Women's role in fuel management is totally ignored. Therefore, a woman's capacity in the generation of energy is also ignored. In this context, slow but perceptible change is indeed being observed. For example, rural women in Karnataka have been known to go from house-to-house motivating homemakers to change over to renewable sources of energy.

## 5. Mitigation and Adaptation for Khush hali

Mitigation, put simplistically, implies the development of techniques to reduce pollution; adaptation would indicate adjusting our daily lives in terms of habits, practices and choices to deal with the changes and degradation owed to climate change. In rural areas, the focus should be more on adaptation than mitigation—renewable energy sources should be used to build resilience among village communities as they face the impact of climate change, and it is in this context that women emerge as key players. Therefore, women's participation in the process of adaptation to and adoption of renewable sources of energy for sustaining livelihoods should be strengthened

It was discussed that in order to ensure the success of renewable energy programme, it should be approached not only from the perspective of mitigation but also from the point of view of fulfilling women's needs. When new technology is provided to villagers, mitigation is inevitable. For example, a conventional stove will burn two kilos of fuel per hour whereas an improved stove will burn one kilo fuel per hour. So the element of mitigation should be inbuilt in innovation.

An important point made by Svati Bhogle was that women in most rural scenarios are not concerned about the significance of personal '*khushali*' (well-being). To almost all these women, happiness lay in providing adequate food and health care for their families and looking after children. This highlighted the fact that many women were not even aware that they, as individuals, might have some needs of their own which are equally important for their personal happiness and well being. However, at the same time, most women expressed a strong desire to earn and control money. Thus, it was felt that it is important for these women to realize their needs; and in order to express their needs, be able to boldly speak up and take steps to fulfill them. Only in this could true empowerment lie.

Relating this to energy access, Bhogle pointed out that while every woman wants to have

money, they do not have the means to generate that money. As a result, many poor women get bogged down by daily drudgery without any financial returns. Bhogle reiterated the core issue was that of creating sustainable livelihoods. According to her, while stoves can be a source of income-generating activity, more such activities/ products were needed in villages. This would be possible through greater energy access in villages, whereby women can make better products and sell the same in rural and urban markets as a means of generating income.

Bhogle reiterated that if a woman has bought a product out of choice, it is very likely that she will use it and maintain it properly. She highlighted the importance of breaking the mindset that for a woman to think of her own well being would be considered selfish. Women at grassroots level should be encouraged to think, voice their demands, and regard these demands as valid for the betterment of themselves and consequently their families.

Kelkar stated that women should be allowed to make choices from a range of products, instead of limiting women to one type of product. Once allowed to exercise her choice, a woman thinks and evaluates, and if she is a part of an SHG, she motivates others to participate in that process. While making this choice, women consider factors such as type of cooking, family size, and cultural influences before finalising the product. Research also shows that women tend to go for green technologies more often than men.

## **6. Urja Initiative by SEWA**

Adaptation is linked to awareness generation and in this context Namrata Chauhan elaborated on SEWA's Energy Programme (Urja), which started in 2006. Around 1,500–2,000 villages are covered under this programme. Field workers addressed small groups of village women, SHGs, and also undertook door-to-door demonstrations, portraying the benefits of solar lights, in order, to promote the cost and energy benefits of the product to the village community. Surajben of SEWA, was one such woman whose house did not have any electricity. Today, she is a regular user of the solar light and has been benefiting from its radiance for the past four years. And not only that, today, she is an active SEWA worker who markets the benefits of renewable energy products to her fellow villagers.

Chauhan clarified that while SEWA Bank acts as the financier, Solar Electric Light Company (SELCO) provides the technology for alternative power and the energy-saving electricity equipment/ products to the villagers. SEWA field workers engage women in SHGs to spread the word about the benefits of these products and encourage them to invest in renewable energy and energy efficient equipments. Apart from providing a thirty per cent subsidy on these products, SEWA Bank also gives loans at very low interest rates. SEWA engages in relationship-building measures, such as, providing maintenance services, home-visits for installment collections, training women in making smokeless stoves and engaging poor women in urban centres to take up income-generating activities. Women engaged in the making and setting up of smokeless *chulahs* can earn up to Rs 100-150 for their services.

