Chapter 6
Lessons and Conclusions

In the following, we summarise the key findings, experiences gained, and lessons learned from the pilot project implemented in Bhutan, India, and Nepal over period of two-and-a-half years. These highlights of the key lessons learned and the conclusions emerging from the project are preceded by a brief overview of the project's major emphasis, approach, modalities used, and impacts.

Overview of the Project Approach and Experiences

The project was implemented in two hill and mountain settlements each in Bhutan, India, and Nepal to promote the integration of women in decision making and implementation, and in the management of household energy and water initiatives. The focus was on meeting basic household water and energy requirements (practical needs) and meeting women's productive and strategic needs (empowerment). This was done by helping women to organise themselves in order to identify their needs and roles and to implement energy- and water-related technologies. The underlying principle of the project was that new interventions for women in the Himalayas should aim to: 1) reduce the hours of work and drudgery that women are involved in; 2) minimise hazards and risks to health and life; 3) increase productivity; 4) enhance equity in the sharing of work and benefits; and 5) widen options for productive work by saving time and energy.

Approach and modalities

Groups made up exclusively of women were formed and implementation took a 'learning by doing approach' based around participatory action research. Women were placed at the forefront in the dissemination of technological options that catered to their needs (pro-poor) and helped promote environmental sustainability (pro-environment). Case studies were carried out to understand how women's roles and needs are incorporated in the use and management of energy and water resources. Gender analysis was conducted to identify water- and energy-related technologies to meet women's needs.

Training manuals were prepared in local languages on traditional and new energy and water technologies to train selected women as trainers during the training of trainer (TOT) workshop. The trained women trained other women on various water- and energy-related technologies. Observation/exposure visits and exhibitions of various technologies were also organised.

Seed money was provided to carry out demonstrations and to create a revolving fund (managed by the women's groups) for the purchase and maintenance of the technologies promoted. This seed money also supported the credit needs of women for income-generating and drudgery-reducing activities. In order to better capture the varied roles and needs of women in water and energy management, the approach and modalities utilised by the project were flexible. The entire implementation process was documented in various forms: training manuals; a video documentary; and policy guidelines for the future design, scaling up and replication of similar projects in the region.

Gender sensitisation

The project sought to sensitise all stakeholders, including community members, on the issues of gender and equity. Participatory workshops were organised to seek to change the attitudes of the communities involved towards women. In Nepal, sensitisation and awareness-raising training programmes were organised to encourage men to recognise and value the contribution of women to the family income. Women field extension workers were hired and were made responsible for the formation and training of the project groups. Sensitisation on these and other problems among women were achieved through training and group meetings. Social mobilisation for institutional capacity building was also addressed. Gender sensitisation and gender analysis focused mainly on raising the awareness and confidence of project participants and women beneficiaries. Gender awareness and sensitisation was incorporated mainly into general training programmes. The use of local organisations and their representatives as 'change agents' was another innovative aspect, contributing to the sustainable continuation of the project.

Technological interventions

Various fuel-efficient and drudgery-reducing energy technologies (such as improved cooking stoves, solar driers, solar lanterns, pressure cookers, and LPG) as well as water-related technologies (rainwater harvesting tank, infiltration well technology, the recharging of traditional water springs, sprinkler and drip irrigation) were promoted according to women's prioritised needs. Overall experience showed that women are realising multiple benefits from pilot interventions: saving of time, reduction in drudgery, improved health, better education of children, productive use of saved time, improved decision-making power, capacity building, and an emerging sense of empowerment.

Enabling support mechanism

Financing and credit arrangements are important for supporting income-generating activities for women. Realising the constraints faced by women in obtaining loans in the absence of collateral and legal rights to land, the project established a revolving fund to facilitate women's access to credit to promote income-generating activities. The project also encouraged women to save regularly. Women have demonstrated their ability to lend money on terms and conditions they have decided. They have also begun to borrow from formal credit institutions relying on their individual and joint liability as a basis for collateral. Besides widening their options for the productive use of time, an improved access to funds has helped the women taking part in the project to access technologies and to overcome a gender-biased lack of credit. In at least one project site (Dhankuta, Nepal) women are in the process of registering their group as a cooperative, which will enable them to access funds from formal financial institutions and government organisations. A women's welfare association was formed for the first time at the project sites in Bhutan, and is expected to promote the creation and mobilisation of community development funds.

Meeting productive needs

A variety of income-generating activities supported by the project (drip/sprinkler irrigation, sewing, food processing, beekeeping and so on) have widened women's options for using the time they have saved from energy- and water-related activities productively. These income-generating activities became possible through the revolving fund and the savings and credit

schemes that they are managing. Women have begun to generate modest incomes and report more control over the income they are generating. Overall, the status of women in the project is improving through the use of the new technologies, the management skills imparted by the project, and through interactions with new institutions such as banks and government line agencies.

