



**REGIONAL WOOD ENERGY DEVELOPMENT PROGRAMME IN ASIA
GCP/RAS/154/NET**



**IMPROVED STOVE SELECTION AND DISSEMINATION:
ASIA REGIONAL TRAINING OF TRAINERS WORKSHOP**

Mataram, Lombok, Indonesia

29 June - 8 July



**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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FOREWORD

In Asia, the need for improved cookstoves (ICS) is as pressing as ever. A re-evaluation of regional energy related data shows there has been no overall fuel switch away from biomass, and suggests that for many decades to come most people will remain dependent on woodfuels. Furthermore, notwithstanding the great advances made in China and India, not even half of the households in Asia have adopted ICS. Continuous efforts from both GOs and NGOs to disseminate ICS are required to improve the situation.

The socio-economic and environmental benefits of ICS and their benefits in terms of improved health and relief of drudgery, particularly for women and children, may be obvious. However, the complexities associated with the design, production and introduction of improved stoves are not always appreciated. Outsiders often find it difficult to understand why the dissemination of such a simple commodity meets so many obstacles. Unfortunately, also quite a few people who are personally involved in stove activities are not fully familiar with the intricacies of building and disseminating ICS.

To rectify this situation the Regional Wood Energy Development Programme (RWEDP) and the Asia Regional Cookstove Programme (ARECOP) have jointly developed a training module for use in national training courses to be held throughout the region, particularly in those countries where stove development is still highly centralized. These national training courses are envisaged as being highly participatory and aim to transfer the relevant design and dissemination skills by hands-on training. Training manuals for use by trainers and trainees, it should be noted, are translated into local languages and distributed in advance of any course. Such courses, it is believed, will lead to better quality control and more effective strategies for meeting users' needs and overcoming any obstacles to stove adoption. Where necessary, to ensure that national trainers fully understand the innovative content of the training module and are fully able to use a participatory training approach, a training of the trainers workshop has been organized prior to the implementation of national training courses.

Thanks are due to the ARECOP experts and the many dedicated stove disseminators in the field, as well as Mr. Auke Koopmans, wood energy conservation specialist at RWEDP, for their tireless efforts to help improve the household energy situation in Asia.

Dr.W.S. Hulscher,
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TABLE OF CONTENTS

| | |
|--|-----------|
| FOREWORD | i |
| 1. INTRODUCTION | 1 |
| 2. BACKGROUND OF THE TOT WORKSHOP..... | 3 |
| 3. TRAINING OF TRAINERS FRAMEWORK..... | 7 |
| 4. FIELD EXERCISES | 12 |
| 5. STOVE CONSTRUCTION EXERCISE..... | 14 |
| 6. TEACHING PRACTICE SESSIONS..... | 17 |
| 7. FORMULATION OF NATIONAL TRAINING PLANS..... | 19 |
| 8. COURSE EVALUATION..... | 21 |
| APPENDICES : | |
| APPENDIX 1: Training Sessions Covered by ARECOP Module | 22 |
| APPENDIX 2: Results of Field Exercises and Stove Selection Stages 1 to 4..... | 26 |
| APPENDIX 3: Teaching Practice Sessions..... | 38 |
| APPENDIX 4: National Training Plans..... | 54 |
| APPENDIX 5: Speeches at the Opening Ceremony..... | 64 |
| APPENDIX 6: List and Profiles of Participants..... | 72 |
| APPENDIX 7: TOT Workshop Schedule | 79 |

1. INTRODUCTION

This document is a report on the Asia Regional Training of Trainers (TOT) Workshop on Improved Stove Selection and Dissemination, which was held in Mataram, Lombok, Indonesia from June 29 – July 8, 1997. In total 20 participants from 8 Asian countries (Nepal, Vietnam, Myanmar, Cambodia, Indonesia, India, Bangladesh, and Bhutan) were trained in the use of a training module developed by ARECOP (Asia Regional Cookstove Program) with the expectation that the participants would organise a national training course on improved stove selection and dissemination in their own countries, using the process of improved stove selection introduced in the training module.

The participants, mostly experienced trainers, came from diverse backgrounds including NGOs, government institutions and research institutions. Please see Appendix 6 for the list of participants along with brief biographies, and see Appendix 7 for the TOT schedule.

The TOT workshop was organised by ARECOP in partnership with Pusat Studi Pembangunan (PSP) and FAO-RWEDP (FAO-Regional Wood Energy Development Programme). The workshop was made possible through the support of FAO-RWEDP.

