

THEME EDITORIAL

Household energy and the vulnerable: The handicapped in a disadvantaged community

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Many development workers wrestle with finding an acceptable generic title for the peoples they aim to serve, resulting in *underdeveloped nations, developing countries, Third World, underprivileged, etc.* However, within whichever of these titles is preferred, a second tier is readily recognised – a group of people who are handicapped within their own community.

Authors, contributing to this issue of Boiling Point on the theme *Household energy and the vulnerable*, have identified from their own experience, examples of people with specific handicaps and also have considered broader issues relating to the community in which they live and beyond.

Alex Bush describes the challenges facing **elderly people** resulting from the findings of a project conducted in the **Karagwe district of Tanzania**. Traditionally, older people passed on to the next generation good practice from the past, eg. in relation to resource allocation and

conservation. This is changing, and often older people are regarded as passive dependants, despite doing housework, cooking and watching the children. Household energy issues are identified and there are proposals for raising the profile of elderly people by increasing a community's social capital.

The plight of **women with physical disabilities** in the household cooking environment in **Pakistan's** North West Frontier Province is reported by **Farhat Rahman**. Disabled poor women are handicapped four times: their poverty, their rural background, their illness, and disability. They have little access to education, skills training, income-generating activities, transport and housing.

Strict purdah (or seclusion of women), restricts the introduction of community-based rehabilitation programmes. Since 1990 programmes have slowly gained acceptance, and household management skills, particular to women with disabilities, are being effec-

tively communicated without disturbing the centuries-old traditions.

Armed conflict resulting in a refugee problem presents a variety of difficulties; firstly for the displaced people themselves, then for the people already living in the locality where the refugees seek to find a place to live. Food is a basic requirement, but in **remote high cold locations** the first requirement may be for fuelwood (Figure 1). **Sudhirendar Sharma** describes how the challenge for aid agencies and, in the longer term for development agencies, is to consider the constraints and resources in such an area, and to evolve an appropriate response to build on the traditional way of life with the aim of achieving maximum self-sufficiency.

Corinna Kreidler describes the coping mechanisms employed by **internally displaced people** in Benguela Province, **Angola**, to provide household energy. Repeated wars forced hundreds of thousands of ordinary people to repeatedly flee their homes to



Figure 2: Simon Batchelor asks, 'Why does she collect fuel in the way she does?'



Figure 1: Fuelwood in Kargil, India is in short supply

camps in the coastal regions. There was little fuel available and people had to buy wood or charcoal: they had little money for these purchases and often sold relief-aid food or exchanged services for charcoal. The fuel problem is extremely complex with long distances to a natural source, the dangers of landmines, assaults and the fear of black magic. It is also a cultural shame not to bury a deceased relative in a coffin. Short-term solutions are improving the situation, including improved cooking techniques, community kitchen schemes and a limited amount of tree planting.

AIDS as a disease is ravaging communities in many countries and particularly in Africa. And there are many consequences including posing a threat to biomass energy conservation in the rural villages of Hurungwe district, north west of Harare, **Zimbabwe**, as described by **Lasten Mika**. An increased number of funerals, resulting from the disease, with prolonged periods of mourning and the requirement to heat and feed the mourners, results in the use of a lot of wood. Often the elderly and the young have to travel long distances in search of fuelwood; they are foregoing meals to preserve fuel; food is poorly prepared leading to health problems. Proposals are made to improve the quality of life of those with HIV/AIDS and their families.

Chris Underhill relates a moving tale of meeting with Mr and Mrs Ramalingappa in Karnataka, **South India**. Mrs Ramalingappa suffers from **mental illness** and is unable to fulfil her household tasks: however her husband lovingly supports her and together, against the advice of the community who wanted him to divorce her and return her to her own family, they make their way together. Her husband diagnosed that the pills she had been prescribed were too overpowering, but when they were reduced and she became more aware of the world around her they both



Figure 3: Margaret Foster stresses the need for training for women

realised she had *forgotten* all her normal life skills – the skills of the hearth! Over one hundred mentally distressed people and carers were met – only two of the primary carers were men.

Simon Batchelor et al describe a new assessment tool to assist the design of any development or emergency intervention. They have added *Why?* to the usual questions What – Where – When – How and Who? usually asked in participatory surveys. The underlying project involves the three activities: firewood collection, improved stove adoption, wood lot planting, seen as critical to fuel wood management in **Northern Ghana**. There is an underlying belief amongst all religions that God will not allow them to go without firewood; these beliefs are at the core of people's attitudes towards the issue of fuelwood and the environment. There has been a need to communicate the *management of resources* message in a way which is acceptable. The tool explains why people are doing the things they do, and identifies how educational messages can address the core barriers.

Very poor women often have most to lose when outsiders, introducing development projects, look for expertise held by (usually bet-

ter educated) men, ignoring women. **Margaret Foster** considers previous work undertaken in this area and reports on a further training manual being developed which will focus explicitly on the energy assets available to resource-poor women and the vulnerabilities they face. It will consider energy as a factor which influences every aspect of their lives.

It remains to be seen to what extent the nations of the world will honour their commitment to the Kyoto Protocol on controlling emissions of greenhouse gases. **Stuart Parkinson and Katie Begg** report on extra funding for developing countries for the promotion of clean technology. Three sources of finance are explained: Clean Development Mechanism; Convention Fund; Adaptation Fund. Full details of the three funding routes have yet to be clarified.

This issue of Boiling Point identifies some of the vulnerable groups, and also gives an update on some funding sources and publications aimed at addressing the problem. It is hoped that other authors with experience pertinent to *vulnerable groups and household energy* will be prompted to put pen to paper and publish in future issues of Boiling Point. ☪

Strengthening village and neighbourhood organisations: Safety networks for the vulnerable

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Background

Situated in the north of Tanzania, Kagera Region is one of the poorest in the country with income levels around 50% of the national average (Figure 1). Karagwe District is a hilly area in the north-western tip of the region at an altitude of 1100-1800m with substantial rainfall (1000mm in two seasons). The population is around 400 000 and is overwhelmingly rural. The district has extensive cash cropping, mainly coffee beans and bananas, so despite relatively fertile soils and good climate, food is scarce. The majority of the population are smallholder, largely subsistence, farmers. People depend on an environment that is becoming increasingly uncertain. In the last two years there has been severe drought, followed by some of the worst flooding for decades.

While life has become more difficult for ordinary people, such difficulties tend to be magnified

Renforcer les organisations villageoises: des réseaux de solidarité pour les personnes vulnérables.

A partir d'un projet mis en oeuvre dans le district de Karagwe en Tanzanie, cet article décrit les défis auxquels font face les personnes âgées. Traditionnellement, les nouvelles générations reçoivent des précédentes les expériences positives par exemple en matière de préservation et distribution des ressources. Ce modèle est en train de changer et les personnes âgées sont maintenant considérées comme une charge quand bien même elles supportent nombre d'activités domestiques. Cet article passe en revue l'énergie domestique, et émet des propositions afin de rehausser l'image des personnes âgées notamment à travers le concept de capital social communautaire.

for older people who are generally more vulnerable to change and are armed with fewer coping strategies.

This article describes work being carried out in Karagwe District, where a programme of work with vulnerable elderly people has been carried out through the SAWATA Karagwe Older People's Programme (SKOPP) project. This project has been implemented by Saidia Wazee Tanzania (SAWATA) Karagwe and HelpAge International, supported by the UK Department for International

Development (DfID). The research that forms the basis for this article was looking at *social capital* and social 'safety nets' as they relate to older people. However the energy-related components of the project do shed some light on these issues.

Basic needs

Older people report that they are finding it more and more difficult to satisfy their basic needs. They receive less help in areas such as cultivation, water and firewood collection. Basic items are now much more expensive. Environmental changes have taken their toll, resulting in previously plentiful resources now being scarce and difficult to obtain.

Land disputes are a serious issue for older people. An influx of refugees into the region has increased pressure on land and created opportunities for new land to be brought into production with a pool of cheap labour available; adding to the disputes over land use and inheritance identified by older women in particular.

Energy-related problems

Older people have an important role in the community, but in recent years this role has changed significantly. In the past, older people were the guardians of tra-



Figure 1: North-west Tanzania

ditional practices and had the responsibility of advising the younger generation and making sure they grew up fully conversant with traditional practices. One of these roles was in resource allocation and conservation e.g. controlling tree felling. Deforestation is perceived to be a major problem in the areas close to the former refugee camps.

The programme identified two interventions to address the problem – the introduction of fuel-efficient stoves to reduce the amount of fuelwood used in a household, and tree planting around homes to increase the supply of fuelwood. After piloting several prototypes, the programme chose an approach using local resources for stove production, so there is no cost of production except in time and labour. Similarly, tree nurseries use local varieties of trees and seeds are collected rather than purchased.

Initially a stove was used that had one pot-hole; later an improved design was made with two pot-holes and a chimney to

channel smoke away from the cooking area. The new stoves have two disadvantages compared to three-stone fires: they do not give out as much light or heat (because they are more efficient). The heat problem has been addressed by sweeping the hot embers out of the stove when cooking is finished.

There was some scepticism among older people initially, and staff needed to persuade them of the benefits. However, there was resistance from older women to hearing such information from young outsiders (the ‘fuel launchers’ as they were known) and a programme of identifying and training older people to serve as village-based ‘fuel promoters’ was substituted.

Over 400 volunteers were trained in making stoves and would then work in their neighbourhood, demonstrating and persuading other older people of the merits of the new stoves and assisting in their manufacture. They also distributed tree seedlings for home-based tree nurseries following negotiations and discussions with villagers about the importance of tree planting for fuel (Figure 2). Improved stoves eventually achieved quite a wide acceptance and using older people to introduce new technology had a significant impact on the status of the older people in the community.

Many men were reluctant to allow land to be ‘wasted’ in this way. Collecting firewood is not their work and they would not

benefit from the time saved in having more accessible sources. The programme had to diversify into providing seedlings for trees for use in construction – the men’s preference – as well as the original varieties, in order to get the men to agree that some land could be allocated for fuel trees.

SAWATA committees also worked hard to get agreement that villages would establish communal woodlots for use by older people. Latterly, these were replaced by more localised woodlots.

Social capital

It is becoming recognised that increasing a community’s *social capital* is a good way to support vulnerable people. *Social capital* describes the connections which people build with others through family, friends, community groups etc. There is clear link between how vulnerable a person is, and the quantity and quality of their contacts with other people. This appears to operate as a vicious circle – greater vulnerability creates less social contact, which in turn increases vulnerability.

In supporting the growth of social capital for older people, it is essential to recognise that each person contributes in some way. HelpAge’s experience of work with older people has highlighted the fact that the contributions of older people (as possibly with other vulnerable groups) are largely underestimated, unseen and undervalued. This may mean that the relationship is seen to be one of dependence and little mutual return. This in turn changes the rules and norms that are applied to older or vulnerable people and results in them being judged by different standards.

The contribution of the elderly

Contrary to the myth that older people (and vulnerable groups more generally) are simply passive dependants of the more active sectors of society, most older people in Tanzania are



Figure 2: SAWATA tree nursery, Karagwe, Tanzania

actively engaged in a variety of work to make ends meet and produce food for themselves and their dependants. Respondents in this research continued to work on the farm into extreme old age, with those in their eighties and nineties putting in several hours per day.

One aspect of this perception is lack of recognition by the community or even of self-recognition by older people of their contribution to the social structure. In the course of this research a person in Bisheshe village said: 'My mother does nothing...Well, she cooks, cleans, looks after the children, she does some weeding – but it is me who looks after her because she can't do anything'. A group of elderly women in Zanzibar claimed to have 7 hours resting per day, but on further probing it emerged that in fact they spent this time doing housework, cooking and watching the children

Important facts which emerged

Vulnerable elderly people in Tanzania face a variety of problems. Some of these are common to many vulnerable groups and some are specifically age related. Several important facts have emerged:

- Older women are more likely to be vulnerable than older men.
- Older people see their vulnerability in terms of health issues, economic issues, lack of basic needs and family and social problems.
- People are not either vulnerable or not vulnerable, but their situation varies with time. The key factors which affect elderly people are family, economic and social issues.
- Failing health makes people more vulnerable, and there is clearly a strong belief amongst older people that once you have lost your health, it is gone forever. Older people do

not realise that they may be able to improve their health.

- Village leaders and other key people do not recognise the importance of health issues to older people (Tuberculosis, eye problems, diabetes and rheumatism probably affect over 50% of older people). All of these problems are magnified for very vulnerable older people – the house-bound and the sick – who are forced to be highly dependent. Being house-bound also increases the risk of smoke-related illnesses.

Stressing their basic needs, village leaders fail to recognise the useful roles which older people undertake. In order to build up social capital, individuals need confidence that their contribution to the group will be recognised and accepted.

Ways of supporting vulnerable older people

Respondents in the research were asked to describe where they found both day to day support and support in emergencies. For the vulnerable older person, the family is far and away the most important source of practical support.

However, friends and neighbours, the clan and a variety of village level organisations make important contributions. Some of these organisations are particularly male-biased, notably the clan and village co-operatives.

