

# **National Improved Cook Stove Dissemination in the Mid-Hills of Nepal, Experiences, Opportunities and Lesson learnt**

**Mr. Saurav K. Shrestha, Energy Officer, AEPC<sup>1</sup>**  
**Mr. Rajan Thapa, ICS Co-ordinator, CRT/N<sup>2</sup>,**  
**Ms. Karuna Bajracharya, ICS Component Co-ordinator, ESAP<sup>3</sup>**

## **Abstract**

Forest resources and other biomass (primarily fuel wood) are important sources of household energy in rural and even semi-urban areas all over the developing countries. Nepal relies heavily on fuel wood for its energy requirement. Nearly 90% of the energy requirement is still met by traditional biomass: fuel wood, agri-residue and animal dung.

The Indian stove models, the Hyderabad and Magan Chulo, were the first Improved Cooking Stoves, introduced in Nepal, during the 1950s. In the 1980s, HMG initiated dissemination of ceramic pre-fabricated stoves, supported by FAO and UNDP. The ceramic-insert stoves proved inappropriate to most areas of Nepal, since they often broke during long and complicated transportation in hill areas and difficult to replace. The development of Improved *Tamang* Stove by RECAST<sup>4</sup> in early nineties gave the stove programme a new look, which could be built on site by locally available materials.

The current National ICS Programme, supported by Energy Sector Assistance Programme (ESAP), started Improved Cooking Stove dissemination in 2000 in the middle hill districts of Nepal. The Programme is primarily focused to the rural women with the appropriate strategies to build capacity at local level. The promoters are paid by the end-user in cash or kind. The approaches taken to disseminate is also flexible so that the programme could be collaborated with more NGOs, GOs and INGOs.

With more than two full implementation years the programme has learnt that awareness and information are crucial for creating a demand for ICS. The programme has also proven that ICS could be disseminated even with no direct subsidy to the end users. The appropriateness of the stove, follow up and supervision are also crucial for the success.

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<sup>1</sup> Alternative Energy Promotion Centre

<sup>2</sup> Centre for Rural Technology, Nepal.

<sup>3</sup> Energy Sector Assistance Program of Danida.

<sup>4</sup> Research Centre for Applied Science and Technology

## **1. Background:**

Forest resources and other biomass (primarily fuel wood) are important sources of household energy in rural and even semi-urban areas all over the developing countries. Nepal relies heavily on fuel wood for its energy requirement. Nearly 90% of the energy requirement is still met by traditional biomass: fuel wood, agri-residue and animal dung.

The annual energy consumption of the Nepal is estimated to be 6,864-7,825 thousand tons of oil equivalent. Looking at the total national energy consumption of the last 5 years, the share of the traditional energy is 86-90% and source of the commercial energy is from 10-14%. In the overall energy consumption, 77% energy comes from the firewood, 9% from the agriculture residues and animal dried dung and remaining 14% energy comes from imported petroleum product, coal and electricity. The annual per capita consumption of the commercial energy is 46 kilogram of oil equivalent. Although the rural area consumes 86% of the total energy of the country, share of the biomass energy is the highest. Renewable energy (Biomass) and imported kerosene oil are the two main sources of the energy used in the rural areas.

## **2. History of ICS Program in Nepal:**

The Indian stove models, the Hyderabad and Magan Chulo, were the first Improved Cooking Stoves, introduced in Nepal, during the 1950s. In the 1960s, an agro-engineering workshop in the Department of Agriculture developed a mould-based stove model, which was disseminated through the mid-1970s, a number of NGOs and GOs (Peace Corps, Women Training Centre, RECAST, and UNICEF) were involved in ICS research and dissemination of the Lorena stove model. Unfortunately, lack of funding led to stagnation in stove dissemination. In the 1980s, HMG/The National Planning Commission addressed the fuel wood consumption issues in its sixth 5 year Plan, together with the introduction of Community Forestry. HMG initiated dissemination of ceramic pre-fabricated stoves, supported by FAO and UNDP. The ceramic inserts proved inappropriate to most areas of Nepal, since they were often breaking during long and complicated transportation in hill areas.