Capacity building and empowerment: strategic needs

Women are appreciating that their organisation is a useful platform for coming together, nurturing social capital, building awareness, addressing their water and energy problems, resolving disputes, and initiating productive activities. The formation of SHGs and the strengthening of their capacity to plan and implement prioritised water- and energy-related, needs-based activities has empowered the women at the project sites.

The socioeconomic empowerment of women has also progressed, as many now do not have to approach moneylenders for small loans. They have the freedom to utilise the income they have earned. The confidence gained by the women in managing their own affairs is another substantive area of impact. Their husbands, families, neighbours, and communities regard them as successful and more knowledgeable. All these project interventions taken together have improved significantly the women's quality of life. A process of empowerment has emerged among the women and it is becoming very clear that women need not always be victims, but can become effective agents of change if they have the opportunity to manage their own lives.

Emerging Good Practices and Replicability

One major objective of the project is to establish good practices and then attempt to influence national policy through a demonstration effect, as well as advocacy and lobbying. Experience from Nepal shows that anchoring a successful pilot initiative to an existing national programme is an effective bottom-up strategy to scale up a good practice. For example the formation of a district coordination committee for coordination and networking with the district line agencies was instrumental in integrating the success of the pilot project in Dhankuta into an existing, nationally recognised village development programme currently active in 60 out of 75 districts of Nepal. This decision has already had multiple policy impacts. First, the District Development Committee (DDC) has already allocated funds to replicate the project in Vedetar Village. Second, this decision is already helping to scale up the pilot activity to the village development committee (VDC) level which gives room for other neighbouring VDCs to replicate the programme.

Example of good practice from Nepal

Using a number of internationally accepted criteria of good practice, several projects that fulfilled the application criteria were independently reviewed, and five of them were selected by WISIONS (an initiative of the Wuppertal Institute for Climate, Environment and Energy), to present examples of good practice projects successfully implemented on four different continents with the potential to make a significant impact on global energy and resource efficiency. The UNEP/ICIMOD supported project, 'Capacity Building of Women in Water and Energy Management Implemented in Nepal' (Palpa and Dhankuta sites) was one of the five projects selected internationally to present an example of good practice and to demonstrate promising approaches (see Box 6.1).

Box 6.1: **Recognition of UNEP/ICIMOD-supported project in Nepal (Palpa and Dhankuta) as an example of good practice**

In order to identify the needs and obstacles concerning water and energy at the household and community level and to initiate appropriate solutions, the Centre for Rural Technology, Nepal (CRT/N), in partnership with local NGOs, implemented a two-year pilot project entitled, 'Women in Energy and Water Management' which took place in two hill districts of Nepal, Palpa and Dhankuta, and was supported by ICIMOD and UNEP. The field project implementation started with the collection of baseline information, the development of guidelines, a training manual, and a variety of training activities for women's groups. The implementation also included the supply of specific, high priority technological equipment related to household energy and water. The project was implemented in a participatory manner and women were involved at all stages, from needs identification to planning and implementation. Emphasis was also given to developing links with other local institutions and support agencies.

Benefits: The project generated a significant impact in terms of improving women's access to household energy and water management services, thereby reducing their workload. The time saved can eventually be used for income generation. These activities are undertaken based on the women's needs, their inherent skills, and the locally available resources, thereby contributing to their economic capacity and increasing their access to improved and efficient water and energy services – which helps alleviate the hardships associated with the livelihoods of these women and their families.

Technology: The technologies adopted are simple, proven, and cost effective. Within the short period of two years, 180 improved cooking stoves, 96 drip irrigation systems, 10 wastewater management systems, 6 solar driers, one large greenhouse, 48 toilets, 10 sprinkler systems, and 52 beehives were adopted at the household level; while 1 water harvesting jar, 1 irrigation tank, and 10 polybag nurseries were built at the community level. A technology demonstration model village centre (TDV) has been established at both the project sites, incorporating the households of users for live demonstration and the promotion of appropriate technologies to the community. The technology village centre has been very well received by the community and line agencies in the district. The demonstrative effect of this has resulted in the procurement of different technologies by members of the community. Realising its effectiveness, the local government body is in the process of replication in other areas outside the current designated project area.

Sustainability: The sustainability of the project is guaranteed by the in depth involvement of the project members. Women participating in the project have gained knowledge through technical training. Twenty women were trained as trainers and more than 200 women throughout the project area have received training on technical and institutional aspects of energy and water, as well as training in energy- and water-related business development. These trained women are actively engaged in providing information and technical services to the project communities. The technology costs are met, for the most part, by the users, which increases a sense of ownership and guarantees optimal use. A revolving fund is available to the women for investment purposes even after the phasing out of the project.

Financial issues: The technology costs were mainly funded by beneficiaries; this contributed towards the effectiveness and sustainability of the project. A revolving project fund was established to provide access to credit for investing in the procurement of the technologies and to support micro-enterprise development.