The TOT training team consisted of two main trainers, Emma Wibowo and Aryanto Soedjarwo who were the trainers for the Indonesian national training course held in December 1996, also on Lombok Island. It should be noted that the Indonesians pioneered the use of the training module and thus were in the best position to train prospective trainers from other Asian countries on the training content, methods and process which the module promulgates.

Mrs. Wibowo, who was the trainer in charge of social and gender aspects for the Indonesian national training course, is an experienced and energetic participatory trainer with a keen understanding of group dynamics and expertise in social assessment, gender analysis, community outreach, program planning and monitoring and evaluation.

Mr. Soedjarwo has been involved in ICPs and technical stove training workshops for two decades, working out of Yayasan Dian Desa. He brings in-depth technical knowledge on stove design and stove construction in addition to troubleshooting skills. His work has been both laboratory and field orientated.

Christina Aristanti, ARECOP manager, and Michelle Schullein, assistant manager, also served as assistant trainers and facilitators in addition to being the main organisers of the workshop.

From FAO-RWEDP, Auke Koopmans and Jaap Koppejan attended as observers. Mr. Koppejan acted as lead camera-man for the duration of the training, documenting important training sessions and video taping each participant's teaching practice for the purpose of evaluation. Tina Sriratana and Jarawan Thananimit, from FAO-RWEDP, provided administrative support and also lead a number of energiser activities during the three days they attended the workshop.

Finally, Pingkan Wibowo and Marjan Koppejan attended in the capacity of volunteer organisers and observers, bringing much energy and enthusiasm to the many tasks they undertook during the workshop.

2. BACKGROUND OF THE TOT WORKSHOP

Among the primary obstacles faced by attempts to improve the effectiveness and success rates of improved cookstove (ICS) dissemination programs in Asia is the concentration of technical and programmatic skills among a few given experts in improved cookstove research and design. This concentration of technical expertise is most evident at the national level where the skills gap separating technical stove experts and the organisations that take on field level dissemination is a large one. In some countries, such as Nepal or Bangladesh, there may be only one recognised stove expert who takes on all R&D and training activities. In recognition of this, the Asia Regional Cookstove Program (ARECOP) based in Yogyakarta, Indonesia and the Regional Wood Energy Development Programme (RWEDP) based in Bangkok, Thailand embarked on a co-operative effort to develop a training module for use in national training courses to be implemented in selected Asian countries.

The module, which essentially consists of a model training course, comprises 2 manuals:

- (1) A Trainee Manual which contains information related to the model training course promulgated by the module and handouts used during the training course. It includes chapters on biomass use in Asia; assessing the community context, the kitchen, the stove user and gender analysis; stove design; stove construction; stove dissemination; monitoring and evaluation; and there is a chapter on stove selection as a socio-technical process. There are also a number of annexes consisting of assessment tools, samples of assessment information, various ICS designs, a pre-training assessment form and a list of references and contacts. This manual is for distribution to participants before the start of a training course.
- (2) A Trainers Manual which is divided into three parts. The first part, which is the briefest, provides a framework for a 10 days training course and introduces a four stage model of the stove selection process; the second part, comprising the bulk of the manual, presents the 40 sessions which comprise the model training course (a list of these sessions can be found in Appendix 1); the third part of the manual gives advice and guidance on formulating a training agenda.

The goal of the training module is to increase the acceptability of improved stoves within the countries where the training is held. The targets of the training are ICP field workers. The training aims to transfer skills so that ICP field workers are able to:

- evaluate current stove designs based on combustion and heat transfer concepts, knowledge of raw materials and technical stove parts in addition to the needs, wants and conditions of the target group;
- determine appropriate modifications/improved stove designs based on the needs, wants and conditions of the target group in addition to technical knowledge;
- become familiar with construction techniques for a selection of different stove designs;

- determine an appropriate dissemination strategy based on existing technology dissemination channels and the improved stove design to be disseminated;
- incorporate gender analysis into stove design selection and introduction; and
- monitor the progress of a stove program and troubleshoot where necessary.

Essentially the model training course is designed to develop the trainees' understanding of the four stage stove selection process (see Figure 1). Practically, this is to be achieved by means of the trainees determining an improved cookstove design for a case study area, and then, during the final day of the training course, determining an improved cookstove design for the area in which they normally work. The training is highly participatory in nature.

As mentioned earlier, the first national training course was held in Indonesia from November 27 through December 5, 1996 on Lombok Island. This national training course was viewed as a 'test' of the training module. One of the specific questions that needed to be answered was would trainers be able to take the module and run a successful training course on their own.