SEWA also actively encourages women to take loans and invest in new energy efficient equipments. The loans allow women to purchase solar lanterns and smokeless gas stoves. Further, they are used to light up vegetable stands and tea stalls. They have also started

Energy Audits to create awareness among villagers on efficient use of grid electricity, use of low watt bulbs and to share innovative ideas on proper utilization of solar energy during the daytime for adequate ventilation and light (and thus save energy on electrical devices in the day).

Following this Vashist raised some pertinent queries regarding the promotion of solar light in comparison to grid electricity in rural areas. Questions raised include:

- Is solar light more expensive?
- Is it easy to promote solar light in comparison to grid electricity?
- What kind of maintenance is needed for solar energy-driven products?
- Do solar products result in an increase in income?

Chauhan clarified that while maintenance was free for a period of initial one year, training was also provided to women and their family members on the basics of maintaining the solar panels. SEWA staff periodically checked on the cleanliness and condition of the solar panels when collecting installments.

Addressing the query of income generation/ enhancement, Chauhan said that there were instances where women converted products to sources of income. Citing an example, she said that a woman invested in buying 10-15 batteries with a loan from SEWA Bank. She recharged these batteries using the solar charger in her house. She then used these to power solar lanterns, which she rented out to hawkers and vendors, charging a per day rent for the lanterns.

## **7. Energy Uses**

A question came up that what percentage of villagers used solar energy products in their income generation activities to increase their income (so that the enhanced income could be used to pay off loans) and how many of them bought these products to increase their ease of living without concerning about the increase in income. This was met with the general response that rural consumers invariably looked for ease of living with the new/ additional energy first, and income generation came second. According to Priyadarshini Karve, ARTI Pune, with new or added energy access, people looked to first buy a television and then thought about their children's studies before even considering enhancing their income using the additional energy. At this juncture, Shalini Yog added that a study in Kenya on gender involvement in energy consumption showed that while men listed television as one of the priority needs, women were not even asked about their requirements vis-à-vis electricity. Thus, while men equated leisure to electricity, women were not accorded the opportunity to think about the various things they could do with or benefit from electricity.

Karve provided the example of the Sarai Cooker where, whilst manufacturers stressed on the environment-friendly aspect of the product, the reality of the end-user was very different. People bought the Sarai Cooker because it saved time, rather than for its income-generation potential or environment-friendly features. Thus, it is also important that the needs and inclinations of the consumer be noted and prioritized.

The SEWA experience shows that even when grid light is available, villagers prefer to use solar light because grid electricity had to be paid for and proved costlier in the longer

run. In fact, villagers alternated between the two modes of energy, and combined grid power with judicious use of solar lights. Consequently, women managed to save money. Salma Bibi from SEWA informed the group that a minimum of Rs 200 could be saved in a month by judicious use of energy resources. She explained the annual saving was significant for her. She further added that besides costs, solar light does not add to the daily tension as the unreliable grid power, which goes off at any time, causing disruption to important household chores.

Svati Bhogle drew attention to the fact that energy needs of an urban user were very different from that of a rural consumer. The energy requirements also varied from region-to-region (as in the plains versus hilly regions; or the hilly/ mountainous regions versus coastal areas). She said energy needs, therefore of women too, would vary in different areas, and stressed one should look to create products and innovations that would cater to the specific needs of the end-user.

## **8. Energy and MFIs**

A discussion ensued on the kind of loans provided by SEWA Bank and those given by micro-finance institutions. While the latter strictly gave loans for economic activity, the former gave loans also to enhance ease of living with increasing income as an embedded aspect of such arrangement. Here, Bhogle added that micro-finance institutions are aware that loans meant for economic enhancement are also used for personal/ household consumption. Consequently, micro-finance institutions have also started disbursing loans with two components: one meant for consumption and the other for investment purposes.

It was also discussed and agreed upon that along with access to financial services to create new products as well as enable users to buy them, it is essential to create access to relevant markets to sell products. It was pointed out that in several cases, income-generating activities failed in the absence of necessary market linkages. Thus, each energy-related project should also take into account the local conditions and explore/create scope for selling products as well.