Obstacles: Initially, it was difficult to convince the local communities, especially the male members, to participate in the project. This barrier was overcome during the project initiation workshop, which clarified that both men and women would benefit from the project.

Replicability: The scarcity of water and energy services, the resulting heavy workload for women, and the increasing degradation of water and energy resources are recognised as critical issues in many parts of Nepal. Due to the positive performance of the project in Dhankuta, the District Development Committee of Dhankuta has decided to support the continuation of the activities within these project areas and to replicate them in another village.

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Lessons Learned

While the project has achieved some notable successes, others are still emerging and others are likely to emerge over time, given the short duration of the project implementation cycle. The project was able to gather many valuable experiences and lessons, which will be useful for the future design and implementation of gender- sensitive water and energy policies, programmes, and projects in the region. The key lessons learned are highlighted below under five broad headings: a) women's empowerment; b) awareness generation and understanding of issues; c) capacity building; d) choice of appropriate technologies; e) monitoring and evaluation; and f) up-scaling and policy integration.

Focusing on women's empowerment

- *In project design, the right choice of entry point is crucial for ensuring the real participation of women and their empowerment*
  The project has rightly identified water and energy as the key entry point for intervention. The water and energy sectors are crucial when talking about the well-being of women in the Himalayas. These are activities that take up an enormous amount of women's time in the hills, the problem is further increasing with environmental degradation, water sources drying up, and so on, which has multifarious impacts on women's lives and poses a major bottleneck to their productivity as well as their contribution to society as care providers. By addressing these bottlenecks, the project is trying to open the way for women to bring about improvements in all-round quality of life for their households and themselves. This intervention has helped meet the practical needs (ensuring daily survival) of the women and also addressed their productive needs (income generation and increased economic capabilities), as well as their strategic needs (position in society, in particular to gain greater equality with men, and help them toward empowerment). Improved access to water and energy technologies has saved time, energy, and the effort involved in daily water and fuel collection. This saving in time has been harnessed by uploading other integrated support mechanisms (credit, skills training, and organisational capacity building) necessary for addressing women's productive and strategic needs.

  Since the project provides a space for women to participate in and benefit from multiple activities, it addresses the twin challenges of engendering water and energy management and empowering women. It provides an important lesson that engendering development in a real sense is not possible without first addressing the time poverty and drudgery of women. At the same time, projects which consider only the short-term benefits and ignore productive and strategic gender needs are also unlikely to be sustainable in the long run. This experience from the project suggests a method to achieve both efficiency goals (practical needs) and equity goals (strategic needs).

- *Focusing on women as a target group is an essential first step for gender mainstreaming*
  Taking a gender approach in project planning and implementation can benefit both the project management (project efficiency) and the intended beneficiaries (women's welfare, gender equity, or women's empowerment). Gender strategies may focus on women or men separately or on women and men together depending on the context and nature of the interventions. Lessons from the pilot project, however, show that targeted initiatives

focusing specifically on women are critical for reducing existing disparities and the subordination of women. A more inclusive gender approach (with the participation of both women and men) may be required for deepening and sustaining the process of engendering water and energy activities and empowering women. This underscores the relative importance of focusing on women's empowerment as a strategy for achieving the goal of gender equality in view of the subordinate position of women that requires a special targeted focus to build women's self-confidence. Women-specific initiatives can create an empowering space for women and act as an important incubator for ideas and strategies that can later be transformed to mainstream interventions. Women's empowerment and gender mainstreaming do not compete with each other but are complementary. Women are to be given priority because they are the key managers of energy and water resources at the household level

- *Involving women and sustaining their participation at each stage of the project should be explicit objectives specified in a project document, with accompanying practical strategies*
  Strengthening women's participation at each stage of the project cycle should be one of a project's explicit objectives. Experience shows that if women are effectively involved from early on, success is more likely in sustaining women's participation at later stages of implementation, management, maintenance, and evaluation. Practical strategies for involving women in the project (necessary time, funds, and modes of strengthening women's participation) should be clearly specified in the project document in an integrated way. While women can be involved directly through working with existing women's NGOs or community organisations, there is a need for women's representation at higher levels if their participation at the grassroots level is to be effective. Targeted efforts are needed to include representatives of stakeholder groups, especially women, in national policy-setting processes related to water and energy.

Awareness generation and understanding of issues

- *Awareness-generation programmes are critical for enhancing awareness of women on efficient energy and water services*
  Given the mass illiteracy and limited outreach of awareness-generation programmes among rural women in much of the Himalayas, many rural women are unaware about the energy efficient and drudgery-reducing technologies that might be suited to their needs. These technologies include those which reduce the time taken collecting fuel, lead to faster cooking times, and reduce smoke in the kitchen; and should include the knowledge and skills needed to use, repair, and maintain the technologies. Because of the remoteness and relative inaccessibility of where they live, the information gap on technologies, programmes, markets and so on is perhaps the most serious constraint being faced by hill women. The pilot project experience shows that an effective awareness-generation component through a combination of methods such as village-level meetings, house-to-house contact in demonstrating technologies, cultural programmes, market fairs, and creative slogans can go a long way towards convincing women about the appropriateness of different technologies.