Interestingly, and despite the presence of several development agencies in the area, not one of the 150 older people interviewed mentioned these external bodies as sources of support. It seems likely that it is the local agents of these organisations that are perceived to be important. The level of internal social capital within the village appears to be a key determinant of vulnerability.

From these responses and other discussions HelpAge has tried to draw some tentative conclusions. For group support to be

successful, the following key points have emerged:

- External agencies need to attend both to the needs of older people and the social links of which they are part (or from which they are excluded).
- They will need to look beyond the membership of targeted groups (such as community organizations) to those they exclude from membership but with whom they have contact.
- They must avoid destroying social capital by creating resentment amongst those excluded from direct assistance.
- They must find a balance between targeting groups and communities and working with households and individuals.
- They must support vulnerable individuals to form substitute relationships where family ties have been lost.
- People from within groups and communities are the key to strong networks of support for the vulnerable.
- Vulnerable people themselves should be directly involved in setting objectives for support

The household energy component of this project had partially succeeded in this by using older people themselves as fuel promoters and by recognising some of the key linkages within the community. Other components, notably one providing paralegal services and conflict resolution within the community had achieved rather more success.

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About HelpAge International – Leading global action on ageing
HelpAge International campaigns on behalf of the worlds older population and provides expertise and grants to older people's organisations in 70 developing countries - assisting them to help the most disadvantaged lead independent lives.

Women with disabilities – cooking, fires and smoke

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Background

Of Pakistan's four provinces, the North West Frontier Province (NWFP) is the smallest, and specific customs in this region form an inseparable part of Pathan society. In the province, there are 1389 general health institutions, and the population per health unit is 12 000. The men are mostly farmers or work as labourers for daily wages. Most of the families belong to very low income groups.

Pathans are men of swords and guns, and the life of a tribal Pathan is governed by unwritten codes which contain values of life and embrace all their activities from the cradle to the grave. Among the Pathans, one of the most evident traditional marks of social status is the relative inactivity and invisibility of their women from the public and social scene. Women perform tasks centred within the family quarters – only fetching water or gathering fuel and fodder, normally take them out of the home in some of the areas.

The world of rural disabled poor women in developing countries is handicapped four times; their poverty, their rural background, their illness, and disability. They have least access to education, skills training, income-generating activities, transport and housing. They also suffer from social disrespect, malnutrition, disease and ignorance, they are less likely to get married and mothers with disabilities face social stigma, poverty and isolation. Most women in this situation spend many hours a day preparing food. This puts them at risk from health problems caused by cooking fires and smoke.

Social constraints

Strict *purdah* (or seclusion of women) is a more critical issue

Les femmes handicapées: cuisson et émission de fumées

Cet article décrit la situation des femmes handicapées physiquement du Nord Pakistan et leur environnement domestique particulièrement les tâches liées à la cuisson. En plus de leur handicap physique, ces femmes sont également victimes de la pauvreté, de la maladie et de leur appartenance au monde rural. Leur accès à l'éducation, transport, logement et activités génératrices de revenu est extrêmement limité. La politique d'isolement des femmes contribue aussi à restreindre l'accès aux programmes communautaires de réhabilitation. Cependant, depuis les années 1990, ces programmes tendent à être acceptés et les femmes commencent à bénéficier de formations liées aux activités domestiques sans que cela ne déroge aux traditions.

than the activities performed by them. NWFP has a reputation throughout Pakistan as the centre of conservative behaviour in this respect. Women observing strict *purdah* usually remain inside the walled off quarters of a home. *Purdah* is not just a woman's personal matter, it rather involves the whole Pathan society. A stranger trying to enter a house can lead to fatal results. If the visiting persons are male, trying to talk/teach the female members of the house, it is next to impossible. When there are cultural restrictions, like the seclusion of women in reaching and helping disabled people, the task of the community-based rehabilitation programmes becomes very difficult.

The Rehabilitation Centre for the Physically Disabled (RCPD)

Keeping all the above factors in mind, the Rehabilitation Centre for the Disabled was started in a two-roomed rented house, with a few parents and professionals in 1985, with the main target being helping rural women and children. Experience had shown that an institution is more likely to be successful where rehabilitation of disabled children is combined with facilities where parents/caretakers can get training about home management skills. The presence of female staff, in a

small day-care rehabilitation centre with a home-like atmosphere, encouraged the local community to allow their grown-up disabled girls, and mothers of disabled children, to benefit from the organization.



Figure 1: Two women with physical disabilities making naans at the Centre's kitchens

For the first few years, home visits by female staff for mothers' training in home management and mothers' counselling played an important role in developing community confidence. (The female staff member was always accompanied by a male staff member, for security. The man

stayed out with male family members, discussing with them the importance of the child's rehabilitation.)

Skill transfer

After the first few years, the organization arranged classes, seminars and workshops for community training in disability-related issues. In 1990, Primary Health Care classes for the mothers coming to the centre were started. Mothers took great interest in these classes. These classes consisted mainly of group discussions, with the help of available slides, charts and videos; Peshawar UNICEF provided some training. Seminars have been run on 'Networking NGOs working on Disability with NWFP', with 102 participants, and another seminar on 'Human Resources Development', with 332 participants.

There were three pre-seminar camps in three main cities of NWFP, before the second seminar took place in Peshawar. During group meetings with the local communities before the seminars, the need for participation of mothers in the planned seminar was stressed. The group members (all male) said that they would try to send a few females for training too. But not very surprisingly, there was not a single female participant present at either seminar.

Outreach programme

To meet the needs of helping disabled children from farther afield, an outreach programme was started in 1992, reaching 96 towns in the following six years. Camps at various locations were attended by both men and women, as purdah arrangements made this possible. Although the community will accept male staff as care givers to some extent, if mothers are to be taught about disability-related matters, with guidance for home care of their disabled children, there must be arrangements made to allow women to attend courses. In 1997, formal seminars on 'Primary Health Care and Prevention of Childhood Disabilities'

helped many women development NGOs to strengthening community understanding about the work of such groups.

Empowering women with disabilities

POWER (Promotion Of Women Empowerment & Rehabilitation)

In mid 2000, a group of women with disabilities was formed at RCPD to help empower women with disabilities. A challenging task in a country with strict socio-cultural norms. The group started work in 6 different towns with local NGO help. These are demonstration groups with commitment to women's equality and female human rights in general, supervised and run by women with disabilities.

National Disability Network:

The need for a disability-related network at national level arose from the expanding work of the outreach programme. From 88 towns all over Pakistan, 231 NGOs became net members and the network became 'Rehab Pakistan' in 2000/2001. The RCPD was already working as a Resource Centre, having physical and vocational rehabilitation sections, providing disability-related publications, and providing a lot of human resource development programmes. In February 2001, it

started collaborating with 21 similar NGOs with contacts and work in another 15 towns.

Household management skills particular to women with disabilities

Physical needs

- Women with loss of sensation in their legs due to disability need to use a protective wooden board close to their legs for the prevention of burns
- Such women should also drink a lot of water to prevent dehydration, especially in summer. Otherwise, urinary tract infections or constipation can cause more problems.

Safety

Liquid fuel and gas stoves can cause explosions, fires and burns if not properly used. For using these more safely, here are some instructions:

- Do not let fluid drip anywhere or touch your skin – if it does, wash it off right away
- Keep anything that can burn away from the stove
- Store extra fuel in a place away from the cooking is done, and do not use matches or cigarettes nearby



Figure 2: Cow-dung is highly polluting as a fuel

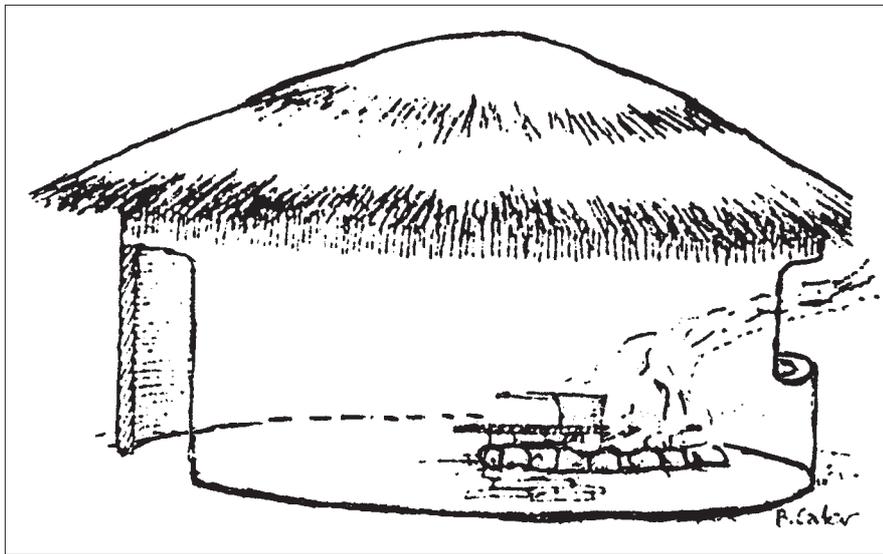


Figure 3: Have at least two openings to allow smoke to get out of the room

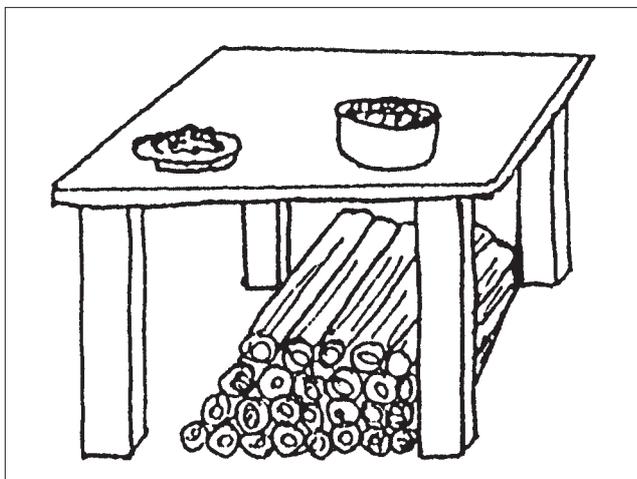


Figure 4: Cut food into small pieces and protect fuel from rain

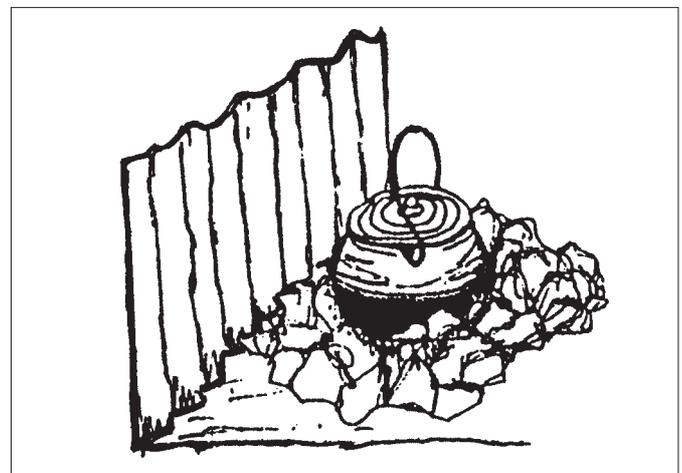


Figure 5: Protect outdoor fires from wind, and always use a lid on the pot

cooking, keeping the cooking pot covered. Less fuel is utilized and you breathe less smoke.

- Using dry fuel on stoves that produce less smoke. (Smoke is a sign that fuel is being wasted, since it is caused by fuel which does not burn completely).

Conclusion

In a society where free mobility of men and women is not permissible mainly due to seclusion of women and cultural limitations, hundreds of thousands of dis-

- The stove should be kept in an area where air can move freely around
- Be extra careful while lighting the stove

Women using solid fuel stoves that produce a lot of smoke often suffer from more health problems than those using cleaner fuels. In Pakistan, biomass fuels include wood, cow-dung cake, paper, wood, coal, dried sugar-cane leaves. The smoke from these fuels causes further problems if the fuel is burned indoors. And if the fuel has chemicals in it, like pesticides or fertilizers in the crop residues, the smoke is more harmful.

Breathing smoke from cooking fires can cause chronic coughs, colds, eye problems, pneumonia, bronchitis, lung infections and lung disease.

Breathing coal smoke can also cause lung, mouth or throat cancer. Pregnant women breathing cooking smoke can suffer from dizziness, weakness, nausea and headache. Smoke can probably also lead to the birth of low-weight babies.

Preventing health problems from smoke

- Cooking where air can move freely. If outdoor cooking is not possible, have at least two openings for air in the room
- If possible, cooking in turns with other women, so that each woman can breathe less smoke
- Finding ways to cook food in less time, but completely. This could include cutting the uncooked food into smaller pieces, soaking dried foods, like beans, overnight before

abled children and their parents, especially mothers, cannot be left unassisted. The above experiences and models, if practiced widely in other such areas of Pakistan, can make gradual, needed changes at the community level, without disturbing the centuries old traditions.