Overall the Indonesian national training course was successful, thus confirming the module's utility. The process-centred module was successful in getting the Indonesian trainees to integrate technical and social factors into the two stove designs which they came up with. This in itself was a leap ahead of most other improved cookstove training courses which have been held throughout Asia during the last few decades and which have mainly focused on the transfer of one or two improved cookstove designs in isolation from their intended social context.

A number of improvements to the module and suggestions for future training courses were discussed at regular evening feedback meetings of the training team and a few experts, and at the training team's final evaluation meeting. It was generally felt that it was very important that trainers of future training courses should understand and be able to internalise the flow and steps of the stove selection process used in the training module, to ensure that the module is used correctly. Secondly, translation of the module (the original is in English) to the local language was thought to be crucial and it was recommended that translation be done by someone who is familiar with the content, flow and process of the module so that the translated version will not deviate from the original. Failing this, at the very least the translation should be edited by someone who is familiar with the content, flow and process of the module. The prospective trainers were thought to be the best group to carry out this translation or editing work as they were familiar with the technical and social concepts used in the module and it would give them an opportunity to clear up any confusion regarding training content and methods, which might creep in to a translation, before the training course gets off the ground. A further recommendation was that each national training course should allow for two days of preparation time for the trainers immediately preceding a course.

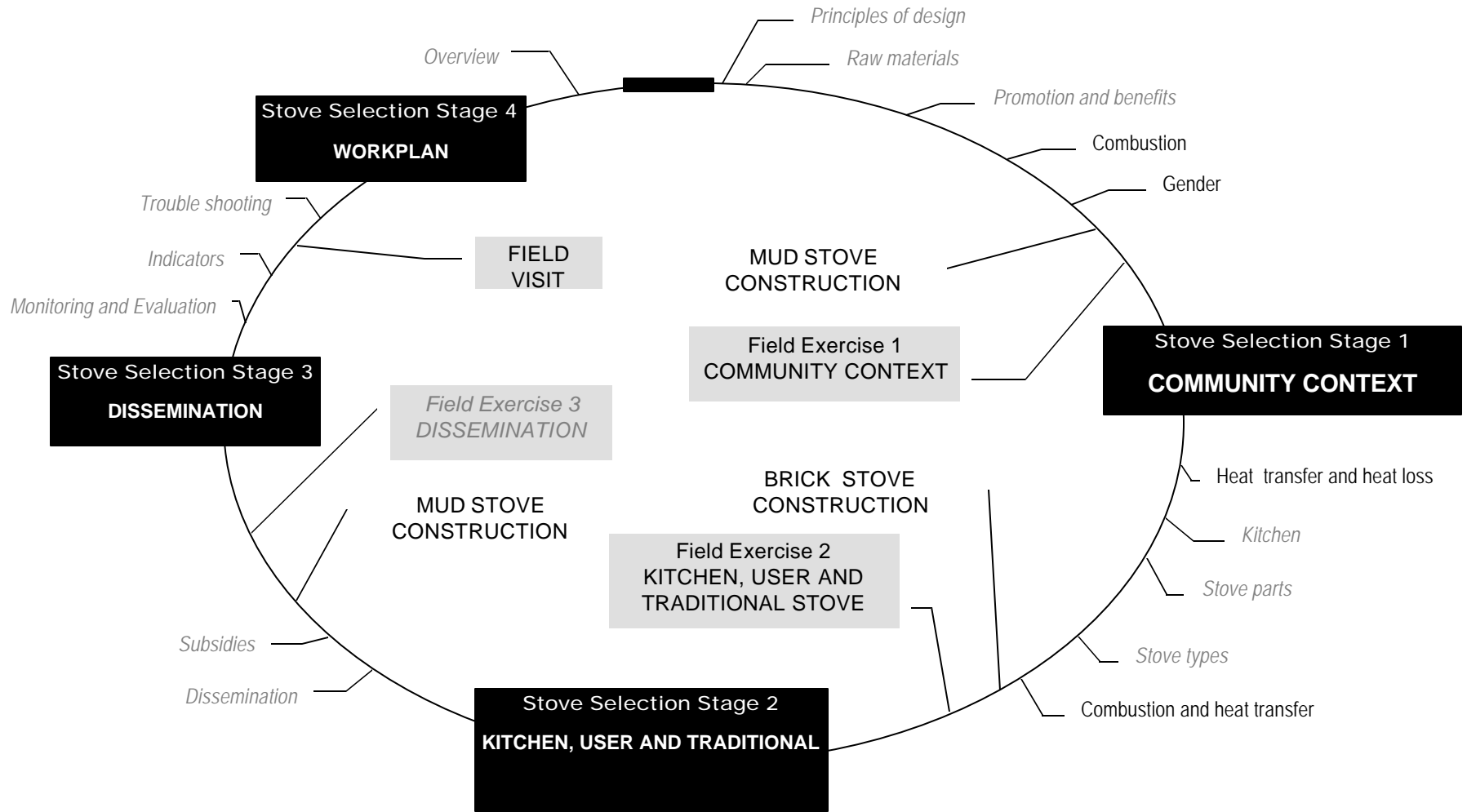
In recognition of the highly specific and innovative content of the module, especially the unique process of stove design selection, and the need to use trainers with experience in participatory training methods, it was suggested that an Asian Regional Training of Trainers (TOT) Workshop should be organised to prepare future trainers in the region. The fact that separate parties are responsible for the creation of the module and its implementation also merited a TOT to provide an opportunity to ensure that prospective trainers have a full understanding of the module. A TOT would undoubtedly benefit trainers who needed to develop a more comprehensive understanding