- *Gender analysis is essential for understanding water and energy needs before the promotion of technologies*

  Baseline and needs assessment from a gender perspective is essential not only to prioritise technological interventions to address women's practical, productive, and strategic needs and roles in water and energy interventions, but also to assess how women and men benefit differently from these technologies. Experience from all the three countries involved shows a distinct gender role, as well as distinct needs and interests. Household work such as cooking, cleaning, fetching fuelwood and water, rearing children, and looking after the household generally are absolutely women's work. Experience from the pilot project indicates that such information is a prerequisite for the promotion of any particular technology to ensure its sustainability. Needs identification is an important step in the identification of technologies for women. Gender analysis needs to be carried out using gender analytical tools to understand the gender roles and relations as well as the gender needs and interests in a given community, and the impact of interventions on women and men.

  Gender analysis reveals that women had particular reasons for selecting or not selecting a particular technology depending, among other things, on their situation within the household and the perceived benefits of the technologies involved. It is not savings in fuel alone that concern women when confronting new technologies supplying cooking energy. Other factors such as benefits to health, aesthetics, whether the technology is a good fit with locally-available fuel, if it is convenient, socially acceptable, etc. that attract the women. In general, women desire simple technologies that they can understand and that can be put into practice with local materials with the minimum of external input, and that reduce their time and labour inputs, improve the health and education of their children, and widen their own options for more productive activities. In situations where the acceptance and popularity of technology by rural women is socially administered by the male head of the household, gender sensitisation as taken up in this project, is an essential process where the acceptance of the technologies by the men is addressed. In situations where the women have no opportunity to earn extra income, the decision maker, i.e., the man, may not see the need to spend on improved technologies unless income-generating potential and other benefits are present. The fuel-saving cooking stoves in Nepal, and the solar driers and LGP depot in Bhutan are adopted more readily when they present opportunities for women to earn income. Factors guiding the choice and adoption of technologies are women's status within the household, their role and division within families, ease in adoption and usage, and the social acceptance of the technology.

  The cost and design of the technologies must also be an integral part of the gender analysis. Experience from Bhutan shows that a failure to carry out such gender analysis led to the rejection of the improved cooking stove (ICS) promoted by the project, as the cost of the stove was not only higher than that of the bhukhari type already in use, but it was also not suited to the housing design at the project sites. Project staff must be trained to conduct gender analysis properly for needs assessment.

- *Gaining the support of men, particularly community leaders, and attempting to promote positive attitudes towards women's active participation among them is important*

  One common lesson learned from all the project sites is that the potential advantages of the project interventions should be explained through gender sensitisation training. Experience further shows how patriarchal attitudes and initial resistance from men to women taking on new roles in water and energy activities can be shifted once the benefits to the community, households, and to the women themselves are demonstrated. In this context, the role of social mobilisers in sensitisation though door-to-door visits and community meetings cannot be over emphasised in devising practical strategies for changing patriarchal attitudes and resistance from men.

Capacity building

- *Making training accessible and suitable to women is critically important for their empowerment*

  Training should be made more accessible to women by recognising and responding to the constraints they have on their time and mobility. This means making training courses shorter with the provision of follow-up training, providing training locally, and setting practical criteria for the selection of trainees that women can meet, particularly with regard to educational levels. The perceived value of training to women can be greatly enhanced if it is known to lead to paid employment. Training needs to be a balance between imparting particular technical skills and the development of problem solving and decision-making capacities which can provide the basis for greater project sustainability. PRA techniques are useful for instilling women with confidence about their own knowledge and capacity for solving problems. Experience shows that a 'hands on' approach to learning is more successful than a didactic lecture-based approach focused on imparting knowledge. The technology manuals prepared by the national partners during the TOT appeared not to adequately cover all the technologies later promoted and adopted. This highlights the need for continuous evaluation and revision of training programmes and training materials. Various methods need to be used to sustain the attention and involvement of participants, such as use of posters; non-directive questioning; transect walks in the locality; role plays; demonstrations; the adaptation of popular songs; street dramas and puppet shows among other things.

- *Training of prospective women trainers is an effective way to train other women both within and outside the project villages*

  The training of trainers (TOT) approach taken by the project has been instrumental in diffusing knowledge more effectively to many members of the women's groups and to other women as well. This approach was found to be effective as women trainees in the village can have regular access to local women trainers for consultation. Experience further suggests that a more flexible training approach is necessary as per the needs of the women, especially with regard to enhancing their skills for productive income-generating activities. The project partners in each country involved different organisations for imparting such specialised training as per the emerging needs of the women for productive activities.