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Energy needs in a high altitude conflict zone of India

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Kargil, a district perched atop the Himalayan plateau, at an altitude of over three thousand metres above sea level, has turned out to be a stage for cross-border aggression. It has not only faced two major wars, in 1965 and in 1971, but has been witness to low-intensity cross-border aggression between India and Pakistan for a decade now. However, it was during the armed aggression of May 1999 that the region shot into prominence. But for the conflict, the region would not have been known to the rest of the country.

In January 1999, during a protest rally in favour of their rights in Delhi, India's capital, the activist Raza Abbasi from Kargil recalls that he and his colleagues had to explain to the police the existence of Kargil. Said Raza, 'The war helped the country know that we do exist as part of this nation'. Raza echoed the concern of most Kargilians who were piqued by the lack of concern by the majority for the small community living in this high-altitude region.

Unfortunately, the war was timed (from May to September) to coincide with the most productive summer months for the local pop-

Besoins énergétiques dans une zone en conflit de l'Inde située en haute altitude.

Les conflits armés et les problèmes de réfugiés présentent plusieurs difficultés: d'abord pour les réfugiés eux-mêmes ensuite pour les populations environnantes. La nourriture est un besoin de base, cependant dans les régions froides et isolées, le bois pour le chauffage peut être la principale priorité. Cet article montre comment les organisations d'aide et ultérieurement les organisations de développement doivent tenir compte des ressources et contraintes locales, il esquisse également les réponses à apporter en se fondant sur les modes traditionnels de vie afin de parvenir à un maximum d'auto-suffisance.

ulation, the time during which not only are farming operations accomplished but enough food is stored for the coming winter. Consequently, the impact of war had wider human dimensions too. Though only 30 000 people were directly displaced, the impact of cross-border aggression was felt by the remainder too, as they had given shelter and support to the displaced during this period.

The energy question

Much to everybody's surprise, the affected population in this war-torn region demanded fuelwood as a relief. Normally, one is conditioned to hear requests for 'food' in such situations. It was a new learning experience for outsiders, that survival in such high mountainous areas is dependent on fuelwood. One may survive

the winters without 'food' relief but not without fuelwood to keep oneself alive. No surprise, therefore, that most of the better months of summer are spent on collection of fuelwood.

Since local people had missed out on the opportunity of collecting and storing fuelwood for the winters, fuelwood figured top on the relief package by most relief agencies. The district administration distributed 2000 tonnes of fuelwood while the relief agencies distributed another 1200 tonnes. Clearly, this quantity was nowhere near the actual wood requirements of the affected population for the six winter months.

According to estimates by the Forest Department in the district, the average requirement of wood for a family for the entire winter duration is around three tonnes. By this estimate, the total requirement for the displaced population alone worked out close to 12 000 tonnes. Clearly, the relief package was only starting to address the problem. Private vendors were expected to cover the shortfall. Even during normal conditions, much of the wood supplies are met through private vendors who transport fuelwood from the Kashmir valley. In 1998, 480 truckloads of wood, containing approximately 3.5 tonnes per truck, were sold in the area.

It was quite clear that war or no war, the issue of energy was

Where is Kargil?

Spread over the inaccessible mountainous terrain of the western Ladakh region in the Indian Himalayas, Kargil town lies to the north-west of the Kashmir valley at a distance of 204 kilometres from Srinagar and 234 km from Leh, the capital of Ladakh. It can be reached by road from both Srinagar and Leh, which are linked by air. Stretching like a lunar landscape high in the remote regions of the Karakoram, Kargil town is situated on the banks of the River Suru, at a height of 2830m.

Till 1979, Kargil was part of the erstwhile largest district in the country, Ladakh. Covering 14 036 square kilometres, the district is characterized by sparse vegetation on mountains that range in height from 2500m to 5500m. The district remains snowbound and inaccessible for half the year, from October to April. Its population of over 95 000 people is distributed in 131 villages. Drass, a small town in the west of Kargil, is reputed to be the second coldest inhabited place, with the temperature dipping down to -75°C. Over 90 per cent of the population in the district is Muslim; Buddhists and Hindus constitute small minorities.

paramount for this region. The dependence of the local population on supplies from the valley and the plains make them more vulnerable in the event of unfortunate calamities. With energy being crucial to human and cattle survival in the region, long-term plans need to be developed to tide over the crisis-like situation that crops up year after year.

A unique institution

Mosque is a social institution in Kargil that addresses the problem of energy in its own unique way. Each village has, on an average, two mosques. These mosques provide hot water facilities for bathing during the winter months. Hamams (traditional water heaters) are available in these mosques. Not only do the hamams keep the praying arena warm, but they provide hot water for devotees as well. Needless to say, most of the devotees who use this facility pay for it according to their capacity. It seems this tradition came to the region of Ladakh from Iran. Ever since, the local communities have not only nurtured this institution but sustained it too. Government too has contributed to the survival of this unique practice. Each year, the forest department contributes a fixed quota of fuelwood to the mosques. In the post-war period, it contributed 400 tonnes of fuelwood to these mosques.

Dependent economy

People in Kargil are surviving in a land-locked situation. Gone are the days when Kargil used to be at the centre of the silk route, bartering barley, wheat, mustard, apples and apricots against salt, wool and meat products. With the closing of the silk route and the creation of the Indian State, the region has become totally dependent on the State. Today, life in the region is fully dependent on food and fuel supplies from the plains (Figure 1).

Over 12 000 tonnes of grain are imported into the region each year. If petroleum products and other essential commodities are



Figure 1: A convoy of trucks waiting to move on carrying civil supplies

Indian army website

also considered, the situation is much more severe from the point of view of a community that was, not long ago, leading a self-sustaining life. Each year, over 5 million litres of petroleum products and over 700 tonnes of fuelwood are consumed in the region. With the population projected to increase at a growth rate of 47 per cent every ten years, the dependence is bound to increase.

A distressing feature in the development process has been the culture of subsidies and hand-outs. In the entire Ladakh region of which Kargil is a part, subsidies constitute a substantial portion of developmental expenditure, which multiplies many times in the wake of a conflict. This has virtually destroyed such qualities as self-reliance, sustainability and even self-respect; so vital for an area that remains cut-off from other parts of India for many months each year,

Kargil poses a development challenge that warrants a radical shift in the present developmental design. There can be no two opinions as to the necessity to change the strategy for economic development of the region. An integrated developmental model taking into consideration the natural constraints and available resources of the area needs to be evolved and implemented at the earliest opportunity if the people of the region have to ensure a



Figure 2: The future depends on qualities of self-reliance, sustainability and self respect

Michel Dalle, Website: <http://gallery.uu.net.be/Michel.Dalle/>

future for themselves. The new model needs to be built on the traditional way of life, avoiding the problems created and dangers posed by the present system, and adopting new and appropriate technologies and paradigms to achieve greater productivity and efficiency at all levels, with a maximum of self-sufficiency as the ultimate goal.

There are no easy solutions for a region that is faced with natural and manmade uncertainties. It is both a challenge as well as an opportunity to address the livelihood needs of the region.

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The provision of household energy: Coping mechanisms of internally displaced people in Benguela Province, Angola

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Introduction

Angola has been devastated by decades of civil war. Several attempts failed to conclude a lasting peace agreement between the Government – formed by the MPLA-party (Popular Movement for the Liberation of Angola) – and the rebel group UNITA (National Union for the total Independence of Angola). The 'Lusaka Peace Process' initiated in 1994 with the signing of the Lusaka Peace Accord finally collapsed in December 1998. The resumption of full-scale war forced hundreds of thousands of ordinary people to flee their homes in the countryside, to seek refuge either in provincial capitals held by Government forces, or to flee to the coast where a situation of relative calm persists. Most of these internally displaced people (IDPs) fled for the third or fourth time.

People who arrived in coastal towns were immediately obliged to assemble in camps established in run-down public buildings, offering nothing more than a roof. The Government failed to provide them with food, water, clothes, medicine, health care, sanitation facilities etc. The international community was approached to take care of the basic needs of these people.

Support for IDPs in Benguela Province

Since 1992, German Agro Action, together with its local partner organisation Acção Angolana para o Desenvolvimento, has supported vulnerable people in the Angolan Province of Benguela. With the resumption of fighting in late 1998, approximately 5000 new IDPs came to the coast and were assembled in two main camps located in the towns of Benguela and Lobito, 600km south of the capital Luanda.

La fourniture d'énergie domestique dans une province angolaise: comment les personnes délocalisées font face aux contraintes.

Cet article décrit les mécanismes mis en place par les populations déplacées de la province de Benguela en Angola afin de pourvoir à leurs besoins en énergie domestique. Les guerres répétées ont contraint les populations à abandonner leurs demeures et à s'établir dans des camps situés dans les zones côtières. Les ressources énergétiques dans ces zones sont rares, contraignant les populations à acheter le bois ou le charbon de bois parfois en vendant une partie des aliments fournis par les agences d'aide ou en échangeant leurs services. L'accès à l'énergie est problématique car les sources d'approvisionnement sont éloignées et le parcours très souvent miné. Des solutions à court terme (techniques de cuisson améliorées, plantations, cuisines communautaires) ont contribué à améliorer la situation.

Arable land is extremely scarce in the dry, semi-arid strip and there is a harsh competition for it. IDPs have experienced extreme difficulties in getting even very small plots on which to start subsistence agriculture. Thus they depend almost 100% on external aid coming from international organisations.

Most of the IDPs have remained in the urban camps, surviving on food aid on the one hand and trading on the other. Possibilities to earn cash income are extremely limited because the displaced people compete with thousands of unemployed resi-

dents for the very few jobs in the formal sector. Hence, they fulfil their needs by selling either parts of their food aid or other relief items they do not most urgently need, or by exchanging services – including sexual ones – for charcoal. The monthly ration distributed to one family consists of 50kg of milled maize (Figure 1), 6kg of beans, 4litres of oil and 400g of salt. If available, one bar of soap is added. In order to get the food aid they have to participate in public works at least 5 hours per day. Even though the market value of these goods is above the minimum wage, it is



Figure 1: Food aid being distributed at the camp

not nearly enough to cover all the needs of a family for one month. The need to buy medicine, to contribute to burials and the daily need for fuelwood (firewood and charcoal) imposes a heavy burden on the household economy. They only buy fuel because they live too far away from areas of fuelwood to go and fetch it.

These mechanisms to acquire fuelwood are not confined to IDPs but are the same for the urban poor who struggle daily to make ends meet and to secure a most basic level of livelihood. The situation is more specific for those IDPs who have been resettled in the countryside, as they cannot take part in urban trading networks and are obliged to rely on scarce natural resources only.

In the year 2000, the Provincial Government transferred about 200 IDP-families from the urban camps to a rural area about 60 km out of town. Each of them was allocated one quarter of a hectare in order to start subsistence farming. Neither the IDPs nor the resident population were consulted prior to the transfer. The resettlement camp was established without taking into account the most basic factors for human survival such as: water sources nearby; a basic social infrastructure; natural resources for construction and fuelwood; social

acceptance by local people. Again, international organisations were expected to provide all that – trapped in a situation where they were politically opposed to the Government action but were aware that the practical and social needs of the IDPs had to be addressed.

In the resettlement camp, the IDPs received the same ration of food when they took part in Food-for-Work activities as they had in the urban camps. The possibilities to improve household income by extra trading and occasional labour are much more limited out of town, thus people rely far more on available natural resources. Located at the northern edge of the Namib Desert, the area suffers from considerable ecological degradation: except for the cultivated plots, no vegetation is available. Up to the horizon one cannot see a single tree (Figure 2). Erosion has marked the landscape, soils are of extremely poor quality and water is very scarce and slightly salty due to the proximity of the ocean.

German Agro Action alleviated the difficult situation of the resettled IDPs by providing them with shelter, access to water and health services, food aid, seeds and agricultural tools.

Wood needs of IDPs

It is recognised that IDPs need firewood (or charcoal) for cooking, heating and light, but they also need timber for constructing houses (especially the roofs), latrines and basic social infrastructures (health centres, schools, churches). The availability, the access and the transport of this wood pose major problems to IDPs. Where natural resources are scarce it is almost impossible to find suitable wood for free. People are therefore obliged to pay for it, which they usually cannot afford. As most settlements of IDPs are temporary ones, people are very concerned about losing their construction material if they are obliged to leave. In the mentioned example, German Agro Action provided shelter by distributing tents, as the scarcity of natural resources such as wood and grass does not permit the construction of houses made from local material.

It is less obvious for most outsiders that IDPs also need wood for

- doors and windows in order to protect their personal belongings from being stolen (Figure 3)



Figure 3: Wood is also needed for doors to protect personal belongings

- fencing in order to keep small animal within the proximity of their homes.



Figure 2: Resettlement camp

– and as handles for agricultural tools, as crutches and for the production of coffins. Especially in extremely degraded deforested areas, some of these issues become major problems for vulnerable households. It is, for example, a cultural shame to bury a family member in a mat or a banana leaf – simply because the family cannot afford a coffin. In their belief, the poor burial could have a negative effect on the well-being of the relative in the hereafter and thus falls back on the living family members as well. Hence everything has to be done to organise the wood for a coffin even if the family has to take on a huge debt.