of the stove selection process. For example, it was acknowledged that experienced trainers in stove design might not be familiar with participatory training methods and that technical experts are usually inexperienced in social assessment and vice versa. Moreover, in some countries in the region (e.g. Cambodia) it was not possible to find trainers with improved cookstove technical experience and the TOT would be able, to some extent, to remedy this.

The expected outputs of the TOT were that prospective trainers would:

- understand adult learning styles and the reason behind using participatory training methods;
- understand why the stove selection process is used and understand how the training progresses towards the identification of an appropriate stove design and work plan;
- be familiar with the technical and social components of the training module;
- have the opportunity to practice the participatory training methods employed and receive feedback for improvement; and
- be clear about their individual roles and responsibilities while being able to work harmoniously with their colleagues on national training teams.

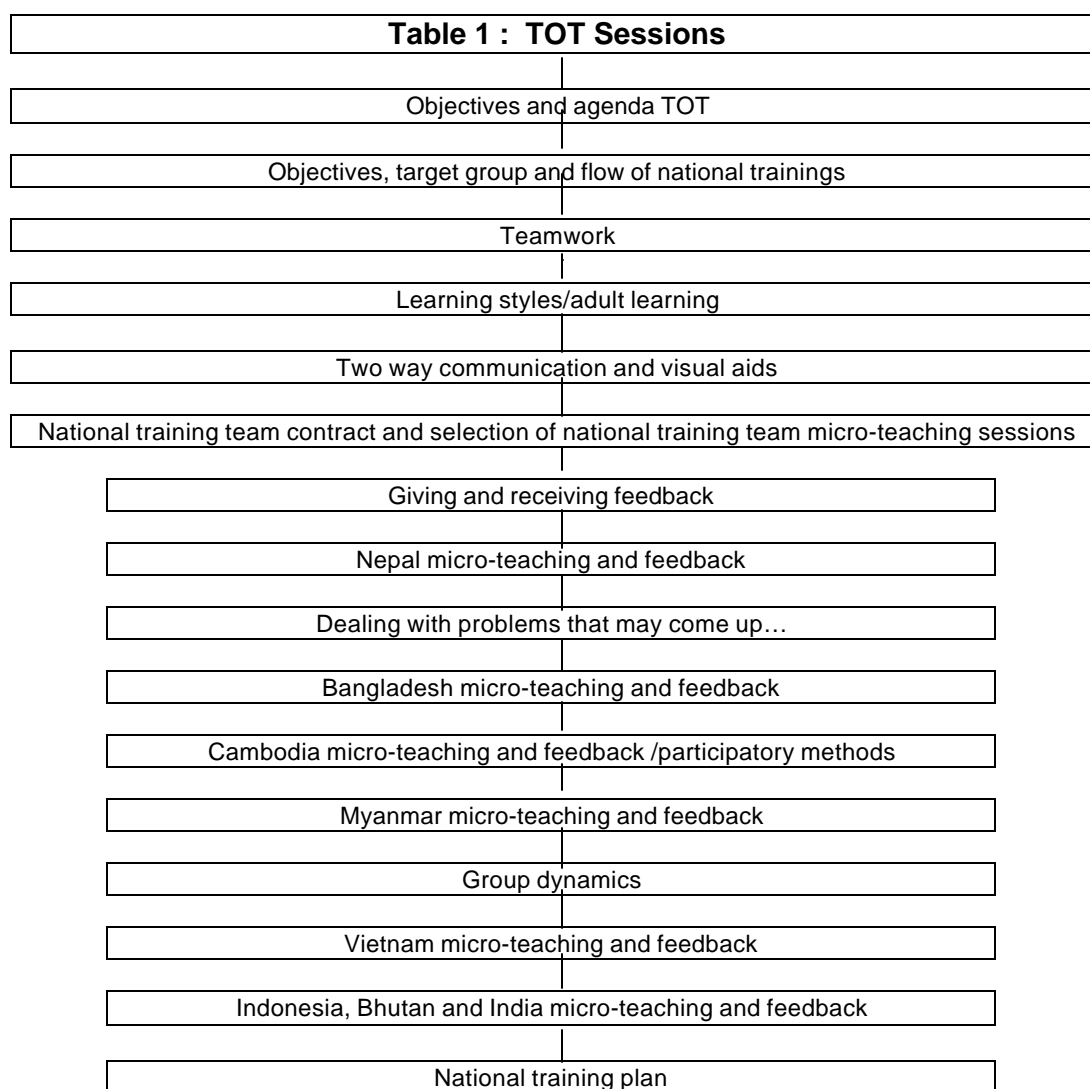
Figure 1: Model National Training Framework