- *Exposure visits are critically important for breaking entrenched sociocultural barriers to the promotion of technologies*
  Exposure visits for women's groups, which were carried out in each country as part of the project's planned activities, were effective in breaking some entrenched cultural norms that were hindering the adoption of new technologies. The Magar community (Tibeto Burman ethnic group) in Palpa provides a good example. Despite several motivational efforts, the Magar community members were not ready to change their traditional cooking stove because of its additional advantage of meeting the space-heating requirements of the family, among other things. After the exposure visit, each of the women in the community installed and used the improved cooking stove. 'Women-to-women' and 'women-to-men' interactions and experience sharing during the demonstration and orientation of technologies at the project sites were found to be an effective means of technology transfer.

Choice of appropriate technologies

- *A more permanent solution to water scarcity problems is possible*
  The case of the Uttaranchal project site (Bajeena) demonstrates that water scarcity can be addressed. In Bajeena rainwater was harvested on mountain slopes, micro-reservoirs were built, and trees planted as a permanent solution to recharging traditional water springs (Box 6.2).

Box 6.2: Sustainable water harvesting methods

Due to an acute shortage of water, the women of Bajeena were spending considerable amounts of time every day collecting water. There was only one main source of water in the village, a spring which had gradually dried up over the years. To overcome this problem, the women constructed 12 micro-reservoirs on the mountain slopes above the village spring to trap rainwater and help it percolate to the water spring to recharge it. Over 2500 saplings were planted (fodder and firewood species, as well as medicinal plants and fruit trees) on 5 hectares of hill slopes to ensure slope stability and halt soil erosion. Loose grazing was also controlled through social fencing. While the full impact of this technology is likely to be felt only after a few years, after one year the water flow from the spring had doubled. Neighbouring villages also showed an interest in adopting this practice. This method of rainwater harvesting could go a long way towards addressing the water scarcity problems in many parts of the Himalayas in a sustainable way.

- *Women are good candidates for being successful energy and water entrepreneurs*
  Women should not only be seen as passive users and consumers of renewable energy and improved water services, but also as good candidates for being successful energy and water entrepreneurs – provided an enabling environment is created. They are the users of these technologies, so they may be more sensitive to customers' needs. They are effective entrepreneurs with a good credit record and they can market to women more effectively. Some women have proved themselves capable of operating and constructing renewable energy technologies on their own, when provided with the appropriate training and support. A key factor appears to be the ability of the renewable energy source to generate income for the users. Women ICS promoters in Nepal trained by the project are able to sell more stoves effectively to other women both within and outside the project areas than

men, as their access to potential female clients is not hindered by social constraints. The fee for stove construction is comparable to wages in rural areas. This has also contributed to improved status, self-confidence, and financial independence for the women entrepreneurs. An important lesson learned from this experience is that imparting to women artisans the scientific principle of improved stove making will be an effective way to scale up the adoption of wood-saving stoves in the region. Some members of the women's group in Nepal are also emerging as entrepreneurs in beekeeping enterprises, and women in Bhutan are emerging as energy entrepreneurs with the establishment of a solar drier production venture and an LGP depot at the project sites.

These examples from the project provide an important lesson, that an enterprise-based approach to water and energy management with the active participation of women in decision making is necessary for the economic empowerment of women. It shows that not only are women the victims of water and energy scarcity and the potential beneficiaries of energy interventions, but that they can be also managers of energy and water micro-enterprises in the informal sector. The advantages of promoting women as energy entrepreneurs include the advancement of women, the expansion of economic activities, the diversification of productive options, and the creation of new sources of wealth and income to support family investments in education and health. The creation of enabling conditions – particularly the formation of women-only groups – has clearly helped this process. In such groups women feel comfortable taking charge of the technology instead of handing over control to men and being relegated to passive 'beneficiaries'. Once their level of confidence has been adequately enhanced through the initial women-only initiatives, these leaders and entrepreneurs will, it is believed, continue to provide leadership in their communities in mixed groups as well.

- *Time saving from improved access to water and energy and productive use of the time saved is conditional and context-specific*
  The productive use of time saved is more visible in those areas where attention is given to simultaneously supporting income-generating activities (fresh vegetable production and beekeeping) and their marketing linkages. The effect of reduced water collection time through improved water technology in previously water-scarce sites in Uttarranchal was mostly offset by the increased number of trips to take advantage of the increased supply of water. Impacts on livelihoods are slow in those areas with a relatively low level of social capital. Experience shows that drudgery reduction in one area can lead to increased drudgery in other areas. The degree of substitutability of saved time/leisure for productive work is conditioned by a host of factors, but more women faced with extreme poverty are more likely to use their saved time for income-generating activities, regardless of the increased workload.