But the daily need for fuelwood is an ongoing concern and poses the biggest environmental risk for hosting areas.

Coping mechanisms to deal with firewood scarcity

According to international standards, addressing the supply of fuelwood and construction materials should be a priority when IDP or refugee camps are established. Where this principle has not been adopted, as in the example of Benguela Province, resettled IDPs face major difficulties accessing fuelwood, and face harsh competition with local residents for using the scarce natural resources. As women are traditionally responsible for cooking, and hence also for the provision of household energy, they are the ones who suffer most from this situation. Collecting firewood poses several burdens and threats to them: the long distances they have to walk, assaults on the way, mine accidents in unsafe areas and fear of black magic.

Where women have to walk very long distances to find suitably wooded areas, they use up a lot of time on the way and come back completely exhausted, carrying the heavy burden of the bundle. Collecting enough wood for a



Figure 4: Children need supervision

week can take up to one full day away from home. They have to prepare food for the family in advance, to organise supervision for the children they leave behind (Figure 4), and cannot participate in a food-for-work activity on that day.

Walking long distances from the camp to very isolated areas they fear getting lost, because they are unfamiliar with the area. More serious even, they are afraid of assaults and rape which can occur on the way. In order to be protected, they form groups and ask men to accompany them. If they are single and cannot approach their husbands for protection, they sometimes have to pay the protectors by giving away a share of the collected wood.

Angola is one of the most heavily mined countries in the world. Mine accidents occur, especially when women who are not familiar with the area collect water or firewood. As they have few alternatives they have to take the risk of a mine accident leaving them maimed for the rest of their life. Also, since the residents need the limited natural resources, they try to impede the access of IDPs to fuelwood. This is either done by formally prohibiting access to certain areas reserved for residents, or by reg-

ulating what type of trees can be cut. In the case of Benguela coast, traditional chiefs set up these rules. In order to enforce them, people often use threats related to myths and magic. They worry the new settlers by, for instance, telling them that a particular path leading to a wood collection area is frequently used by ‘the big snake’ which allows only resident people to pass, and attacks strangers.

These aspects prevent women from making full use of one of the very few items they could collect free of charge, and oblige them to seek other coping mechanisms to get fuelwood. Because of their fear and the physical hardship connected with fetching firewood, they would always prefer to earn enough money or exchangeable benefits to acquire fuelwood on the local market. The results of an appraisal exercise in the camp showed that even though women were most concerned with acquiring water and fuelwood, they asked for support for agricultural production more urgently, because increased yields would permit them to buy fuelwood.

In such situations, where IDPs get food aid, they usually exchange parts of the food for fuelwood. As mentioned, the food rations are not enough to fully cover the needs of a family. Part of the food is exchanged in order to vary the diet (changing maize for dried fish, tomatoes or leaves) and to buy very basic household items such as matches. This leads to the situation that during the first half of the month (after the monthly distribution of the food aid) they exchange food for fuelwood. As everybody is doing the same, the price for fuelwood rises considerably and forces people to give away their food for very little wood in exchange. During the second half of the month, food becomes very scarce and women are obliged to go and fetch firewood (facing the above men-

tioned risks) in order to exchange it for food. Again, everyone is doing it, resulting in a very negative effect on the terms of trade for the wood. This creates a 'no-win' situation that leads to household food insecurity from which very few IDPs manage to escape. As a result of this and other factors, people suffer from bad health and small children, especially, become malnourished, even if food aid is supplied on a regular basis. When weight-for-height measurements of children in the camps were taken, it was found that many of the children were from single-headed households, where the mothers simply lacked the physical strength to do more than they already did to secure the nutritional needs of the children. Where malnourished children come from two-parent families, alcoholism is often the reason for food scarcity of the household; additional income earned by the husband is exchanged for alcohol. In some cases, he even uses the food aid leaving the wife no other option than collecting firewood throughout the whole month. In such situations, individual saving is often the only possible way for women to reduce those problems associated with fuelwood provision. In the end, they are compromising their health and that of their families, because they cannot afford to cook more than one meal per day due to lack of fuel.

Short-term solutions to improve the situation

A socially acceptable balance has to be found between the objective of sustainable natural resource management and people's welfare. As it is impossible to prohibit the collection of firewood, alternative ways of improving the use of natural resources are needed. There is scope for improving the efficiency of the fuelwood use through educating women on improved cooking techniques (such as careful control of the fire and its air supply,

gentle simmering, pre-soaking of hard foods and the use of lids), providing appropriate cooking devices, and by increasing the amount of available wood.

Given that the resettled IDPs come from several different areas, not knowing each other well, it is difficult to encourage them to save fuelwood by pooling household cooking resources. The scarcity of fuelwood is also a very limiting factor to open communal kitchens to serve children and vulnerable adults with cooked meals once or twice per day. In the more forested central highlands of Angola, people participating in the community kitchen schemes have to contribute one stick per person per day. This requisition cannot be imposed in the deforested coastal areas. Provision of cooking gas is also impossible because the transport from town to the settlement site is not a sustainable solution. The introduction of fuel-saving stoves, through their use in community kitchens, is a possible way to address the problem. From past experience of such projects, a carefully studied approach is needed, and implementation has to be monitored well. In addition, though fuel-saving stoves may lessen energy consumption, they do not guarantee reduced deforestation as people may resort to the commercial use of firewood as an additional strategy to assure their livelihoods.

Because daily survival is the direct and most urgent concern of the displaced, long-term environmental degradation resulting from their behaviour is not a priority. It is therefore especially difficult to sensitise them to the environmental impact of their coping mechanisms. Any campaign needs to provide tangible benefits, otherwise it is a costly waste of time taking into consideration women's all-day work load. Tree-planting is in principal a welcome activity, but is often severely hampered by the scarcity of drinking water. As women also have to walk quite long distances to fetch

water, they are not prepared to water seedlings without benefiting directly from them. Because living in tents in the refuge area is meant to be a temporary situation, they are not concerned about caring for a seedling that will become a fully grown fruit tree probably years after they expect to have left the area. Experience in other IDP-camps shows that tree-planting is only successful in areas where people have constructed shelter suitable for them to stay for several years. An initiative to encourage people to grow trees around these homes was very successful, as shade is very important in the hot climate of the coastal area. German Agro Action distributed seedlings of the neem tree – very welcomed by the IDPs for the anti-malaria effects of the leaves. Even young trees carry already the leaves necessary for herbal teas, and hence an almost immediate value for the people.

Conclusion

It has been shown that for displaced people, fuelwood is a complex issue related to various mechanisms developed to cope with the effects of forced displacement, poverty and lack of land. It is not just a question of environmental damage or sustainable resource management. Hence, 'deforestation around a refugee camp can be part of a more complex problem, the solution to which requires an understanding of the interactions between peoples' needs and behaviour and the local environment' (1) This article aims to contribute to that understanding.

Reference

1. UNHCR: Refugee operations and the environment. Selected lessons learned. A source book", p. 14. August 1998

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AIDS a threat to biomass energy conservation

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Status of HIV/AIDS

The regional programme on biomass energy conservation (ProBEC) is implementing a demonstration project in the rural villages of Hurungwe district, 240km north west of Harare, Zimbabwe.

An energy baseline survey was conducted in February 2000 to establish the energy status and the link between energy and health in the demonstration area.

One section of the survey questionnaire tried to solicit the villagers' views on the most prevalent diseases in their community. Malaria and diarrhoea were the most common diseases cited.

Out of 123 respondents, only 5% acknowledged that HIV/AIDS was a prevalent disease. Does this reflect the true situation obtaining

Le SIDA et la menace sur la préservation de la biomasse énergie

Le SIDA est une maladie ravageant plusieurs pays particulièrement en Afrique. Ceci a engendré plusieurs conséquences y compris une menace sur les espèces ligneuses comme illustré par cet article décrivant la situation d'une région située au Nord-Ouest de Hararé. Le nombre croissant de décès a entraîné une augmentation considérable des cérémonies funéraires qui sont accompagnées de besoins importants en énergie afin de nourrir et chauffer ceux qui assistent aux funérailles. De surcroît, les repas ne sont pas bien préparés conduisant à des problèmes de santé. Souvent les personnes âgées ainsi que les jeunes sont contraints de voyager sur de longues distances à la recherche de bois de feu. Cet article propose des mesures afin d'améliorer la situation des personnes victimes du SIDA ainsi que leurs familles.

in the district? Reliable information from the district health experts differs from that obtained from the survey. The low 5% figure indicates the limited awareness about the HIV/AIDS issue and the cultural sensitivity associated with the disease. It is taboo to discuss openly about HIV/AIDS.

The World Health Organisation (WHO) statistics on HIV/AIDS in Zimbabwe show that the age group between 15 to 24 years is the most affected, with 36% being positive. Regrettably, this is the most productive and active group, whose loss deprives the community of their valuable support. Often they leave behind orphans to support themselves, or in the care of the elderly.

From the baseline survey in Hurungwe, 89% of households are interested in getting more information or training in home-based care of the terminally ill patients. A fairly high number of the respondents (67%) indicated that they normally have ill family members for whom they have to care. The emergence of HIV/AIDS has seen a high rise in the number of home-based care programmes country-wide. Hence it can be concluded that there are HIV/AIDS problems in the community, though they can not be expressed directly.

Effects

It has been reported at a regional meeting in Malawi in November 2000 that HIV/AIDS is threatening not only the biomass energy conservation programme but also other developmental projects. There has been an observed increase in the number of funerals in the project areas.

Facts about AIDS in Africa

All but unknown a generation ago, today AIDS poses the foremost and fastest growing threat to development across Africa. By any measure, and at all levels, its impact is simply staggering:

- At the regional level, more than 11 million Africans have already died, and another 22 million are now living with HIV/AIDS. That is two-thirds of all cases on earth.
- At the national level, in at least ten other African countries, prevalence rates exceed 10%. In Zimbabwe and Botswana, one in four adults is infected.
- At the individual level, in many African countries, the lifetime risk of dying of AIDS is greater than one in three. A child born in Zambia or Zimbabwe tonight is more likely than not to die of AIDS

AIDS already accounts for 9% of adult deaths from infectious disease in the developing world. By 2020, that share will quadruple to more than 37%. The global death toll will soon surpass the worst epidemics of recorded history. And unlike those prior plagues, AIDS could well remain with us for decades to come. In South Africa, the prevalence rate grew tenfold in five years.

What sets AIDS apart is its unprecedented impact on development. Because it kills so many adults in the prime of their working and parenting lives, it decimates the workforce, fractures and impoverishes families, orphans millions, and shreds the fabric of communities. The costs it imposes force countries to make heartbreaking choices between today's lives and future lives and between health and the dozens of other vital investments for development. Sometimes development itself even contributes to the spread of AIDS.

From website: www.worldbank.org/aids-econ/africa/fire.htm

During the mourning period, which often lasts 2 to 3 days, a lot of wood logs are used to provide warmth and cooking fuel for the mourners. Community meetings scheduled at such times have to be postponed, as most of the community will be at the funeral. In addition, members who are sick are not able to perform their duties effectively.

Death often takes away the active member, the local artisan or shop owner, resulting in the collapse of the business venture. Loss of a trained member means that extra resources would be needed to train a replacement. More often, the community priorities have to be changed, slowing down developmental efforts.

In Hurungwe district, the survey established that people travel on average 1.5km daily in search of fuelwood. In some areas they go up to 5km. This imposes a heavy burden on the elderly and the young, for the distances are too long.

Families are foregoing meals due to lack of fuelwood (Figure 1). In some cases the food is poorly prepared, exposing the family to malnutrition and other health problems. Under such circumstances, the concept of home-based care will not work.

HIV/AIDS issues have become so prominent that they have overshadowed other developmental issues such as energy conservation, poverty alleviation, gender etc.

In Zimbabwe, the government created a special levy for the funding of HIV/AIDS programmes. As a result, other programmes have to compete for the limited resources with HIV/AIDS. However there are strong indications that programmes which focus on AIDS alone are making minimal achievements in their effort to contain the spread of the disease (1).

Possible Solutions

Approaches to the HIV/AIDS pandemic need to address the root causes of the factors determining the vulnerability of people to HIV infection and AIDS. This means that the problems of lack of development, such as poor support services (health, education, agricultural extension), poor infrastructure and social inequalities should be considered as an integral part of development policy and practice. All developmental projects can thus play an important role in the effort to contain the spread, and mitigate the effects, of the pandemic.

For example, biomass energy conservation activities can be integrated with HIV/AIDS on 3 levels.

- Prevention, through information awareness for everyone
- Encouraging positive lifestyles for people living with HIV/AIDS
- Protection and support for people already infected.

Joint lobbying for resources can be done through co-operation with other institutes/NGOs addressing HIV issues. Training can be offered to enable the affected people to raise income for their families. This can be directed to AIDS orphans, artisans and extension agents.

Awareness can be raised on improved home-based care through better kitchen management techniques. Kitchen management techniques compliment home-based care programmes in that they promote healthy food preparation with minimal energy input and a cleaner kitchen environment.