3. TRAINING OF TRAINERS FRAMEWORK

In order to familiarise the participants with the framework of the model national training course described in the module, the TOT followed this as closely as possible. The TOT also endeavoured to cover the contents and process of the model training course. However, as the TOT Workshop had to cover a number of sessions specific to a TOT, such as sessions introducing the trainees to participatory training concepts and methods and had to provide an opportunity for teaching practice (a critical component of the TOT), there was not enough time to cover all of the sessions described in the model national training course (see Appendix 6). However, the trainees were given the opportunity to ask for clarifications about these sessions and even to try out a selection of these sessions during their teaching practice. The participants, it should be noted, were grouped into national training teams for the teaching practice sessions.

The model national training framework, which is based on the 4 stage stove selection process, is shown in Figure 1. Components that were not included in the TOT due to time constraints are shown in *italics* and with the text shaded light grey. TOT sessions can be seen in Table 1.



The Training Sessions

Introduction

As stated in the previous section, the workshop consisted of two types of training sessions: the sessions to be covered in any national training course, based on the model training course contained in the training module and special training of the trainers sessions which emphasized the use of different training methodologies, especially non-conventional teaching methodologies which are considered more appropriate for training adults. In addition, the principles of adult learning were presented to the trainees and the importance of a training team contract was stressed. As far as possible the two types of training session took place in an integrated manner.

During the workshop, the trainees were given an opportunity to experience, to some extent, all of the components of the training module, thus they also had to do field exercises, follow and practice the different steps in designing a stove for a particular community group as well as to practice constructing several different stove designs.

The following are two examples of the sessions covered during the training, one technical session and one non-technical session.

Combustion stations and processing

The principles of combustion are usually taught in classroom-based theoretical sessions. It was felt that this was inappropriate for adult learners in the field as it may be too difficult for them to follow a lecture or too boring. Thus in order to provide the trainees with a more appropriate methodology which they could use in their own future training courses a methodology using 10 different 'combustion stations' was introduced. These 'stations' were simply places on the floor where different combustion materials were placed along with various cards containing instructions for the trainees. Participants were divided into pairs and invited to carry out various experiments and make the observations asked for on the instruction cards.

Later, classroom sessions focused on questions and answers about the combustion stations, with some explanation of the importance of the principles of combustion for stove design.

Thus, the combustion stations are an example of how the two types of training were integrated in the workshop.

Gender

The session on gender (a non-technical subject) was also designed as an integrated training exercise whereby the trainees could learn about the concept of gender in a stove program as promulgated by the training module as well as gain an understanding of the possible different methodologies that can be used to convey this information. In this particular session three different methodologies were used.

First, the sessions were introduced through a traditional Indonesian song which reflects gender relations. This was translated into English as follows:

*For centuries men have dominated women
Put in a cage as beautiful sweet ornaments
Somehow, sometimes men can be made so very weak
Made to bow down with a woman's flirtatious wink*

Afterwards, trainees were grouped by country of origin and asked to think of the concept of gender in their own country context and to draw a picture representing this concept of gender.