- *Supporting income-generating options through the creation of a revolving fund is crucial for addressing productive needs, thereby increasing the affordability of a wide-scale adoption of technologies*
  Given women's generally lower incomes, they tend to spend a higher proportion of their income on energy and water services, even if men's contributions are absolutely higher. One way of tackling the affordability problem is to promote income-generating activities (IGAs) for women in conjunction with water and energy technologies through the

provision of a revolving fund and a group saving/credit scheme. However, unless the income generated from such activities is enough to cover the increased costs of water energy provision, this is rather self-defeating as women may end up working increased hours. If IGAs are to be introduced, this needs to be carefully considered in the early stages of project planning. Experience suggests that promoting IGAs in a meaningful manner requires additional complementary inputs, for which coordination with other agencies in the area with experience in credit, marketing and so on, is necessary. Experience further suggests that the creation of a revolving loan fund and group savings managed by women's groups with comfortable lending terms can serve as an innovative credit mechanism for addressing the needs of women lacking collateral.

- *The technology demonstration village is an effective model for speeding up the technology transfer process*
  Technological intervention should be driven by development needs and address women's practical, productive, and strategic needs. Emphasis must be given to technologies that reduce the workload and drudgery of women in day-to-day household work and to micro-enterprises that enhance women's income. Evidence shows that women are better able to make their own choices out of a range of possible technological options provided information is easily available and technologies are made accessible by the project. The live demonstration of such technologies actually operated by women at the project level is essential for wider acceptance and quicker dissemination. In this context, the technology model village as piloted in Nepal is a promising concept that can be experimented with in other regions to speed up the technology transfer process (Box 6.3). The technology demonstration villages and the resource centres established and managed by women's groups at both project sites in Nepal have provided many rural women with a convenient place to learn about new water and energy technologies as well as a place to share their experiences on the uses of these technologies.

Box 6.3: Technology demonstration model villages

Technology demonstration model villages were established at two sites in Nepal to demonstrate the technologies operated by women and to help speed up the dissemination of these technologies. A management committee made up of women was formed to manage the centre. These villages are being visited by women from neighbouring areas and are proving to be an effective medium for learning about the application of all field-tested technologies that meet women's practical and productive needs and which can reduce drudgery. Influenced by the demonstrated success at the Dhankuta pilot site, the Dhankuta Local Development Fund Secretariat under the District Development Committee (DDC) decided to replicate and integrate the pilot project at another site (Vedetar). Similar integration is also envisaged for the other site in Nepal. While it is not always possible for small-scale projects to directly influence national policies, this method demonstrates how good practices can be anchored to a national programme using the bottom-up approach.

Monitoring and evaluation

- *Where baseline data is either absent or weak, this also feeds into weak monitoring and evaluation at a later stage*
  Experience shows that impacts are difficult to gauge in a situation where baseline surveys are either not properly conducted prior to the project (especially in Bhutan) or they are

weak (Nepal) in terms of capturing all essential information reflecting the project's major area of concern. Baseline information needs to be broken down by gender on various aspects, such as access to and control over resources provided (training, skills, technology use, employment, income); control over decision making (at the household and community levels); human resource development; the workload and drudgery involved in daily water and fuel collection; improvements in health and productive use of saved time (time allocation pattern); impact on women's status in the community; and changes in women's perception about their empowerment. While the benchmark established at the project sites in India made it easier, relatively, to assess the impact later on, the lack of a well-planned baseline survey strategy (with standard survey design and instruments to be applied to all project countries) early on was a major weakness experienced by the project. To overcome this shortcome in baseline surveys, the project had to follow a historical recall method ('before-and-after' situation) using both objective and subjective indicators to assess the impacts of project interventions. A better approach would have been to collect data early on from both men and women as part of the baseline data for the project/programme, and particularly to collect information from the respective groups on their own situation and activities.

Other lessons are that the case study reports prepared by each country prior to the implementation of the project were rather generic with little focus on issues of women in water and energy management in the case study areas. A better approach would have been to integrate the baseline assessment in the case study report, to be undertaken only after identifying the pilot site. In general, women should interview women and men should interview men individually. Children can be a good source of information because of their experience of working for their mothers in fuel and water collection. PRA techniques also need to be gender sensitive, as certain techniques like seasonal work calendars are of little relevance to women. Reporting the results of survey or other data gathering exercises back to the community is a useful way of assessing the reliability of information, gaining supplementary insights, and generating further discussions and interest around new activities.