The way forward

From the survey in Hurungwe district, and from consultations with health experts and other stakeholders, it was found necessary to develop a training manual on better kitchen management techniques for terminally ill patients.

Inputs for the manual are being sought from the district's Village Community Workers (VCW's), environmental health experts, NGOs, community, schools and other stakeholders. The manual, when complete, will be available in the district, and will be given to VCW's for use in their AIDS awareness programmes.

If all developmental workers and health experts come together to work for a common goal, the quality of life of those with HIV/AIDS and their families can be improved.

Reference

1. ProBEC newsletter Pg 3, October 2000. 



Figure 1: Fuelwood is in very short supply

The hearth – reflections on the needs of women suffering mental illness in India

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To reach the small hamlet of Sid-dapura via YN Hosakote, Pava-gada Taluk, Tumkur District, Kar-nataka, South India you travel slowly. There is no other option and so it was that in September our very old Ambassador taxi car-gently edged into the field where we were going to conduct our consultation with mentally ill people, their carers and the members of the Narendra Foundation, a small Community Based Organisation (CBO) who were our hosts. The Narendra Foundation is a wonderful thing: a real grass roots organisation working on health issues in some twenty villages. It was founded by Rajanna, whose work is inspired by the works of Swami Vivekananda:

This life is short, the vanities of the world are transient, but they alone live who live for others, the rest are more dead than alive

The Foundation has a programme supporting physically disabled people in community-based rehabilitation and they want to add support to those with mental health problems to their range of skills. Our organization, *BasicNeeds – new initia-*

Le foyer: réflexions sur les besoins des femmes mentalement handicapées en Inde

Cet article relate une histoire émouvante d'une rencontre avec un couple à Karnataka au Sud de l'Inde. La femme souffre mentalement et est incapable de s'adonner aux tâches domestiques. Cependant son mari continue de l'aider en dépit des conseils de la communauté qui voudraient le voir divorcer. L'auteur met en relief le rôle central de l'équipement pour la cuisson et du feu qui sont au coeur de la demeure où les gens se restaurent, se désaltèrent et se sentent en sécurité.

tives in mental health and development, want to partner the Narendra Foundation in developing their scope in mental health delivery. To do this we start with the people in mental distress – hence the meeting.

The little mud buildings in front of us are the head offices of the Narendra Foundation (Figure 1). Everything is very clean, disciplined, a little austere. The last of the people coming to the meeting are walking over the field. A man and woman come into sight: he is a dignified man in immaculate white top and trousers; she is poised with a beautiful flower in her hair – Mr and Mrs Ramalingappa (Figure 2).

The animation of the meeting begins. As can be seen from the picture it is lively (Figure 3). My colleague, Naidu, moves with the flow of the group and helps them to give voice to anxiety, despair,

and hope. Mental illness, or distress, brings powerful emotions to the surface in any society and this little farming community is no exception. From my field notes:

The young woman was married off to a man who turned out to have a wife already with three children. The idea was to have a permanent person to care for the children. No further children were required by the (original) couple and so the young woman was forcibly sterilised. As the tears roll down her face she longs for the pesticide (suicide – drinking pesticide as a poison). The group give out small noises of sympathy and encouragement.

The meeting is held outside, under a tree. As the sun moves so



Figure 1: Head offices of the Narendra Foundation



Figure 2: Mrs Ramalingappa, seated in foreground with a flower in her hair



Figure 3: The discussions became lively

does the group so as to take advantage of whatever shade there is – the group quietens. In the heat two notions are set beside each other in my mind: hearth and family. The hearth is both the real centre of the family and its spiritual one as well. Pain is often expressed in terms of being part of, or rejected from, the hearth. The hearth is also the place where the sticks are gathered together to heat the hotplate upon which the simple rotis are griddled and where the water boils in the big pot squatting on three stones. Who is it that keeps this central place stocked with fuel? What happens if she just stops carrying out this duty, which is the focus of the family home?

I had learnt something of Ramalingappa's story from Naidu and from the meeting which was still in progress. Mrs Ramalingappa is mentally distressed and from time to time attends to one or two voices speaking internally to her. She contributes to the meeting quietly, thoughtfully. The couple told the story of how her illness had been diagnosed and how the pills she had been prescribed had been too overpowering. She could not focus on anything for long, was very drowsy and eventually became incontinent.

Mr Ramalingappa works a stretch of the railway, ensuring the safe passage of the trains. He has a gang of labourers under him. He is important in the area. His hearth should be warm and well tended. This is what people felt around him and he was advised to find another wife and to return Mrs Ramalingappa to her own family.

But he did not do this. Instead he supported her, cared for her needs and did everything possible to understand the illness. In the end, through his intervention, the amount of pills she was taking were reduced, but as she became more aware of the world around her, they both realised that she had 'forgotten' all her normal life skills – the skills of the hearth – of tending the fire to keep it alight.

So he sat down and they prepared the *rotis* together. The fire was lit and they cooked together. Things were not always easy but against the advice of the community, they made their way together.

Be it old age, blindness or physical disability, each problem can be made much worse by the relationship between the local community and the vulnerable person.

In the case of mentally ill women, not carrying out their

role can seem threatening to those around them. To them, the stove and fire is related to the heart of the home where people come to refresh themselves with food, talk and safety. Because of this, many people fear mental illness in the person who attends to the hearth, since they feel that it will put this central part of family life at risk.

Just as the hearth has a spiritual dimension, so too there is much symbolism in not attending to it – the family can feel abandoned and so on. The person who is mentally ill is not just different (blind etc), but appears to others to threaten their existence. All of this brings much pressure on those whose role it is to gather sticks and to roll out the rotis and boil the water.

In the five days we spent working with five different groups of mentally distressed people all over Andhra Pradesh and Karnataka, we met over one hundred mentally distressed people, carers etc. Only two of the primary carers are men.

We are waiting to eat. A simple meal was served by the Narendra Foundation staff – the chant to give thanks rising up into the air – hands a little outstretched. A little later we ease past the people as they leave the field.

After a long meeting of about seven hours the group has concluded that there was much to commend a regular meeting. We are all going to meet again. Good – very good. We drive past the Ramalingappa's walking steadily home- raising an arm to bid us farewell as we disappear from sight.

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Identifying barriers to the adoption of specific domestic energy strategies – a new rapid assessment tool

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What is an 'assessment tool'?

This article presents the use of a new assessment tool to assist the design of any development or emergency intervention.

The assessment tool is useful in two ways:

- It allows you to find out detailed information in a short time – good for emergencies and where there is no resident anthropologist.
- It is not just one person's opinion or interpretation of what other people have said, so it identifies accurately what the majority think.

It is called a 'tool' because it can be used by a field team, with a small amount of support from a sociologist who helps to get the format of the formal questions correct. It comprises a set of formal questions which depend on the statements made during a general survey. There is always the same structure to find out very precisely about people's beliefs, values, social influences and behaviour.

This new assessment tool is called the TORA, and in the case study below, it was used to find out the particular beliefs which were stopping people from adopting specific domestic energy strategies within displaced communities in Northern Ghana.

Why people should use the TORA

The new tool describes the links between beliefs, social influences and behaviour. It helps find out the most effective way of introducing an intervention by looking at the social attitudes that may affect why people do things and who can influence them.

Identification des barrières à l'adoption de stratégies spécifiques à l'énergie domestique: un nouvel outil d'évaluation rapide.

Cet article présente un nouvel outil d'évaluation afin de faciliter la conception d'actions en situation d'urgence ou de développement. Les auteurs ont ajouté le "pourquoi" aux questions habituelles "quand", "comment" et "qui" que l'on trouve dans les enquêtes participatives. Le projet concerne 3 activités (collecte de bois de feu, introduction de foyers améliorés et plantations) considérées comme cruciales dans la gestion du bois de feu au Nord Ghana. Une croyance sous-jacente dans cette région est que Dieu ne va pas les laisser repartir sans avoir collecter leur bois de feu. Ces croyances sont au coeur du comportement des gens à propos de la question du bois de feu et de son environnement. L'outil permet d'aborder les comportements et identifier les messages éducationnels qui pourraient être développés afin d'apporter des réponses aux questions posées.

Participatory surveys are usually used to ask the questions: What – Where – When – How – and Who? For example, consider wood collection:

- where is it collected?
- when do people collect?
- how often they collect?
- who has to collect it?

This new tool adds a process to reveal *why* things are done.

- Why do people collect wood in the way they do?

The TORA tool gives a value to the strength of opinions, attitudes or beliefs within a community. In addition, the assets which people have because of their role in a community (ie their *social capital* – who they know and how much they are influenced by others and how much they influence others) has tended to be neglected in many development strategies. The tool helps identify the key people for each community activity. The TORA tries to answer the question 'Why does this community act the way they do?'

For example, in an open survey – someone might say that they think that 'a persons life is connected to the life of any tree

he or she plants'. Within a group discussion, everyone might appear to agree with this statement. But if the person who made the comment is very influential, it is hard to know whether everyone else is being polite because he is an elder, or whether that belief is really at the root of their behaviour. Is it a belief that is so strong that it affects the behaviour of the majority of the population, and is the eldership really influential on that issue?

How does this help with development planning?

This is best illustrated from the project itself. The project was undertaken in an area of Ghana with an environment which is very sensitive to change. There are many households internally displaced, due to ethnic conflict in 1994. Although the area has seen a number of initiatives in improved stoves and woodlot planting, encouraged by Government and Non-Government agencies, these have had limited success.

To make the tool work well, the way people live must be carefully understood to ensure that activities undertaken are appropriate. A

non-focused enquiry into a community's behaviour will not produce the desired results in a short period of time. Seven different activities were identified as key to domestic energy and three were analysed closely, as they were seen to be critical to fuel wood management. The three were:

- Firewood collection
- Improved stove adoption
- Wood lot planting

The TORA survey took into account differences within the population, i.e. different language groups, geography and those who have, or have not, been forcibly displaced due to war or civil unrest.

Insights to help planning?

An important finding of the TORA was that, under the right circumstances, displaced people were actually more likely than local people to adopt sustainable fuelwood practices. Decisions on whether to adopt improved methods are influenced by what is seen to be acceptable by the community, rather than by people working out benefits for themselves. Also displaced people are less willing to adopt new practices in the kitchen, but as a community, they are willing to try new external interventions, such as woodlot planting (Figure 1).



Figure 1: There was a positive response to woodlot planting

There were no real concerns about planting woodlots as everyone responded positively to this matter. There were no major belief barriers to overcome, just practical barriers which were addressed through community discussions, organisation and co-operation.

The improved stoves being promoted have a number of technical difficulties. Cooking practices in Northern Ghana are characterised by large pots that must be stirred aggressively during the cooking process. This often breaks the proposed improved stoves. Also much of the extension work had been targeted at women (understandably). However the TORA revealed that few if any women would change their way of cooking without asking both their husband and their mother in law. Agencies are working on new solutions and will try to ensure that the men are also kept informed about new cooking options.

The most important key barrier

However, there was still no widespread response to improving the environment. In particular, foraging for fuelwood was an issue that had not been addressed by agencies. This offered the best potential for a change in people's activities that was quick, easy and cost effective.

The TORA identified that all communities have a strongly held belief that they will always have areas from which to collect firewood. Communities are generally aware of extension messages about the destruction of biomass resources, which they hear on the radio, from extension workers,

and from posters. However, they more strongly believe that God will not allow them to go without firewood. (Note, These statements are not specific to particular religions, the communities are Islamic, Christian and Animist.) They believe that there will always be wood for their children. There is an overriding perception that there will not be a problem with future access to firewood. These beliefs are at the core of people's attitude towards the issue of fuelwood and the environment. The TORA demonstrated that a linkage exists between these key beliefs and activities which damage the environment.

However, feedback from most of those working in the field is that people are willing to discuss the inconsistencies in what they believe. They know that 'God does let bad things happen, their lives are full of sorrow'. So they face the disparity and answer it consciously in the light of their world experience. They are then prepared to consider ways to modify their behaviour to take it into account, not through outside influences, but through their own understanding.

The TORA also shows that the channel used for each message is as critical as the message itself. Since most decisions are made as a group, joint consultation should be carried out, educating should be done mostly in

Box 1: Using a flip chart in group discussions

A flipchart, with a sequence of pictures, is one way which helps group discussion in the villages. In this one (Figure 2), the man, Kofi, who was middle-aged in previous pictures, is now imaging himself as an old man and wondering if there will be very few trees. (He is considering whether God will allow this level of destruction.) His wife, Ama, has asked him what can they do now to stop this happening? The animator or extension agent asks the community 'What do you think Kofi's answer might be?'. Expected answers might be; plant trees, prune trees, use it more carefully, talk to the chief and ask him."



Figure 2: An elderly Kofi thinking about access to fuel

Box 2: Drama – future access to fuelwood supplies

One of the ways extension agents work with their clients is to present a drama, to introduce the subject in a humorous way. The names were changed to be suitable to the different areas in N Ghana. This drama has been performed in villages and schools. Note how it picks up on the theme of future access.

Kofi and Ama.

Kofi: Is food nearly ready. I have a hard day in the field and I am hungry.