Bhogle noted, that wherever a grassroots level industry is already in place, access to energy has more of an impact on living conditions. Elsewhere, awareness needs to be created about energy systems and associated industries.

## **9. Energy Products and the End Users**

Speaking on the ever-changing needs of consumers, Ramesh Kumar Jalan, the climate change cluster coordinator at UNDP India, stressed that designs of existing energy-efficient products should be periodically modified to meet the dynamically changing demands. He also touched upon the aspect of waste management and said it was linked to renewable energy: waste can be recycled as natural fertilizers and compost and women should be encouraged to play a greater role in regeneration and recycling of waste material.

Continuing the line of modifying products to suit the needs of end-users, Karve said that

the subsidy programme for smokeless stoves with chimneys did not become very popular as cleaning of the chimneys became an issue. Women were responsible for the cleaning and maintenance but found it difficult to access and clean the chimneys attached to these stoves and they would not get any help from their husbands to do the chore. Hence, the starting point of any programme should be the client, even in the case of subsidy-driven programmes.

At this juncture, Soma Dutta from ENERGIA-ASIA, pointed out the need to improve the design of the smokeless stove and stressed that time should be given for behavioral change with respect to any new product/ innovation. If women were expected to create income from the energy resources available to them, energy projects should provide complete infrastructure for livelihood generation. Citing the example of micro-hydro projects, she stated that maybe only one in a thousand such micro-hydro projects had a central milling usage. She pointed out that China utilized similar projects to create low wattage water heaters that were effectively used to eradicate diseases.

Kelkar stated that while framing policies, various indigenous knowledge based practices should also be considered. For example, Karnataka has a tradition of using stoves with chimneys, whereas areas in North India do not have this practice. Installing stoves with chimneys in North India will pose questions like who will clean the chimney and so on, and this would also involve a behavioral change. Thus, products and policies should be designed keeping in mind the dynamics of the end-user.

## **10. Promotion of Renewable Energy Equipments through SHGs**

The discussion then shifted focus to SHGs. According to Bhogle, SHGs had the potential to create bonds among village women and also helped them to unwind after the day's hard work. SHGs were very important in the context of livelihood, but as far as decision regarding electricity or energy consumption was concerned, it was the individual household that played a major role. Here, Manika Nigam, Rajiv Gandhi Mahila Vikas Pariyojna (RGMVP), pointed out that in Rai Bareilly, SHGs play an important role in energy-related decisions as well. For example, SHGs would collectively decide to take a loan and invest in a solar charging unit, whereas individual families would buy lamps for their households. All the contributing members could use the solar charging unit to recharge the batteries of the lamps.

Several participants agreed that SHGs are instrumental in motivating others to take on new products. SHG members are able to influence others in their villages by demonstrating benefits of a particular product or programme.

Highlighting the above aspect, Bhogle narrated an incident with reference to a USAID package for an awareness programme for energy-efficient lights. Under this project, the SHG sold energy-efficient lights (LEDs and CFLs) and earned up to Rs 8000. Karve supported this by stating that the Sarai Cooker was sold and gained popularity using the same principle. The concept was first sold to SHGs which, in turn, motivated other village members to purchase the Sarai Cooker, having seen the benefits through live-demos.

## 11. Sudden Upsurge of Smokeless Chulhas

Discussion shifted to the importance and misconception about smokeless chulhas (cookstoves). Kelkar pointed out there has been a tremendous effort to reintroduce smokeless *chulhas*, which leads one to wonder about the sudden interest and zeal in this area. Bhogle felt the sudden upsurge in efforts is due to the realization that biogas has limited implementation, and Liquefied Petroleum Gas (LPG) is a non-renewable fuel; hence, the renewed interest in smokeless *chulhas*. Moreover, there has been an increase in the understanding on the linkage between the indoor environment and health. Kelkar added that there is data available which shows the positive impact of these smokeless stoves on the health of women. However, no measureable benefits resulted from health or education, where poor economic status of the household limits opportunities for transition to cleaner fuels and energy efficient stoves.