- *Institutionalising participatory monitoring is essential*

  Evaluation needs to be seen more as a process and should involve both project personnel and community members as recipients of and participants in evaluation. Experience shows that while monitoring of progress is normally done by women's group members in their regular group meetings, self-evaluation by women's groups and project personnel should be given more emphasis through developing gender-sensitive methodologies and mechanisms. Explicit indicators are needed to examine the level and quality of women's participation in different project activities and their level of capacity building, both individual and collective capabilities ('organisational empowerment'). Subjective perceptions may be as important as 'objective' evaluations by outsiders and this is particularly true of changes in perceptions about gender. For example, the qualitative indicators used in assessing the organisational capacity building in the present project illustrates how the relative strengths of different dimensions of women's organisational capacity building can be better judged by rating a set of subjective indicators on a five-point ordinal scale. The use of similar indicators of organisational strength as a regular monitoring tool for self-evaluation by the groups themselves can go a long way to institutionalising a participatory monitoring and evaluation system.

Policy integration

- *Anchoring good practice to the national programme is possible though a bottom-up approach*
  The decision to replicate the demonstrated success of the pilot project in Nepal by the DDC provides an important example of anchoring a good practice to a policy process though the bottom-up approach. Experience shows that the formation of a district coordination committee right from the beginning of the project and advocacy and information sharing are necessary steps for integrating good practice into a national programme. Intensive dialogue and interaction with different stakeholders is critical for the successful implementation of small-scale infrastructure and linking such a project with existing programmes that are operational at the field level. Working together in partnership, as a multi-disciplinary team, with district partner organisations is an effective strategy for successful project implementation and the integration of good practice examples in other on-going programmes at the district level.

- *Existing water and energy policies and programmes in the region are gender-neutral, failing to address the special circumstances and needs of women*
  As in much of the South Asian region, the Himalayas (particularly India and Nepal) are dominated by classical patriarchy, in which women have few economic rights (land, formal credit), have low literacy levels, and suffer because of strong traditions of female seclusion. Although Bhutan has a matrilineal system, women there too have little voice in shaping their choices. It is in this context that pro-women water and energy policies call for the confrontation of these societal norms, attitudes, and practices through changing people's mindsets, apart from the enforcement of formal law and regulations against gender discrimination.

  A review of the existing national policies and programmes in the three countries reveals that policy makers continue to treat energy and water policy as gender-neutral in terms of impacts, thus failing to recognise the differing roles and needs of women and men in water and energy management. Women are more likely to be represented at policy levels in 'soft' ministries such as health and community development than in technical areas/agencies of water and energy. In adition, a lack of cooperation between 'soft' and 'hard' ministries is hindering the process of introducing more gender-aware approaches. There is no specific policy for integrating the needs and roles of women in water and energy management at the household and community levels.

  A large number of women continue to face hardships in fulfilling their basic water and energy needs. The successes of the present project have the potential to be scaled up to benefit many women across the Himalayas. Meeting the water and energy needs of women can have a significant impact on their lives and can bring measurable change. Scaling up such activities would help the efficient use of energy and water resources so that more women can derive benefits quickly from pilot interventions and sustain the activity. Women should be kept at the centre when deciding what is appropriate for scaling up and sustaining the programme. Some key lessons learned for future programme design are as follows.

- Focus on people and not on technologies. Understand first the livelihoods of women and the contribution (or potential contribution) of technologies to improve them.
- Recognise and respect the potential of women for innovation by strengthening their confidence and providing them with opportunities.
- Provide women with the science behind the technology, and not just the technology itself, to encourage them to adapt/innovate technologies appropriate to their own context.
- Avoid activities that require heavy external inputs, and help women to use locally-available resources.
- Help women to organise themselves and address problems on a community basis by establishing access to information, credit, markets, and complementary support.

Conclusions and Recommendations

The lessons learned from the project were reviewed and a number of practical strategies suggested. In applying such strategies, it is important to take account of variations in local conditions, and to adapt the approaches accordingly. In the following we summarise some of the key conclusions and implications emerging from the above review of lessons learned.

Focusing on women's needs and roles in water and energy management can lead to significant advances in meeting development challenges, including the MDGs. Since women are heavily burdened under current circumstances and resource conditions, reducing their heavy work burden is an essential first step towards making it possible for them to participate in and benefit from any form of development. The benefits of an innovation must be clearly understood if women are to allocate time to it. The pertinent question is not merely which technology is best for the end-user (the woman), but rather, more importantly, how women can be enabled to choose which option(s) best meets their needs (practical, productive, and strategic) and fits their circumstances in order to move them out of energy and water poverty – and other manifestations of poverty – for improving their livelihood. From a policy perspective, this raises the twin challenges of engendering water and energy and empowering women to be addressed, which can only be met when women are placed at the centre of the national policy agenda for poverty reduction.