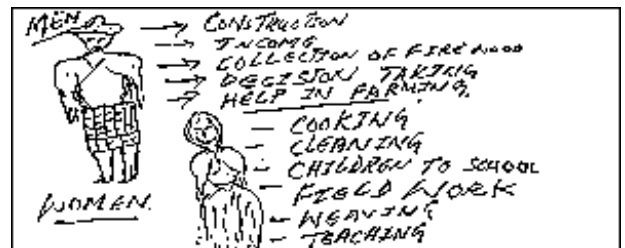
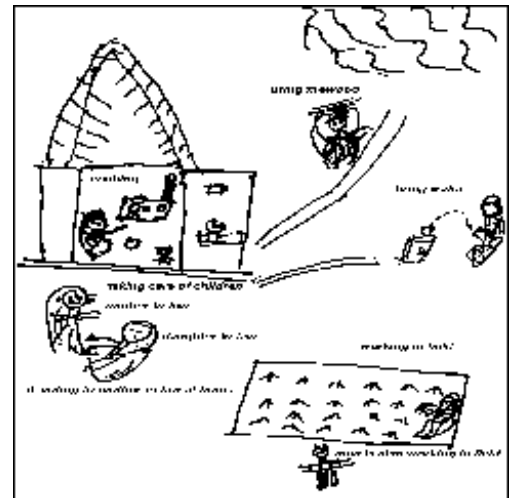
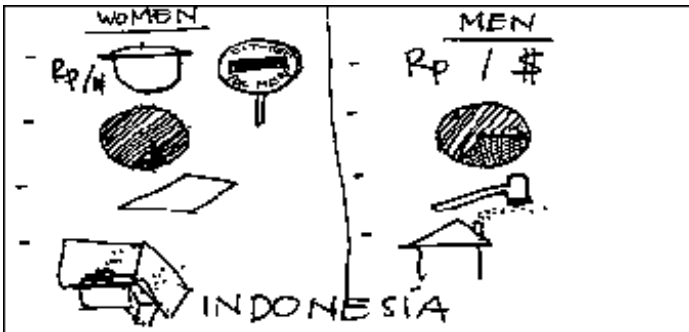
Each group explained its artistic product and Emma the trainer, noted differences and similarities. The Bangladeshi team explained that gender is often thought of as meaning development projects for women. Bhutan, Cambodia, India, Nepal and Vietnam concentrated on gender as meaning the division of labour. Indonesia brought in some aspects of access to resources and Myanmar was more specific looking at relationships between men and women, domination specifically, for different classes within society. Emma summed up by using a transparency as follows:

*SEX refers to the biological differences between females and males.
GENDER refers to the socially defined differences between men and women.*

After the discussion on the national perspectives, participants were asked to think about how gender influences a stove program and the responses of trainees from the pioneer Indonesian national training course were shared with them, as below:



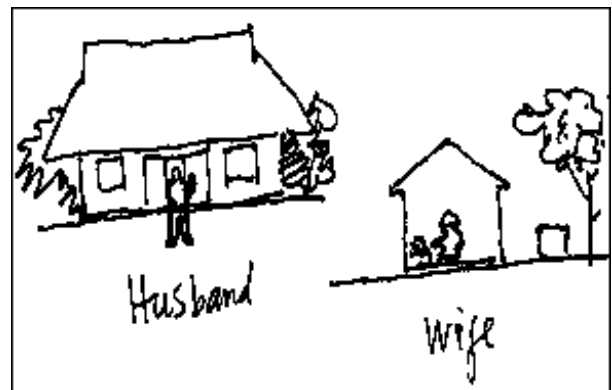
Discussing the differences and similarities of gender concepts



♂ Socially defined ♀

MYANMAR Community

| | | |
|-----------------|--|-----|
| Un Educated | | 90% |
| Educated | | 20% |
| Highly Educated | | |
| RURAL COMMUNITY | | 70% |
| URBAN COMMUNITY | | 30% |



Some of the group work visualizing gender within the trainees' own country context

| Gender is... | Gender in the field... |
|--|--|
| The difference between the roles of men and women due to socialization | The role of women is in the kitchen; the role of men is outside, making a living |
| The division of roles between men and women, in relation to: equity-togetherness-partnership-mutual respect in the lives of people according to their place and time | No real reflection on the meaning of gender in the field as yet. One example: kitchen work is dominated by women |
| The relationship between men and women in household life; besides this, gender is to fulfil biological needs and represents a process to ensure descendants | Observation has been made of the household tasks of women and men |
| Equity in household activities-equity in work division-mutual understanding of the reproduction process | Not yet the same as our statement of "gender is..." |

This session helped the trainees right from the start to be aware of the importance of integrating gender issues into the overall planning of a stove program as well as for developing or selecting the most appropriate designs for their respective target group. From the TOT point of view the participants also learned the different methodologies introduced and used during the gender sessions. All other sessions were conducted in the same manner.