Bhogle strongly advocated that smokeless *chulhas* could provide tremendous opportunities of income generation for women. SHGs can act as distributors and market centers for these *chulhas*. Quality-control groups can be elected from within the local community since these women, being the end-users also, would be able to identify faults easily. There can be a local Business Process Outsourcing (BPO)-type setting for handling complaints and the local women can also be employed for this function.

Karve illustrated how energy-efficient stoves helped in household savings. She gave the example of a programme where villagers were provided with improved *chulhas* which saved about 50% fuel. This project, which started with individual houses, finally led to the electrification of the entire village. Fuel consumption did not increase as the amount of wood that was being used remained the same. The villagers next demanded an *attachakki* (*grindingmill*). For this, a biogas unit was setup to run this *chakki* using organic waste generated in the village.

Members at meeting expressed concern that the entire theory of women's empowerment was encapsulated in the concept of the *chulha* thus, viewing women only in their domestic roles, Implementation and management of the renewable energy industry should actually be the face of women's empowerment.

Kelkar reiterated that one must look beyond the *chulha* when it comes to women's access to energy and empowerment. She reiterated that emphasis should be on exploring the role of women as producers and managers of energy. She pointed out that 70% of rural women are involved in agricultural activities; a good percentage is involved in the informal sector. Therefore, if better energy-saving and energy-efficient devices are provided and managed by these women, they could utilize time saved on other productive tasks or for leisure.

Vashisht said that one of the outcomes derived from discussions on gender roles is that women should be given access to technology, they should be trained in the use of technology and timely feedback should be sought to enable modification and improvement of products and services, which is very important to suit the specific needs of the end-users.

In the context of energy-efficient devices available, women should be given the power to

exercise their choice regarding technology, products, financing options, etc. Products should be introduced with different models and variants.

## **12. Women as Managers of Biomass Energy**

Bhogle said that there are a number of opportunities for women as managers of biomass energy, which have not yet been explored fully. However, there is little clarity on their role as energy managers. Bhogle felt that an organization like SEWA can play a major role here in achieving this goal.

Expanding on the need to involve women as energy managers and giving them the technical know-how, Bhogle cited the example of the Urja centres in Madurai. Here, women sell fuel pellets at a very high price. However, these women are mere agents selling the pellets on a commission basis. They are only able to sell at prices dictated by distribution agencies. Women wished to rein in on biomass resources and set-up a facility where they could manufacture the pellets. Only then, they claimed, would they be in a position to control the prices. However, the private sector refused to provide the women with the technology, and they were forced to continue procuring the pellets from a central facility. Women were explicitly denied technology as it was a profit-making initiative and the women in our society are rarely allowed to be part of a profit-making venture.

There is a general perception that science is a supremely masculine domain. Due to this, energy access is also considered to be a male-dominated area. Therefore, more women-centric campaigns are required to break this domination and establish women as energy managers

## **13. Renewable Energy for the Cities and Grid Power for the Countryside**

All participants agreed urban areas are the higher polluters; however, the impact of climate change is generally seen greater in villages than in urban areas. At this juncture, Dutta questioned whether it was really necessary to regard rural areas as the selling centers for green technology, where the carbon footprint is so small, especially when compared to the vehicular pollution generated in a city like Delhi. Others contended that even if mitigation is happening in rural areas, it is leading to healthier lifestyles and local benefits will eventually translate into global benefits.

Further, while discussing energy issues, there should not be any discrimination between rural and urban sectors. The central issue was that of decentralization of energy. However, on the whole this issue has been equated to being an issue of decentralization of energy only in rural areas. Karve pointed out that decentralization of energy was quite possible in urban areas as well, where equally there were users of energy. Karve added that it was much easier to shift people out of a centralized supply chain to a decentralized one.

Karve shared with participants a proposed programme on urban waste management that she and her team are working on at present. She said that urban waste can provide a solution to urban energy issues. A waste-recycling habitat is being developed in Pune

where approximately 500 kg of organic waste generated daily can be converted into 50 units of electricity using a biogas unit. Here the idea is to use the waste-pickers association comprising of women who collect waste from house-to-house. Waste is separated into organic and inorganic waste. The women sell the inorganic waste to scrap merchants which is where their income comes from. Currently, the organic waste is not put to any use. Karve explained the project aims to partner with the women waste-pickers who will run the biogas unit. Fifty units of electricity produced by the biogas unit can be consumed by the habitat, thus saving on grid electricity. This can be considered as an example of a decentralized urban energy model and can also be a solution to rural energy problems.