Until 1998, 95,000 ICS have been distributed or installed at various districts in the country. Out of this, about 57,000 ICS were distributed by the Community Forest Development Projects (CFDP). Apart from CFDP there are other organizations involved in the promotion of ICS. The other organization together promoted about 40,000 stoves in Nepal.

New initiatives for ICS dissemination have been underway since 1990s with new stoves design that can be built completely from cheap readily available local materials and changed approaches from top down, target oriented, subsidized approach to bottom up demand driven, self-construction approach..

To complement these efforts, National ICS Program has been initiated with the support of Energy Sector Assistance Programme (ESAP) of DANIDA. Similarly, Networking of ICS promoting organizations have also been undertaken with the support of ARECOP. In this

initiative, Centre for Rural Technology (CRT/N) in cooperation with various GOs, NGOs is coordinating Network strengthening activities. Alternative Energy Promotion Centre (AEPC) the government agency is supporting to further strengthen the Network activities.

The status is that over 150,000 ICS have already been built and the observation is that there is a tremendous and growing demand for them

### **3. Present Government Policy:**

The government has an important role to play in formulating smart policy for promotion and dissemination of ICS. Government initiative and efforts in creating favorable environment has been very instrumental for the successful ICS dissemination in recent years. In this perspective the government has moved from implementers towards facilitators and coordinator of ICS promotion activities. The government would also be responsible to formulate and reform the Subsidy Policy as an when needed.

### **4. Ongoing National ICS Programme**

The National ICS Programme has already promoted 35,000 ICS in the 11 middle hill districts of Nepal so far. The progress is very close to the target for the first phase (up to 2004) i.e. 40,000. The Programme has already produced around 850 promoters (50% are women) out of which more than 50% are still active. The programme has already certified 90 promoters after two full years of implementation. The Programme also trained around 150 partner staff of around 90 local partners institutions in the district. The Random Sample Survey (RSS) 2001, has indicated that 90% users are satisfied with the stove installed and 95% stoves are still in use.

With more than two years of implementation, the programme has learnt that awareness and information are crucial for creating a demand for ICS. The programme has also proven that ICS could be disseminated even with no direct subsidy to the end users. The appropriateness of the stove, follow up and supervision are also crucial for the success.

#### **i. Objective**

The general objective of this program is to establish a sustainable framework and strategy for making available needed technically and socially appropriate ICS in rural communities based on local capacity building and income generation. The immediate objective is to create and build up the capacity on community, district and national level regarding the promotion and dissemination of ICS and to achieve broad coverage of ICS primarily in mid-hills

This national program has to an extent has attempted to address the strategic challenges based on the lessons learnt from the past ICS disseminating programs. This program thus has developed sustainable approaches characterized by the following features:

- ↳ Participatory
- ↳ Demand Driven
- ↳ No direct end users subsidies
- ↳ Effective and Appropriate Technology

## **ii. Implementation Process**

The Programme is primarily focused to the rural women with the appropriate strategies to build capacity at local level. The promoters are paid by the end-user in cash or kind. The approaches taken to disseminate is also flexible so that the programme could be collaborated with more NGOs, GOs and INGOs at national, district and local level.

The following steps describes the general implementation procedure followed by the National ICS Program:

- 1) Establishment of ICS Promotion Unit in the district.
- 2) Identification of Suitable Local Partners for collaboration.
- 3) Program Initiation Workshop
- 4) Baseline and Need Assessment
- 5) Training of Partner Staffs
- 6) Identification, Selection and Training of Local Promoters
- 7) Village wise Orientation and Demonstration, local Information Campaign for Demand Creation
- 8) ICS installation, Monitoring, Follow-up and Technical Testing and Promoters Regular Meeting.
- 9) Participatory Monitoring
- 10) Annual Review and Planning
- 11) Certification and Award to Best Promoters
- 12) Formation of Promoters Association.
- 13) Phase out and Extension of Program to New Areas

## **iii. Vision for the Future and Program Outputs**

The vision of the future is to contribute to a national strategy for ICS promotion and dissemination, which would be sustainable in the sense, that ICS promotion and dissemination could continue to take place in rural (and semi rural) areas, primarily in the Middle Hills, by the local people themselves without external inputs. The coverage of ICS at this time is already very broad so that an ICS is now more common than a traditional stove.