4. FIELD EXERCISES

These are an essential component of the training module. Before starting the participants were made to understand that, according to the module, there should be three field exercises covering the four stove selection stages in any national training workshop on Improved Stove Selection and Dissemination (see Fig. 1). However, since this was a TOT, and there were time constraints, only two field exercises (see Fig. 1) were carried out. Nevertheless all the stove selection stages were covered.

For the field exercises, trainees were divided into four field groups. Each group was supervised by one of the TOT trainers. Each group was assigned to one village. The groups and villages were as follows:

| Group 1 - Merembu | Group 2 – Bedugul | Group 3 - Mapak 1 | Group 4 - Mapak 2 |
|--------------------------|--------------------------|--------------------------|--------------------------|
| Indu | Sushila | Sadhana | Lulu |
| Sulpya | Adhong | Nazmul | Luitel |
| Han | Zaher | Thong | Lwin |
| Thayut | Jigmela | Beang | Koma |
| Hong | Vu | Myo | Husni |
| Pingkan | Michelle | Christina | Aryanto |

Before leaving for the four respective villages the trainees were given guidelines which were explained by the trainers. The trainers also went over the community context profiles and activity profiles that were to be used to conduct the field exercises.

Once the first field exercise was completed, the groups were asked to start working on stove selection stage 1. To facilitate this, stove selection stage 1 guidelines were distributed. Then the groups freely discussed their findings and reported their results. Through sharing their findings the groups learned from each other.

The same process was followed for the other field exercise and stove selection stages. The results of the stove selection stages are presented in Appendix 2.

In addition to the field exercises and stove selection stages, a field visit to analyse stove performance testing and analysis in the field was organised in the middle of the training. This also combined a period of relaxation.

The participants were divided into four different groups and asked to monitor stove performance from four different perspectives: the kitchen environment; community involvement; integration; production and dissemination. Each group was assigned to one particular kitchen in the community visited where several different stoves, traditional as well as improved stoves, were used. After completion of the observations, discussions were held at one of the community houses. The results of the discussions were in effect a set of recommendations to PSP, the local NGO, and co-organiser of the TOT which is working on an improved cookstove program in the village.



Discussing cookstove issues with key informants during the field study



The Bedugul group sit down to discuss their findings from the field work for “Stove Selection Stage I”

5. STOVE CONSTRUCTION EXERCISE

The best way to acquire the necessary technical skill to construct a stove is to try to construct one. This rarely takes place in training workshops because the trainers have only theoretical knowledge of stove construction and lack the technical skills needed to construct a fully operational stove. Although trainees could have been taught how to construct a wide range of stove designs and types which use all sorts of materials, only the most commonly used materials and stove designs in the trainees' respective working areas were actually taught. Thus, four different stove designs were constructed by the four groups of trainees using mud and bricks. The groups were as follows:

| Group 1 | Group 2 | Group 3 | Group 4 |
|----------------|----------------|----------------|----------------|
| Indu | Sushila | Lulu | Sadhana |
| Hong | Thong | Sulpya | Luitel |
| Nazmul | Zaher | Lwin | Adhong |
| Han | Myo | Beang | Vu |
| Jigmela | Koma | Husni | Thayut |

The mud stove construction

Each group was given one stove design. The following diagrams illustrate the different mud stove designs to be constructed and two examples of the stoves made by the trainees.

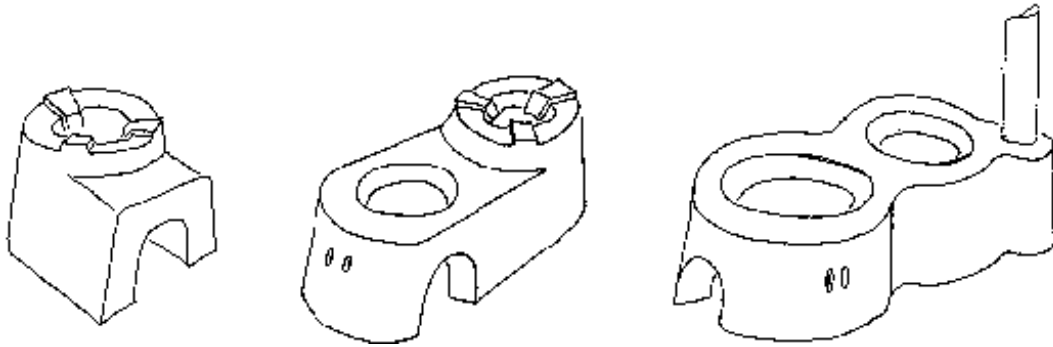
In the first stage, which took one whole afternoon, each group mixed the mud and formed the stove body. The stove bodies were then left to dry for three days, and later the trainees returned for another afternoon session to make holes and chimneys to complete the stoves. Because the trainees were so eager to know the results of their work (although in reality they understood that this should not be done) they attempted to fire their stoves.