Karve stated villagers no longer considered biogas units to be a sustainable energy model with the number of cattle coming down. She pointed out other organic waste material could be used to generate biogas. Community level waste aggregation and generation of biogas is highly possible and this same model can also be implemented for individual houses.

The plan should be to shift cities to renewable sources of energy, so that grid connected villages can avail an increased supply of electricity. The city can afford the cost of renewable sources of energy. Karve stated that in the diffusion of renewable energy sources, priority should be given to urban areas. She cited another reason for shifting cities to renewable energy systems. Allocating renewable energy equipment only for villages encourages the mindset that these technologies are being promoted in the villages as they are inferior in some way. She pointed out that if urban people start using energy-efficient products and technologies first, it helps in building trust in such technologies in the villages. Hence, if we want the rural areas to be shifted to renewable energy systems, the transition needs to start from the urban areas.

**SEWA Documentary:** SEWA then presented a short documentary on the work they have been doing in empowering women with income-generation activities and use of energy-efficient products. They showcased the Sarai cooker, the smokeless chulha (this was also an income-generating activity for women), solar lamps and biogas units.

#### **14. Addressing Challenges: Awareness on Renewable Energy and Products**

Chauhan explained the biggest challenge was creating awareness in rural areas. Once you have been successful in creating awareness, acceptance of the programme or product becomes easier. The next challenge is to impart technical know-how about equipment to the users. A simple fall-out like batteries going dead can lead to loss of faith, as they do not understand that batteries need to be replaced and that there is nothing wrong with the equipment. Therefore, constant awareness creation and educating rural women remains the most challenging aspect of the work involved in SEWA projects.

Bhogle felt the biggest advantage of SEWA was that SEWA Bank invested money in awareness generation and capacity building in villages. The bank regularly invests in live demonstrations for various alternative energy systems and equipment. All participants agreed that compared to television or newspaper advertisements, live demonstrations are

more effective in a rural setting. Since conducting live demos is not always cost effective, it is not always possible for manufacturers or distributors to carry out such programmes. Karve added that if the cost of live demos is added to the product price, then the product becomes unaffordable for villagers. Hence, SEWA Bank's investment in SEWA projects was greatly appreciated by all. The importance of such investments is heightened given that no government funding is available for marketing and awareness-building programmes for energy-related products.

It was also discussed that various proposals ought to be submitted to the government to create awareness campaigns on similar lines as the polio awareness programme. Such widespread campaigns with well-known celebrities explaining the hazards of air pollution, issues regarding women's health, including, respiratory health is bound to spread deeper among the masses. Once awareness has been created, it is much easier to reach out to the consumer and acceptance is much higher.

Kelkar added to the discussion that awareness raising is a very important aspect of development programmes and should be an important consideration in policy making.

## **15. An Integrated Energy Policy: Need for Convergence**

Karve felt that all kinds of energy requirements should be clubbed together for easier formulation of policies. It is usually the case that for easier management, an integrated energy programme is discussed. However, it becomes problematic when there are different ministries allocated for different energy sources, which makes it extremely difficult to take an integrated approach.

It is often the case that different ministries compete among themselves in the energy sector. And, in some implicit accountability for implementation, they keep passing the buck from one ministry to other ministry. Karve further suggested that one should look at the domestic household energy sector as an aspect of the well being and the commercial energy sector as an aspect of productivity.

Kelkar intervened to say that the distinction between well-being and productivity may not necessarily be opposed to each other. That leisure in-between periods of work actually enhances productivity. Other participants agreed with the women's need for leisure and rest. One participant added that leisure was very important for women, as it is a means of providing relief from the grinding drudgery of the day to day work.