Local institutions and individual households will have stoves that they are capable of using and maintaining, and replacing when needed and which give more benefits than they costs with regard to biomass consumption; health issues, women's and girl's work load, indoor environment and social aspects"<sup>5</sup>

**ICS Program is divided into two phases:**

**Phase 1 (2000-2004):**

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This phase will cover at least 15 hill districts to demonstrate that a sustainable strategy for mass ICS dissemination has been developed and that it is possible to implement successfully on a reasonably larger scale. The program will develop and strengthen local capability and promote 40000-50,000 ICS through close collaboration of Women Development Program, CBOs, NGOs and other informal groups such as Community Forest Users Groups, Mother's Group, Women's Groups/Cooperatives etc.

#### **Phase 2 (2004 -2010) and Future Vision:**

Phase 2 is envisaged as scale up ICS dissemination spread to all the mid-hills of Nepal and some mountain and terai districts using the strategy developed during Phase 1. During this phase, quite a large number of NGOs and substantial number of community-based organizations would be mobilized to develop purely market based ICS dissemination through out the country.

Apart from the National ICS Program, other INGOs/NGOs will also take maximum advantages from this program to implement ICS activities in the rural areas, which is not covered from this program. All the valuable experiences and the training manuals and awareness campaign materials developed for these initiatives will serve as supplementary efforts to contribute in meeting the national plan target of ICS dissemination.

#### **iv.ICS Networking and Lobbying:**

In the above context of the implementation of Phase 1 and 2 as well as other ICS related programs to be implemented, strengthening of ICS Networks at the central level as well as the decentral level will play a vital role in terms of information dissemination, inter-linking program experiences and collaboration and development on ICS. Thus the present network capacity-building efforts with ARECOP support will serve as "fill in the gap" to the current program and contribute more as complementary support for effective ICS program implementation in the future. The Government would be active in lobbying with the GOs, INGOs and Donors in developing consensus regarding basic concepts for sustainable ICS dissemination and promotion.

#### **5.Prospects and Opportunities:**

ICS promotion in Nepal is on the cross-roads of prospective future characterized by the following apparent opportunities:

- ↴ The objective and the intended benefits of ICSPs too have ranged from the early viewpoint of reduced fuelwood consumption (estimated to save 25-40% of fuelwood) to reduced smoke hazards free health and sanitation situations at individual, family, community levels, environmental degradation by way of lessened dependency on forest resources for domestic energy consumption; saving time in cooking and fuelwood searching and collecting; reduced the drudgeries of the already over-burdened women folks; and building of overall positive smoke-hazards.

- ↳ ICS have become an important and integral component of development initiatives with these being supported by quite a number of programs, donor agencies and promoting/disseminating organizations.
- ↳ The status is that over 150,000 ICS have already been built and the observation is that there is a tremendous and growing demand for them.
- ↳ People living even in the remote areas have heard about ICS and the positive demonstrative effect has been widely propagated.
- ↳ In recent years the donors have been showing interest for funding to the ICS programs.
- ↳ The existence of the Network among ICS promoting organizations has helped in the process of institutionalization of the affiliated NGOs which is also encouraged by the government.
- ↳ The Programme is primarily focused to the rural women with the appropriate strategies to build capacity at local level.
- ↳ The promoters are paid by the end-user in cash or kind and the promoter acts as self-entrepreneur.
- ↳ Institutional Capacity of the Partner Organization has greatly increased.
- ↳ The approaches taken to disseminate is also flexible so that the programme could be collaborated with more NGOs, GOs and INGOs.
- ↳ The women have been involving saved time (in cooking and collection of fuelwood) in other income generating activities.
- ↳ The children received better environment to study inside the house as the kitchen environment is improved.
- ↳ The Smoke borne diseases in the rural areas is greatly reduced.