Ama: Food will be late. I only started a short while ago.

Kofi: What! What have you been doing. Have you been sick?

Ama: No. We needed more wood and it took me a long time. It took me all day.

Kofi: All day! How much wood did you get. Enough for a month?

Ama: No. Enough for three days.

Kofi: Three days! Ah, Ama. You are getting old and slow. I remember when we were first married you could get a month of wood in half a day, and now you are telling me you took all day for three days wood. Poor old Ama.

Ama: I am not that old! I still move fast. But we have to go a long way for the wood now. When we were married the wood was here, near the village, but now it is way over there.

Kofi: Wood cannot move. God did not make the trees with legs. Are you saying they are running away from us.

Ama: Of course not. But the trees that were near the village are gone, dead.

Kofi: But I see trees. Look, there is one, there is another.

Ama: Yes but you know as well as I do that those are for fruit. Look, if I took wood from that Shea Butter tree the chief would tell us all off. Show me one that is near that I can take wood from.

Kofi: There is one.

Ama: Yes but that is one! I must collect a bundle to cook your dinner, I cannot do that from one!

Kofi: Huh. I still think it is old age that makes you slow. Trees do not move.

Ama: Look, when you were a child, what was this village like.

Kofi: Ahhh. We had fun as children. There were bushes over there that we used to hide in. If our Father was going to beat us we would run to those bushes. But now there is Alhassans hut and beyond that there is Alhaj's. Hmm, now that I think about it, there were more trees when I was young. And when we got married. And now they are over there.

Ama: Yes, And we are walking further and further every year to get the wood. And it takes more time. By the time our daughter is our age she will have to go two days to get the wood.

Kofi: No – her husband will not let her go that far. It is too dangerous.

Ama: Then the men will have to collect the wood.

Kofi: Hah. That day will never come. God will never let the trees disappear.

Ama: But I have heard the radio say that all trees are part of Gods creation, and that we should care for the trees.

Kofi: Yes. And you, Ama are the one cutting the trees, so you should be the one caring for them.

Ama: But, I am cutting them to cook your dinner.

Kofi: Hah – that is no excuse. If you do not take care you will soon be cutting the sacred groves. You must take more care cutting.

Ama: But how can I get wood and yet take care of the trees? That is impossible isn't it?

Kofi: I am not sure. We will ask the chief or the extension agent.

Ama + Kofi: How can we look after the trees and get wood for our fire at the same time?

groups, and involvement of key members is key to gaining approval. So having identified these key barriers, educational messages can be more targeted. Most of the agencies working in Northern Ghana have come together to target these beliefs. A workshop was held to discuss the findings of the TORA and many of the recommendations rang true with field workers. Together, workers created flipcharts (as shown in Box 1), dramas (as shown in Box 2), radio messages and discussions that tackled the themes of future access to fuelwood. Over 20 different agencies have incorporated the findings of the TORA into their work and in August

2001 an impact evaluation will take place.

Lessons learned

Although the TORA has been used in many areas of business before in the North, this is one of the first times the tool has been used for development purposes in the developing world. Given that demonstrating TORA as a rapid assessment tool was the purpose of the project, we can now say that with the correct approach to the process it yields the required outcomes. The tool is particularly useful where development interventions are being undertaken. In these cases it can help identify where barriers lie, and target the intervention more effectively. It

explains why people are doing the things they do, and identifies how one can create educational messages to address the core barriers so that people can think about and discuss the core issues.

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Learning to listen to the poor

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Introduction

Very poor people are usually women, frequently 'invisible' to the outside world because of socio-cultural or religious reasons. Their voices are rarely heard because they are often illiterate and they lack the confidence and status to speak out within their own communities. If outsiders reinforce this situation by ignoring women, and looking instead for expertise held by (usually better-educated) men, they risk missing out on some of the most important and relevant issues. One of these key issues is the availability of adequate, renewable, cheap and healthy energy resources.

Identifying the right people

Listening and talking to the right people means that outsiders can understand and enhance the existing skills held by all those with knowledge of indigenous technologies, and technical aid can be more effectively targeted. It also means that a strong and equal relationship is created with local women and men.

A training manual has been developed for use by ITDG project staff with various partners in development (1). ITDG recognises that vulnerability can only be sustainably addressed by empowering, supporting and energising those who are most at risk. The training manual aims to help field and community workers to identify and listen to under-represented resource-poor people.

Stakeholder analysis

Primary stakeholders are those who have the most to lose, in development projects this is often poor women. Secondary stakeholders are outsiders who are affected, but who invariably have the greater power over the out-

Apprendre à écouter les pauvres

Les femmes en situation de pauvreté, souvent, ont le plus à perdre. Cette tendance est renforcée par le fait que souvent l'expertise des femmes n'est pas prise en compte. L'auteur considère les travaux antérieurs dans ce domaine et donne un aperçu d'un manuel en cours consacré cette question. Le manuel est explicitement centré sur les atouts dont les femmes disposent et les contraintes auxquelles elles font face. L'énergie est considérée comme un facteur influençant chaque aspect de leur quotidien.

come. Conflicts of interest are often emphasised by gender; costs, benefits and resources are rarely evenly distributed, even within the family. Using tools such as stakeholder analysis may indicate those areas of support in the field of energy which may be of value to poor women.

It is important that women's energy needs are understood within the whole context of their lives. Their existing knowledge must be respected and used as a basis for developing the energy sector and the way in which it serves the poor.

Sustainable Livelihood Framework

One way to analyse existing energy use or to compare alternatives is through the Sustainable Livelihood Framework (2). This method begins by considering the strengths that even the poorest people possess. These previously ignored but valuable 'assets', include all the important existing resources and initiatives already held by poor people, and which currently sustain them. Helen Appleton for example reported on the importance of women's invisible technical abilities in ensuring household food security(3). The Framework can be used to highlight those aspects of their lives that make people vulnerable: shocks, trends and crises. These factors are not only environmental but also political, economic and, especially in the case of poor women, very often social.

Future plans

A further training manual, entitled *Resource Poor Women and Information about Energy* is currently being developed and will focus explicitly on the energy assets available to resource-poor women, and the vulnerabilities that they face. It aims to:

- allow participants to explore the importance of their existing knowledge and the importance of energy resources in increasing security
- consider the relevance of modern communication technology to them in their quest to be heard
- allow them to test out reasonable ways in which they can retain control of the vital links through which they can communicate with decision makers.

As the training manual is distributed to partner organisations, an International Gender and Technology network is being set up to share experiences and monitor results. Any organisations interested should contact the author.

References

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Funding for clean technology through the Climate Convention

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Introduction

Climate change is one of the greatest environmental threats that faces humanity over the coming centuries. The main causes are the burning of fossil fuels such as coal, oil and natural gas, which lead to emissions of greenhouse gases such as carbon dioxide, methane and nitrous oxide, together with deforestation. Although climate does fluctuate with time anyway, the man-made increase in greenhouse gas levels in the atmosphere is expected to produce a warming of the earth which could result in major changes in sea level, storms, flooding and droughts, and in agricultural changes. This could lead to a huge increase in the number of people left vulnerable to these global disasters.

Under the Climate Change Convention, agreed in 1992 at the Earth Summit, countries agreed to prevent 'dangerous' climate change by controlling emissions of these greenhouse gases (GHGs). In 1997, countries agreed on a set of actions to be carried out by the period 2008-2012, called the *Kyoto Protocol*. In particular, this protocol set a target of a 5% reduction from the 1990 emission levels by this time for all industrialised nations.

In addition to these commitments, a number of routes for extra funding for developing countries have been agreed, the details of which are still under discussion. This article reports the latest on this discussion, following the continuation of the climate negotiations at the recent conference, called the 'COP6', in The Hague in The Netherlands in November, 2000.

Sources of funding

There are three new sources of finance for developing countries

Financement de technologies propres à travers la convention sur le changement climatique.

L'auteur se pose la question de savoir dans quelle mesure les nations du monde vont honorer leurs engagements au protocole de Kyoto sur le contrôle des émissions de gaz à effet de serre. Les auteurs abordent la question des fonds supplémentaires pour les PVD afin de promouvoir les technologies propres. Trois sources de financement dont le Mécanisme de Développement Propre sont expliquées.

under the *Kyoto Protocol* which together are expected to reach billions of US dollars per year. They are the:

- *Clean Development Mechanism* (CDM)
- *Convention Fund*
- *Adaptation Fund*

They are designed to be available to all developing countries.

Clean Development Mechanism

The *Clean Development Mechanism* (CDM) will allow industrialised countries to fund projects in developing countries which reduce greenhouse gas emissions. These could include introduction

of renewable energy technologies (wind, solar, biomass, hydro etc), or increasing energy efficiency. In return the industrialised country will receive 'carbon credits' which they can use towards their targets.

There are two criteria which CDM projects will have to meet.

1. They will have to lead to a reduction in GHG emissions which is greater than that which would have otherwise happened – this is known as *additionality*
2. They will have to 'contribute to sustainable development'.

Exactly how these are to be assessed is still to be decided: however, we can describe the

Box 1: Example of a possible CDM project

Criterion 1

Project developers need to give reasons why the project might not have happened without the CDM. Reasons could be, eg, lack of finance or lack of local expertise in the technology. The developers would then have to estimate the GHG emissions under the situation where the project was not carried out. This is called the baseline. In our case of the micro-hydro plant, it is likely that the situation without the project would be that the lighting would be provided by kerosene lamps, which give off carbon dioxide during operation. Since the project is being carried out in a rural area, it may be that this situation would persist for maybe 15 years before any changes were made. Hence the GHG emissions reduction which is attributable to the project is the carbon dioxide emissions of the kerosene lamps over 15 years (since the micro-hydro plant emits no GHGs during its operation).

Criterion 2

There should be some evidence of the 'contribution to sustainable development'. This could be the quantitative or qualitative social, environmental and economic benefits of the project. For example, a social benefit could be that the better lighting allows children to study in the evening, improving their level of education. An environmental benefit could be the reduced local air pollution from not using kerosene lamps in the home. An economic benefit could be that the annual cost to each household of the electricity from the micro-hydro plant is less than that spent on kerosene.

basic process by using the example of a micro-hydro project providing electricity for lighting in a rural village (Figure 1).

For someone developing a CDM project, the CDM process will probably work in one of three ways. The first way is where a company in an industrialised country which wants to export 'cleaner' technology agrees to set up an activity, eg a micro-hydro plant, in a developing country. The company will have to reach an agreement with authorities in the developing country (known as a *host* country) that this project can go ahead.

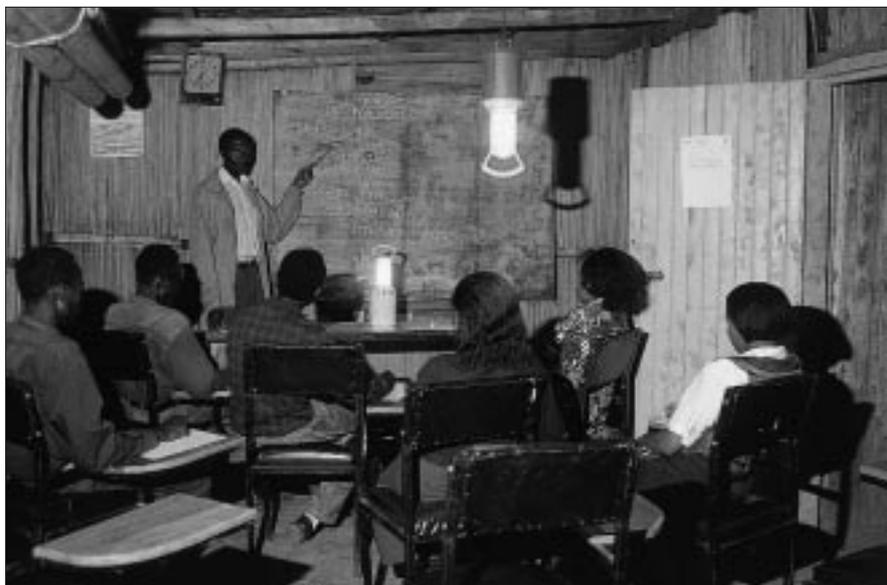


Figure 2: Raising awareness of the need for forest management

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Figure 1: Electric lighting from micro-hydro reduces GHG emissions

The second way in which the CDM might operate is where a company in a developing country which wants to expand its production of a 'cleaner' technology obtains funding from a source in an industrialised country (known as a *donor* country).

An alternative to these types of arrangements is where a single organisation acts for a group of investors and funds several different projects (perhaps even in different countries).

Convention Fund

A further source of funding which is currently under discussion in the climate negotiations is the *Convention Fund*. It is intended

that this fund would be available for capacity building measures both in former Eastern bloc countries and in developing countries. It would be administered by the Global Environmental Facility (GEF), a World Bank programme.

The aim of this fund would be for training people and raising awareness as well as to set up institutions and procedures in host countries to help the transfer of cleaner technologies, either through the CDM or through more conventional means.

Examples of particular relevance to *Boiling Point* reader are things like training workshops for businesses/community groups which may wish to collaborate in a CDM project, or workshops for organisations (eg environmental groups) which may be interested in carrying out the independent monitoring of CDM projects.