**Priti Darooka** from PWESCR presented an observation from a fact-finding study conducted by PWESCR on Dalit women in Rajasthan. Two urban and three rural clusters were taken as the research base. When asked to name one thing as their primary requirement, she was surprised to hear women answer: 'We want electricity during the day, not at night'. She explained, the reason behind this request was that the water pumps functioned only when there was electricity, and when the electricity supply came at night, the women had to rush to fetch water from the pumps after the day's hard work. While fetching water at night, women also had to face the danger of snakes and dark roads, which raised security implications. The second problem faced by the women here was the

privatization of electricity. Privatization led to high costs (bills) which inevitably left the villages in darkness, as villagers cannot afford to pay such high bills.

Kelkar stated that villagers are often blamed for energy wastage due to lack of awareness. But at times, what looks like wastage is required for security and physical safety. Some village paths are kept lit all night to increase visibility to avoid snakes and also for safety of women and girls from potential sexual assaults.

Drawing attention to the discussion on gender roles and relations in the energy sector, Kelkar pointed out that issues pertaining to non-energy domain should be brought in the ambit of the discussion, as these are of importance while framing gender responsive policies. She especially referred to women's health in this regard. One of the ways of improving health conditions of women and infants is through providing smokeless stoves.

Additionally, there is the question of women's lack of voice and rights within the home and outside. Kelkar said that she had met with village women in Maharashtra who work on three different types of stoves for household purposes (solar, LPG and improved stove) whereas they have not had the right to exercise choice in other aspects of living. The women's roles remained confined to cleaning, cooking for the household members and agricultural workers employed by the head of the household.

Bhogle said that in Karnataka, the government announced free LPG for everyone. Campaigns were designed in a way which said 'free LPG'. End-users were not aware that only the stoves were free; they still had to buy the LPG cylinders

Karve wondered why the study is limited to explore gender concerns in biomass and solar energy systems. If the gender issue is linked with energy access, the energy source should not matter. To this, Kelkar responded that solar energy is important in India, as India expects to be the world leader in solar energy by 2020.

## **16. A Participatory Summing Up**

Kelkar requested summing up the discussion with individual inputs from all participants.

Karve reiterated that whatever may be the reasons behind the increased efforts to use renewable energy systems (main reasons being climate change and low carbon economy), whether in the rural or urban areas, priority should be given to the concerns of end-users, majority of whom are women. Campaigns need to be designed as per consumer mindsets and needs. If child health is a concern, we should say that this would improve child health. So as a seller of energy technology, we should design programmes according to the specific needs of users, in order, to increase levels of acceptance. As far as gender empowerment is concerned, one should not only look into energy accessibilities but also take into account other issues which are usually ignored like health, education etc.

Nigam said that renewable energy systems are more successful in villages owing to the involvement of women. Once women understand and accept the importance and utility of renewable energy systems, they are convinced. Also, when women exercise their right to select and buy, it makes them happy and increases their confidence. This also provides an opportunity to create a business module for rural women. They can participate in

spreading awareness and generate income by becoming distributors.

Rizwana stated that villagers in Rai Bareilly, where she works, did not realize the harm caused by traditional stoves, such as, smoke inhalation through kerosene and the imminent dangers of fire. SHGs conducted regular meetings to spread awareness amongst the villagers of the dangers. SHGs were also successful in promoting solar lamps and reducing the use of kerosene lamps through women.

Dutta raised the issue of women's choice as end-users of technology. Secondly, she also stated that all energy projects should have a different and unique approach. There should be an accountability process to track implementation. She mentioned two specific areas that need more research and attention, namely research in the biomass supply chain, and secondly, energy issues in urban slums.

Salma Bibi reiterated that development comes through savings and said that we should save whatever and whenever we can.

Chauhan said the relationship building with villagers is very important to build trust and create awareness. It is essential to interact with them regularly and understand their issues; otherwise they might feel they are being cheated.

Vashist appreciated the interaction with the grassroots-level participants and said that we should integrate learnings from grassroots in climate change policy frameworks.

Darooka stressed on the women's role and identity in society is being reduced by the function of cooking and taking care of kids. The care economy reduces women's role and opportunities of empowerment. It is important to link energy to women's economic status. She also stressed for a safe and secure environment for women, not only in rural areas but also in urban areas. A safe and secured environment will provide more mobility and opportunities to women. Moreover, climate changes impact gender norms.