Clearly technology is not neutral; technological options should remain open and be driven by development needs. Addressing women's development needs (practical, productive, and strategic) for saving time, for improved health, for security, and for income generation requires a basket of services and multiple technologies using an integrated planning approach to enable women to access improved energy and water services and to enhance their entrepreneurial and technical skills and their empowerment. Creating a demand-driven, decentralised rural energy market can go a long way to supporting the various initiatives that would reduce the social cost of biomass use and provide an incentive for switching to cleaner and more efficient fuel and technologies. This calls for raising the gender awareness of policy makers and planners so as to fully integrate women's concerns in the policy-programme-action continuum. There is a need to establish enabling mechanisms such as credit, information, and training, along with the necessary legal and institutional reforms. Barriers such as women's legal status, land-tenure opportunities, property rights, and access to public services and facilities which severely limit women's ability to take advantage of available opportunities need to be overcome through substantial shifts in policy and priority for ensuring

gender equity in the development process. While the establishment of gender-disaggregated data using gender analytical tools is critically important for raising such gender awareness at the policy decision-making level, documentation of good practice models and their replication and up-scaling through bottom-up initiatives is equally important for demonstrating what approaches and actions could help make these gender concerns convincing for their full internalisation at the policy, programme, and implementation levels.

The project was fruitful in building the social capital of women and providing options for pilot testing of environmentally friendly and pro-women water- and energy-related technologies. Lack of elected representatives and weak governance has been a crucial factor in weakening the support of poor and vulnerable groups. Although the ongoing violent conflict situation in Nepal has affected the project, particularly in supervision and monitoring visits to the project sites, the local NGOs have thus far been able to successfully implement the project. The project has taken the right steps towards the integration of women in decision making through building their individual and collective (organisational) capacity to implement and manage household energy and water initiatives that have helped reduce drudgery and widen the options for more productive use of saved time. The saving in time and reduction of drudgery provides ample opportunity to scale up and replicate the project through uploading many innovative interventions for empowering women by addressing their productive and strategic needs.

Pilot interventions integrating women's needs and concerns in water and energy management have the potential to support self-help initiatives by local women not served by larger-scale, government-run programmes. The fully-fledged participation of women in water and energy management as a means to more sustainable and effective service provision has many potential advantages. However participatory approaches cannot be assumed to automatically lead to improved women's participation unless specific strategies are pursued to ensure that women are not involved in ways which increase their workload and/or financial burden, or prevent them from using the benefits of improved water and energy services in productive ways. This calls for graduating after a certain threshold from women-only projects to a gendered perspective, which looks not just at women in isolation, but at the relative roles and responsibilities of men and women, and their changes over time.

In a situation when the potential for positive impacts are emerging and the prospects for establishing good practices are high, there is considerable potential for this pilot project to succeed as a new paradigm for empowering mountain women through promoting them as successful entrepreneurs. The beginnings of the mainstreaming of good practices at the district or national level were already being seen even within the short duration of the project. The immediate benefits of the technologies, the clear potential for their replication, and the enthusiasm of the participating women have led to significant interest from local government to expand coverage by incorporating the approaches into their own programmes. This is a very positive sign as it shows the way to scaling up the positive outcomes of this project. For this, efforts in policy dialogue and partnership building for up-scaling and replication remain to be enhanced and some more innovative activities need to be supported in a consolidated manner. One major limitation of this time-bound demonstration project is the lack of sufficient time for further deepening and expanding the project activities to make an impact at the policy level. A second phase would provide a strong basis for further testing the policy guidelines with more focus on working jointly with government and presenting 'demonstration model

cases' (entrepreneurship, technology options, credit and women-centric institutional mechanisms with a larger and more structured component of advocacy and outreach) so as to produce a more concrete, deliverable policy framework on gender mainstreaming.

Lessons learned from the pilot experience of the project in the three countries involved have provided an important basis for developing a gender-sensitive training manual and policy guidelines to advocate women's roles in the planning, design, and implementation of water and renewable energy technologies. New experiences and insights from the field have been incorporated into training manuals and guidelines in a participatory manner, so that knowledge is disseminated on a wider scale. Policy guidelines are expected to make a significant contribution towards the application of a gender-sensitive approach and concepts for devising sustainable water and policy and programmes in the region. Policy makers and rural development practitioners active in the Himalayan region can immediately take these experiences, adapt them to their needs, replicate them, and scale them up. Even so, such efforts do not lead to major changes in approach unless supported by complementary strategies at policy-making levels and by related agencies and donors (Banskota et al. 2005).

Key areas of policy direction emerging from the study

- Placing women's needs and concerns in energy and water interventions at the centre of national poverty reduction strategies
- Promoting technologies to address poor women's practical, productive, and strategic needs
- Offering a basket of services to enable women to access improved energy and water supplies and to enhance their entrepreneurial skills, their technical skills, and their self-confidence
- Establishing gender-disaggregated data at all levels using gender analytical tools to understand gender-based needs, constraints to participation, ability to participate, and different benefits from participation
- Enabling institutional representation of women in decision-making
- Supporting capacity building and partnerships of women and men involved in energy and water management
- Promoting partnerships among governmental and non-government organisations as well as with the private sector