Adaptation Fund

Another source of funding under discussion is the *Adaptation Fund*. This is a trust fund for helping communities to make changes at field level to adapt to the effects of climate change. Again it would be administered by the GEF.

There are several types of projects which might be funded through this fund. It may, for example, be used to help increase coastal defences to guard against increased flooding.

If this is not viable, then it could be used to help relocate people whose homes are threatened from flooding. It could also be used to help increase the more general storm preparedness of communities.

Another area that would be funded is forestry, such as avoidance of deforestation. Forests can provide many benefits to local communities, eg as a source of food or fuel-wood, or in preventing soil erosion. They are also under threat from changes in climate, eg increased temperatures or decreased rainfall, hence some form of forest management scheme may be necessary to help them adapt to new conditions (Figure 2).

Future developments

At the recent COP6 conference, climate negotiations in The Hague in November 2000 broke up without agreement. As a result the full details of the three funding routes described above are still not clear. The negotiations are due to be concluded during a conference to be held between July 16-27, 2001. Hence it could be some time before the funds start to flow. However, there is a lot of pressure for this to happen, especially given the large number of climate-related disasters which have happened in recent years. 🌿

Theme

Looking at household energy provision in a new way: The Sustainable Livelihoods approach

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The Sustainable Livelihoods approach is a way of looking at development which is concerned first and foremost with people. It tries to understand people's strengths (their skills, status, and possessions) and how they use these assets to improve the quality of their lives. No single asset on its own will provide for all the many and varied requirements people seek to make their lives worthwhile.

The following tables show activities within the energy field that can make people less vulnerable. They are based on the Sustainable Livelihoods Guidance Sheets provided by DFID, and The Poverty and Transport Toolkit, produced by Lucia Hamner, David Booth and Elizabeth Lovell at ODI, June 2000.

This is a different approach from the usual one where the starting point is the type of energy, such as electricity, oil, biomass, and so on. Access to electricity for lighting, radios and television is regarded by many people as crucial to their feeling of inclusion in the modern world; whilst the use of all forms of energy (not just electricity) in productive activities is often crucial to increasing the range,

quality and productivity of income-generating production, and for transporting it to a wider market.



Figure 1: Production technology to reduce human drudgery; a woman using micro-hydro powered milling machine

Table 1: Linkages between people's assets and energy

This table shows the main assets which people may possess to enable them to access energy

Capital Asset	Link with energy intervention/improvement
<p>1. Natural Capital These are natural resources, such as fuelwood, which are useful for livelihoods</p>	<ul style="list-style-type: none"> • The main natural capital asset of poor people is likely to be biomass for fuel. In some cases hand-dug coal and peat are natural assets for poor people. Access is affected by land ownership, climate etc and sustainability is affected by level of fuel use, changes in land use • Other energy related natural capital assets include falling water, wind, and solar insolation, but these require capital to convert them into useful energy. • Human and draft animal power form a significant 'natural' energy asset.
<p>2. Social Capital Human relationships, belonging to groups etc.</p>	<ul style="list-style-type: none"> • Networks and social relations often determine individual's access to natural resources <ul style="list-style-type: none"> – who can collect fuelwood from a particular location? – access to energy conversion technology that is owned by others (grain mills, baking ovens, machines for preparing land, irrigation water pumps) – access to other people's skills (electricians, engine repairers) – information about technical (and managerial) alternatives. <p>As women do most of the fetching and carrying in poor communities their social capital of friendships and networks is likely to be particularly important.</p>
<p>3. Human Capital Skills, knowledge, ability to work, good health etc.</p>	<ul style="list-style-type: none"> • Employment generation in construction, maintenance and provision of energy services. • Indigenous knowledge of local energy sources • Improved health of women and children from access to improved energy services for cooking which reduce indoor air pollution – one of the biggest causes of death and ill health • Improved healthcare, education, communication as a result of energy for lighting, pumping, communication and transport.
<p>4. Physical Capital Basic infrastructure for energy, shelter, water, transport, production equipment. Access to energy sources (electricity) and fuels (fossil and biomass fuels)</p>	<ul style="list-style-type: none"> • Access to end use technologies such as stoves, lamps, machines, radios, motors and engines etc. • Production technology to reduce human drudgery (Figure 1) • Reliable fuels for transport
<p>5. Financial Capital Finance to provide savings, credit, pensions etc.</p>	<ul style="list-style-type: none"> • Many poor people cannot get together enough cash at one time to buy goods which would provide cash savings over the medium term future (kerosene is often bought by the cupful). • Modern renewable energy conversion technologies cost more to buy, though less to run.

Table 2: Linkages between Vulnerability and energy

People live in an environment influenced by trends, shocks and seasonality, over which they have limited or no control.

- Trends are long term changes, such as population, resources, national and international economics etc.
- Shocks include ill health, earthquakes, conflicts etc.
- Seasonality is the change depending on the season of year, such as prices, production, employment opportunities etc.

<i>Vulnerability</i>	<i>Energy Link</i>
1. Geography	<ul style="list-style-type: none"> ● Amount of available biomass and the availability of falling water, wind, insolation, and other sources of energy (coal, oil, gas, geothermal energy etc). ● Infrastructure, such as pipelines, power distribution. ● Cost of improving energy infrastructure. ● Climate determines the need for heating, and cooling
2. Location	<ul style="list-style-type: none"> ● Remoteness adds to the costs of all energy supply options. ● Remoteness may make renewable energy supply more cost effective than other options that require transportation of fuels, but may incur the cost of frequent visits from urban-based maintenance technicians.
3. Seasonality	<ul style="list-style-type: none"> ● The need for energy fluctuates with temperature, agricultural season, availability of materials etc. ● Transport costs include installing and maintaining infrastructure and delivering fuels, equipment and spare parts, which varies with the season. ● Energy supplies dependent on water, biomass, wind also vary by season.
4. Population density	<ul style="list-style-type: none"> ● The moisture content of biofuels, and their combustion characteristics are affected by the season ● The unit cost of electricity falls when a lot of people are attached to the grid ● Low population density favours options such as photovoltaic systems
5. Trends in governance (including politics)	<ul style="list-style-type: none"> ● Rapid changes in population, eg refugees, puts particularly pressure on the sustainability of fuels ● Restructuring of the energy supply is a political process which can affect poor people's access to energy services. Where there are no explicit mechanisms to enable the very poor to gain access to energy services, this can be a major problem. ● Political promises of grid electrification may undermine people's willingness to invest in alternative decentralised options.
6. Technological trends	<ul style="list-style-type: none"> ● Massive technical change in recent years has altered people's ideas of what is possible. ● Improvements in small scale energy conversion have reduced costs for many technologies ● The use of gas for power generation has meant that electricity can now be generated on a relatively modest scale at costs that are competitive with large coal fired plants, reducing the influence of the large utilities.
7. Shocks	<ul style="list-style-type: none"> ● The major energy related shocks have been associated with the availability and price of oil products. ● All energy delivery systems are vulnerable to natural and man made disasters, to war and conflict.

Table 3: Linkages between structures, institutions, processes and energy

The importance of institutions, organisations, policies and legislation cannot be over-emphasised. They operate at all levels, from the household to the international arena, and in all spheres, from the most private to the most public – these are known as the *structures* within the framework.

Processes can be thought of as the way in which structures – and individuals – operate and interact. They are both crucial and complex: not only are there many types of processes operating at a variety of different levels, but there is also overlap and conflict between them.

<i>Institution/Process</i>	<i>Energy Link</i>
1. National government	<ul style="list-style-type: none"> ● Often responsible for the supply of electricity and for the regulation of all the energy supply industries ● Responsible for efficient public and private sector development in energy service industries.
2. Local government	<ul style="list-style-type: none"> ● The main source of subsidies for energy related services, energy price control and for energy taxes ● Often responsible for smaller scale energy infrastructure at district/local level ● Responsible also for transport infrastructure ● Responsible for regulation and permits associated with small scale energy retail businesses (eg electricity supply to rural bazaars, the production and sale of charcoal)
3. Community-level institutions	<ul style="list-style-type: none"> ● Often crucially important in the mobilisation, regulation, and running of schemes to introduce decentralised energy supplies (diesel mini-grids, micro-hydro etc.)
4. Firms	<ul style="list-style-type: none"> ● Providers of energy services and, often in partnership with government, suppliers of energy related infrastructure. ● Small and micro firms are likely to be the main actors in the supply and use of improved energy services that are used by poor people (e.g. sellers of kerosene, candles and charcoal)
5. NGOs	<ul style="list-style-type: none"> ● Can play important role in interventions to improve energy services at the local level ● Represent an important source of technical and other information. ● Sometimes restricted by funding, inclination or expertise to a limited range of technical options (eg specific renewables).
6. Laws	<ul style="list-style-type: none"> ● Regulate the provision of energy services, including public health and safety. ● Regulate contract procedures for infrastructure construction ● Determine the monopoly powers of the state and utilities in the supply of energy services.
7. Gender relations	<ul style="list-style-type: none"> ● Women are the main users and suppliers of energy at the household level in poor communities. The impact on poverty of energy related interventions will be largely determined by the end-use technologies that are adopted. The gender impact will thus depend on the extent to which women are involved in decision-making.
8. Other Power Relations	<ul style="list-style-type: none"> ● Village hierarchies, caste, belief systems play important roles (access to common property resources for fuel wood collection; access to credit; access to information; the 'rights' to set up retail outlets, etc) ● Religious beliefs are particularly significant in determining cooking practices, and the use of certain types of fuel (pig waste, human waste etc)

Table 4. Energy related Livelihood Strategies

The Sustainable Livelihoods approach seeks to promote choice, opportunity and diversity to enable people to achieve their livelihood goals, including productive activities, investment strategies etc.

<i>Livelihood strategies</i>	<i>Energy Link</i>
1. Gaining additional income by selling energy	<ul style="list-style-type: none"> ● Fuels (wood, charcoal, dung, crop residues, kerosene, LPG) ● Conversion Technology (stoves, lamps, batteries, motors, Photovoltaic systems)
2. Gaining access to improved household energy services or fuel switching	<ul style="list-style-type: none"> ● Improved biomass stoves ● Improved lighting (from candles to kerosene to electricity initially from batteries)
3. Gaining access to improved energy services, by increasing production efficiency	<ul style="list-style-type: none"> ● Improved energy services result in increased productivity (eg through mechanisation), which in turn results in a greater ability to pay for improved energy services.
4. Grouping with others to obtain access to improved energy services.	<ul style="list-style-type: none"> ● Community based activities enable labour to be converted into capital (eg through civil works); cheaper connection to the grid (through group purchase of transformers and distribution systems); installing micro hydro generators, and acquiring mechanised transport services etc. Also groups can provide political or commercial pressure to gain access to energy services.

Table 5. The benefits which can be achieved

This part of the livelihood strategy reminds us that we, as outsiders, should investigate, observe and listen, rather than jumping to quick conclusions or making hasty judgements about the exact nature of the outcomes that people pursue. In particular, we should not assume that people are entirely dedicated to maximising their income, but rather, that we should recognise and seek to understand the richness of people's goals. This, in turn, will help us to understand people's priorities, why they do what they do, and where the major constraints lie.

<i>Benefits</i>	<i>Energy Link</i>
1. More Income	<ul style="list-style-type: none"> ● Income from: <ul style="list-style-type: none"> – the sale of energy services – increased productivity through improved energy provision – doing things that are impossible using only 'person-power' – extending the working day through improved lighting – better access to fuel based transport
2. Increased well-being	<ul style="list-style-type: none"> ● Improved household and street lighting ● Reduction of indoor air pollution (improved fuels or improved stoves) ● Reduced burden from fuel collection and processing ● Reduced drudgery by replacing human energy with other forms of energy ● Increased education as a result of better lighting in schools ● Better health from health services that have access to: <ul style="list-style-type: none"> – improved lighting – cold chain storage – for vaccines – communication ● Improved access to information through radio, television and other information technology. ● Sense of inclusion in the 'modern' electrified world.
3.Reduced Vulnerability	<ul style="list-style-type: none"> ● More secure water supply from pumped irrigation ● Better security lighting ● More secure fuel supplies ● Production based on a wider range of raw materials
4. Improved Food Security	<ul style="list-style-type: none"> ● Improved agricultural output from energy-based mechanisation, and pumped irrigation ● Improved post harvest processing and storage ● Improved fuel based transport
5.More Sustainable Use of Natural Resources	<ul style="list-style-type: none"> ● More efficient and / or sustainable use of biomass fuels, ● Replacement of 'mined' biomass with more convenient, 'efficient' fuels and / or renewable fuels
6. Improving the position of women	<ul style="list-style-type: none"> ● Reduced indoor air pollution ● Reduction of time consuming tasks (fuel and water collection, milling, grinding, food preparation, and other productive tasks). ● Safer night time environment due to improved lighting ● Access to the outside world through radio and other information and communication technology ● Better light for reading and other night time tasks. ● Less frequent pregnancy (reflecting the high correlation of electric light with reduction in birth rates)

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Improved stoves for preventing deforestation: myth or reality?