Yog stated that whatever policies are framed should be done keeping in mind that they have to be implemented and the agent of implementation at the grassroots level are women. Overcoming gendered roles as a social norm has to be kept in perspective while framing all policies.

Bhogle reiterated that she wanted to focus on the special needs of women in the hilly areas. They are never heard as they are so remote geographically and unconnected. Their energy needs are much different because of the climate and terrain and their needs are left unexpressed. She also stressed on women's aspirations to earn and control money. All decision-making and policy-framing should be responsive to women's aspirations.

Muzna Alvi stated the focus should be on budgetary allocation for women in the energy sector. So focus should not only be from the perspective of policy and programme, but also from the perspective of finance. She also stressed that women should be involved in the designing of technology. It has been discussed that various models of stoves should be offered so that women are given a choice. Women should be involved in the designing process itself. This will help bring down costs of designing 10 different models and then re-modifying to suit specific needs.

G. Mini added the role of men should also be considered. Men, too, have responsibilities

and commitments in society and communities and need to work with women. Men should be sensitized on gender issues as a way of addressing gender concerns.

Agreeing with Mini, Kelkar briefly discussed experiences of working with men on different projects. The root of imbalance was well researched in a study on the development in masculinity due to social conditioning and other factors. It is widely recognized that there is need to sensitize both women and men.

Leena Patel stated the main realization for her from the workshop was that climate change is also faced with the same underlying issues of lack of participation and lack of empowerment of women, as other development areas. She agreed with Mini on the need to sensitize men as one way in addressing gender disparities. She raised a general question to this end on how to change societal attitudes and behavior which are adversary to women and which have been existence for centuries now.

Malvika Gupta agreed with Mini on the need to involve men in gender programmes and to sensitize men on gender issues in villages. When campaigns are organized in villages, instead of only targeting women, men should also be involved at all levels.

Vashist thanked everyone for their valuable inputs. He said a lot of lessons from grassroots have been derived from the discussion in the sharing workshop. All would be taking back new insights with them and these pointers will be of immense help in launching further researches and studies.

## **17. An Analysis of the Discussion with Implication for Future Work**

1. While suggesting the interventions, the sharing workshop discussion makes two important observations: 1) that increased biomass use would need to be accompanied by careful land management and land tenure entitlements for women; 2) more research is needed on the relationship between renewable energy systems and socio-economic contexts in which women and men are located.
2. Women are seen primarily as cooks, which by itself, is a wrong characterization of women's work as it overlooks their roles as agricultural producers, informal sector workers and managers of energy.
3. It is evident from the sharing workshop report that if gendered position of women is not addressed within the energy interventions, the power relations within the household and outside would not allow the project interventions to be effective, even in a project related to reduce indoor air pollution and related illnesses.
4. Policy consideration with regards to socio-cultural context of project interventions should seek to eliminate social, cultural limits on the opportunity cost of women's labour, i.e, promote end use of commercial energy that directly increases women's productivity in income-producing activities.

There is no automatic beneficial effect of indoor air pollution reducing measures on women, unless such interventions are linked to easing the drudgery of women

and increasing their productive roles such as providing commercial fuels for women's income earning activities. The resultant increase in the opportunity cost of women's labour and the need to economize on women's labour will also promote the household adoption of improved biomass technologies, the commercialization of fuel, and the switch to modern cleaner fuels, with their attendant health benefits.

Further, women's marginalization in energy interventions can be halted only by providing women and girls with unmediated access and control (not through the household or the head of the household) of productive resources such as land, trees, housing, water bodies and an enabling environment to make use of economic opportunities to work outside the home.

5. Women- centric research and analysis is needed to change male domination in the field of energy and recognize women as energy managers.
6. Capacity development of women for the effective use of energy and management of energy equipments.
7. Engaging men in enhancing the economic and technological agency of women within the home and outside.
8. Deepen research in order to understand knowledge gaps in the end use and management of renewable energy. How non- energy domain of gender relations tend to influence the energy domain and leads to misdirected policies for women ( eg, women's roles seen as cooking, cleaning in the household and at best as the end users of renewable energy).
9. Need to provide policy assistance and seek convergence of concerned Ministries in overcoming women's gendered roles in energy policies and programmes.