## **6. Lessons Learnt:**

With more than two years of implementation of the National ICS Programme few lessons have been drawn as:

- ✍ ICS Programme should be demand driven and need based.
- ✍ There should be thorough networking and collaboration among key stakeholders at central, district and local level.
- ✍ Users education, training, awareness and information are crucial for creating demand for ICS. Users Training on ICS use and maintenance is very important.
- ✍ The programme has also proven that ICS could be disseminated even with no direct subsidy to the end users. Direct end user subsidy should be discouraged for the continued use of ICS and the sustainability of the programme.
- ✍ Appropriate stove model to cater diverse needs and preferences of the Users based on cooking practices, socio-economic, cultural and geographical conditions are paramount. Further, effective and affordable models are equally important for creating larger demand.
- ✍ Continuous Monitoring, Follow up and technical supervision on ICS performance and use are crucial for the success of any ICS program.
- ✍ ICS Programme should not be implemented on isolation rather it should be integrated with other community development activities having strong social mobilization part. ICS promotion activities coupled with kitchen improvement, fuel wood management, as well as household sanitation would add its value and increases demand.

- ✍ The Programme has to be gender specific and should give primary focus to the rural women with the appropriate strategies to build capacity at local level. The National ICS Program encompasses women groups as a vehicle for ICS promotion. More than 50% of the Promoters trained are women members of the group.
- ✍ It is important that ICS promotion should give priority for improvement of health of women and children and then saving fuel wood and time and providing comfort. Studies have indicated that normally getting rid of the smoke problem is perceived as the immediate priority of most rural people particularly women.
- ✍ Above all ICS program should be able to generate local employment and income opportunities.

## **7. Issues for the next phase:**

The involvement of the more women in the second phase of mass scale up programme would be one of the issues since the drop out ratio of the women is high. Similarly the involvement of the poorest, disadvantaged groups such as Dalit still remains a challenge. Apart from the middle hills the larger portions of the population use fuelwood and dung cake for cooking food. Thus the policy should also have to be reformed to work beyond the middle hills, i.e. mountains and Terai (Plains). The mountainous region has been focussed in recent years where the forest situation is degrading year after year. Where as in the case of Terai, although the availability of Kerosene and popular of biogas program, many people still depends upon fuel wood for cooking. The ICS should also be disseminated in these regions with appropriate and cost effective model. Thus the appropriate design and model of stove should be developed to cater the needs of mountain and Terai people as early as possible.

## **8. Conclusions**

As one of the developing Countries, Nepal is characterised by a low level of commercial energy consumption reflecting the limited industrial production. This consumption is primarily satisfied through excessive burning of biomass. The biomass consumption has vast implications both for deterioration of natural resources and the workload of rural women and girls charged with the responsibility of fuel wood collection. The poor combustion technology of traditional stoves has serious negative impact on the health of rural women and small children as cooking traditionally take place inside houses with very poor ventilation.

The sustainable ICS dissemination would be only possible when there would be the ability to create and consolidate the institutional and local capacity within the rural communities, allowing to continue ICS dissemination after the programme is phased out. There fore it is essential to promote and disseminate a range of different, affordable and culturally acceptable ICS to communities.

The rural people are generally illiterate, ignorant and innocent. They do not believe until they hear and see about the technology. It is believed that an Information Campaign would inform and aware about the benefits of the technology. It is necessary to involve the local communities and the end users through local information campaign at an early stage. The demand would be created through the effective campaign and the marketing approach by the promoters as well.

Experience indicates that the most crucial factor in achieving any technology's potential efficiency is the interaction between the user and the technology. The practice of cooking over fire is as ancient as mankind itself. Climbing the stove ladder in the context of rural people could not be anticipated faster due to the socio-cultural beliefs in search of clean fuel. Therefore it is important to make the technology as user friendly as possible by orienting the users and through technical backstopping.

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