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Introduction

Fuelwood (charcoal and firewood) is the main source of household energy in Madagascar. This situation is particularly alarming because the country's forest areas are decreasing by 2.5% per year. Urban population growth is the main cause of deforestation; urban growth rate is often greater than 4% per year.

It is important to highlight that although fuel gathering is not the only cause, it is responsible for 40% of the deforestation. Given the absolute necessity for the population to use fuelwood, it is important to have an energy policy which aims to limit depletion of the country's natural resources. The two main objectives of the Woodfuel Energy Saving National Program (PNEBE) are:

- To reduce consumption of woodfuel
- To alleviate the cost of household energy.

A first step seemed to be the dissemination of a large number of fuel-efficient improved stoves. To evaluate the usefulness of this approach, the questions that needed to be addressed were:

- How will household behaviour be affected by the introduction of improved stoves?
- Will the dissemination of improved stoves affect wood energy savings significantly from an environmental perspective?

Study Framework and Methodology

PNEBE is part of the Energy II project of the Ministry of Energy and Mines of Madagascar, financed by the Malagasy Government and the World Bank.

The present impact study of household behaviour change, fol-

Table 1: Household sampling in Antananarivo

Income level	Low-income	Middle-income	High-income
Percentage of total population	70	26	4
Number in sample	335	103	42

Table 2: Percentage of households using any given fuel in Antananarivo

	Wood	Charcoal	Sawdust	Oil	Gas	Electricity
Percentage of households using each fuel	6.3%	93%	2.6%	4.2%	6.3%	1.6%
Main fuel used by household	2.6%	91%	1.6%	2.6%	4.2%	0.5%

lowing dissemination of improved stoves (Figure 1), has been carried out in Antananarivo and its suburbs (about 1.5 millions inhabitants). The distribution of households was based on income as shown in Table 1.



Figure 1: Artisan making an improved stove

Results

The survey of Antananarivo inhabitants confirms that biomass (firewood, charcoal, and sawdust) is still the main source of household energy in Antananarivo (Table 2). In fact, 95% of the households in the capital city use biomass as their main fuel, usually as charcoal (91%)

Since the only improved stoves available in Madagascar use char-

coal, the study has been based on the behaviour analysis of those 93% of households using charcoal as their main or secondary fuel. Table 3 shows the income distribution of those who use stoves. Middle-income use of improved stoves (54%) reflects that this group are able to pay the difference between the cost of a traditional stove (*fatampera*) and an improved stove (*fatana mitsity*). The average cost of a traditional stove is 7400FMG (franc Malgache), compared with 12500FMG for a fuel-efficient stove (1 US \$ = 6 700 FMG; November, 2000). Overall, 41% of households have improved stoves. Low-income households are interested in improved stoves as they reduce fuel costs.

Every household using the *fatana mitsity* is convinced that the stove is fuel-efficient. The project therefore investigated how the extra money saved through using the improved stove was

Table 3: Distribution of improved stoves equipped household by income categories

Income category	Use of Improved stove (%)
High income	36
Middle income	54
Low income	33
Mean	41

Table 4: Use of money saved from the use of the improved stoves

Households	Low-income	Middle-income	High-income
Energy	4.55%	23.53%	66.67%
Other uses	95.45%	76.47%	33.33%

Table 5: Distribution of savings spent on non-energy uses

Households	Low-income	Middle-income	High-income
Foods %	54.5	26.06	
Hygiene – Health %		2.78	
Telephone			2.78%
Others	5.5%	7.16%	1.22%
Total	60%	36%	4%

Table 6: Population involved in energy saving from improved stoves use

Income level	Low-income	Middle-income	High-income
% of total population	70%	26%	4%
Households owning improved stove	33.71%	54.05%	32.82%
Uses of savings to non energy uses	95.45%	76.47%	33.33%
Population involved in energy saving	23.86%	10.75%	0.44%

spent. Two main points came from the data:

- Part of the saving is immediately allocated to other energy uses (Table 4). This fraction is larger for high-income households. For these households, two-thirds of the 'savings' are fictitious because they are spent buying energy for new purposes; water heating, ironing, etc. The improved stove contributes to an improvement in their quality of life by providing access to other energy services, without increasing their reliance on forest supplies.
- Secondly, 80% of the beneficiaries say they buy extra food with their savings.

Results analysis and perspectives

Use of improved stoves by the least well-off contributes most to environmental benefits, and at the same time it reduces their expenditure on biomass energy. Only 35% of charcoal users contribute to wood saving.

The different models of improved stove give charcoal savings of between 20% and 45% (Bazile et Rabearivelo, 2000), which contributes to an overall saving near 30% in Antananarivo. So with only 35% of the population engaged in energy-saving through using improved stoves, among the 91% of charcoal users, we find that, in reality, this produces only 9.56% of charcoal saving.

This analysis shows that, in Madagascar, it is necessary to develop and diffuse an improved wood stove in parallel with charcoal stove dissemination. Since June 2000, the PNEBE has disseminated a fuel-efficient Lafatra wood stove that, under laboratory conditions, provides 50% fuel savings and an energy efficiency of 25%. However, using an improved wood stove is a new cooking concept in the country, and will thus take a longer time to diffuse, so an analysis of potential benefits has assumed a diffusion rate of only half that for charcoal stoves.

In addition, by increasing peoples' awareness of good fire management, it is possible to double the saving made by the use of improved stoves (Bazile 1998).

Conclusion

These figures only refer to household energy consumption. They do not measure other uses such as cheap restaurants, bakeries, brickworks and other industries. Nevertheless, by extrapolating results from Antananarivo to the whole country, and by modifying the above observations for local differences, such as income groups, types of fuel used etc. we estimate that a programme like PNEBE might lead to 11 000 tonnes wood saving, if improved stoves for both charcoal and wood were distributed. This figure is still low because it is the equivalent of only 38 000 cubic metres of forest. Although modest, its impact is worth considering because, in a country like Madagascar, where the urban population growth is as high as 4%, the savings achieved are 3.5 times the energy needs created by demographic growth. Thus, a project like PNEBE is one way to slow down degradation, to allow time for other complementary actions such as forestry management or energy substitutes for wood to be developed.

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Figure 2: Artisan making the Lafatra stove

The watermill battery charger

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Throughout the Himalayas, many people living in remote areas use water-powered mills on a seasonal basis to grind wheat, corn, millet, and other grains into flour. It is estimated that there are 25 000 water mills operating in Nepal (referred to as ghattas), over 200 000 in India (referred to as gharats or panchakis), and many more in the mountainous regions of China, Pakistan, and Turkey. Each traditional mill has a power output of 200 to 500 W (Figure 1).

and kerosene inhalation poses a real health threat. New lighting technology can completely replace the use of kerosene for lighting. Both Compact Fluorescent Lights and the more exotic white LED lights are available today in the local market. There is enough power in the traditional water mill to power these kinds of lighting systems as well as other small household appliances, even small incandescent lighting systems. Extending the mill's functionality to include electricity generation also has the added benefit of providing an entrepreneurial mill owner with an additional source of income.

Just as in the industrialized world, entrepreneurship can be an excellent way to introduce and disseminate technology in developing nations. When engineering a product for the individual entrepreneur quickly in the Himalayan region, low cost becomes the dominant criteria. For a mill owner (Figure 2), expensive induction generators and transmission lines may be simply out of the question. A battery charger is a much more viable

solution. The mill owner bears the cost of the inexpensive charging system, while the individual households bear the cost of batteries, as they are able. Even the more remote and isolated homes are able to participate in this scheme, as long as they are within walking distance of a mill. Although issues of transportation and disposal remain, battery use seems the quickest and most economic path to bring basic electrical lighting to the mountains.



Figure 1: Traditional water mill

Today, much of these mountainous regions remains non-electrified, despite the interest in and demand for basic electricity. The aim is to create an opportunity for an individual entrepreneur to provide electricity to his immediate community by using part of the indigenous infrastructure: the water mill.

Even the smallest amount of electrical power can have a big impact on this part of the world. For most Himalayan homes, kerosene is the only available source of light after sunset. Houses are rarely well-ventilated,



Figure 2: Mill owner with water wheel

Himalayan water mill technology is centuries old. It continues to be built and maintained using local materials. Although each mill is to some degree unique, all share fundamental similarities. Water is diverted from a stream or river and flows down a chute towards the mill's turbine. The vertical shaft of the turbine runs up through the floor of the mill house and turns a rectangular metal "key." The key supports and turns the top stone of a pair of grinding stones. There is also a lever extending from below the turbine into the mill house that enables the mill owner to raise or lower the top grinding stone as he sees fit. It can be raised up high enough to spin very quickly without touching the bottom grinding stone.

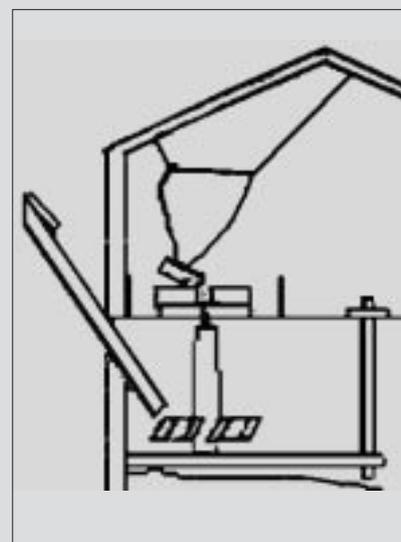


Figure 3 – sketch of water mill

Batteries simply can go where a transmission grid cannot. Indeed, the precedent has already been established; villagers in parts of eastern Nepal are currently carrying 12V car batteries into grid-connected towns for recharging. A battery-charging extension to the mill could both alleviate the need for these long trips and make such a strategy available to other, more remote areas of the mountains.

The mill is also an ideal site for a battery-charger. During much of the year, a steady stream of people arrive at their local mill with grain and leave with flour, as has been done for centuries. It will not be a dramatic change of routine for rural villagers to bring their batteries to the mill as well (Figure 4). They can have a battery charged and their grain ground in the same trip. The battery charger extension can also be operated during the currently non-utilized time of the mill, which varies by season. The availability of a battery-powered light also allows the mill to operate at night, either for grinding or battery charging.



Figure 4: Power being tapped from a water mill

An inexpensive battery charger can be made using a car alternator, a bicycle rim, a belt, and a mill key. The key sits on the rotating turbine shaft and supports the top grinding stone. By attaching a small square post to its top, the turbine shaft can effectively be extended. The bicycle rim has a square pipe welded to its axle that can be slipped over the square post. The turbine thus

drives the bicycle rim, and the rim in turn drives the smaller alternator pulley using the long car v-belt. With the top stone raised up, the water mill's energy goes not into grinding, but into powering the alternator.

A car alternator is an excellent choice for a battery charger as it has been specifically engineered to provide a regulated voltage ideal for recharging 12V batteries. It can supply up to 500W of power, which is conveniently the maximum estimated power output of most traditional water mills. Although the alternator needs a fairly high rotational speed (rpm) to generate electricity, it can be run below car idle speeds. The bicycle rim and alternator pulley provide enough of a ratio to allow the alternator to produce power at water mill speeds (60-90 rpm).

For the rural regions of Nepal and surrounding countries, the cost of an alternator may still seem prohibitively high. Although it does account for much of the total cost (US\$50), there is evidence that this is affordable. Nepal's Center for Rural Technology has successfully launched a programme to sell higher efficiency mill turbines for approximately US\$80 to rural water mill owners. Over 600 new turbines have already been purchased and installed; sales are currently averaging over 250 per year. There should be a considerable market for a battery charger in a similar cost range.

The initial low cost of the battery charger is not the only advantage of the simple design. With the device's removable shaft, the mill owner can quickly switch between battery charging and the traditional grinding operation. With the bicycle wheel removed, the mill looks and operates exactly as it always has for centuries. The only permanent modification to the mill itself is the addition of the small square post on its key. This post does not interfere with grain

Specifications for water mill battery charger

Water Mill Battery Charger

Cost:	3540 NRs (US\$50)
Power:	up to 0.5kW
Voltage:	14.4VDC
Pulley ratio:	13:1 approx.
Belt type:	V-style car belt
Generator:	Car alternator

being fed in between the grinding stones, and is completely out of sight.

The most significant advantage of using an inexpensive mill addition to bring electricity to the mountains is sustainable maintenance. Maintenance is always a large concern when introducing new energy technology to remote areas of the world. Typically it cannot be maintained without additional infrastructure and technical expertise.

The Himalayan water mill, however, has been built and repaired locally by the mill owner and his family for centuries. They are already technical experts for most of the battery charging system. The electrical portion, the alternator, cannot be repaired by the mill owner, but it can be repaired by any auto garage shop in the country. There is no need for assistance outside the country, and no need for a major centralized repair centre. All parts of the system come from locally available, off-the-shelf components.

Renewable energy projects can be costly in the developing world. A considerable amount of time and capital is needed to create local expertise and manufactured parts. The Himalayan region, however, does not need to wait for such assistance. The technology infrastructure already exists to support basic power generation.

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