The brick stove construction

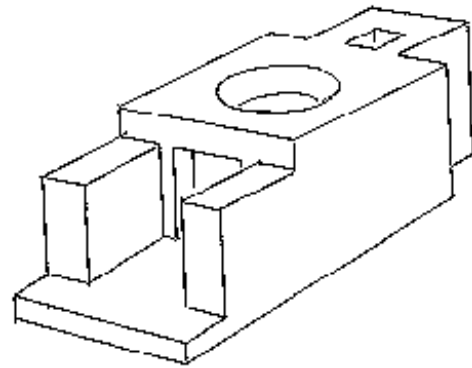
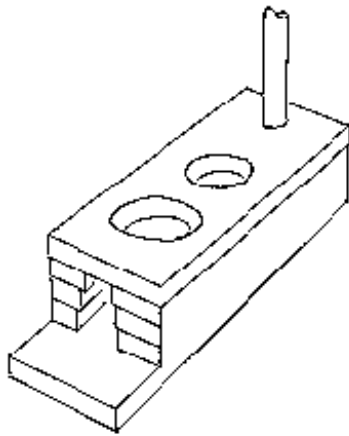
Similarly, different brick stove designs were given to the four groups. Under the supervision of the technical trainers and some of the trainees with technical experience in stove construction, the brick stoves were finished in one afternoon session and the results were quite satisfying. The different brick stove designs and pictures of the finished stoves are shown below. Unlike the mud stoves that need to be left to dry for several days before making the holes, the brick stoves can immediately be shaped and finished. However, to prevent cracking, the users must wait for several days for the stove to dry before using it.

In general the participants really appreciated the hands-on experience constructing stoves and they admitted that they learned a lot more from being able to construct the stove themselves. Some related that this was the first time they had attended a stove training workshop which allowed real construction work.

Some of the mud stove designs and actual samples built by the participants are shown in the accompanying diagrams.



Some of the mud stove designs and actual samples built by the participants



One and two pot brick stove designs and the stoves as built during the training

6. TEACHING PRACTICE SESSIONS

The teaching practice sessions were designed for the trainees to start teaming up in preparation for future national training workshops in their own countries and to evaluate their understanding of the training module, especially the stove selection process. All sessions were conducted in English and this proved quite a challenge for some of the trainees.

Each country group was assigned to select some of the 40 sessions covered in the training module. Sessions had to be selected from all of the four stove selection process stages so that the teaching practice sessions covered the entire stove selection process. Each member of the country training teams was then asked to take responsibility for specific sessions and if possible, in order to avoid duplication, to co-ordinate his or her teaching practice with that of members from other countries who chose sessions from the same stove selection stage. They were also given to understand that they were free to choose any training methodology from those provided in the training module as well as any others which they thought were appropriate for their country. They could also modify sessions to suit national situations and the materials available for use. Each teaching practice session was recorded on video for evaluation purposes.

The evaluation of teaching practice was done in many different ways. Direct feedback in the form of verbal comments was used. This was done particularly in the first two sessions. Before the practice sessions cards with questions reminding the trainees of good teaching practice were pasted onto the wall. After the teaching sessions these cards were then distributed to a number of trainees and written responses were solicited. The questions were in the form of: Does the teacher

- encourage active learning?
- provide plenty of opportunities for practical experience?
- make sure shy trainees are given a chance to speak?
- openly admit mistakes or lack of knowledge?
- leave out what is not important or too detailed?
- prepare session plans and materials in advance?
- modify the teaching methods so they are culturally appropriate?
- show honesty and openness?
- encourage quicker trainees to help those who have more difficulty?
- make him/herself available to trainees after and in between training sessions?
- show loyalty to trainees?
- avoid embarrassing trainees?
- evaluate whether trainees will be able to use their learning in real-life situations?
- give examples to illustrate new ideas and ways?
- use the vocabulary of trainees and avoid fancy jargon?
- relate the subject to the trainees' experience?
- respond to trainee mistakes with positive criticism and patience?
- use imaginative teaching aids?
- know the subject well?
- treat trainees as friends and as equals?
- encourage participation by asking questions and presenting problems?

The results of the teaching practice were in general quite good and, as admitted by the participants themselves, such teaching practice really helped the trainees to start internalising the contents of the training module, especially the stove selection process. The different methodologies used and introduced during the teaching practice sessions were very interesting and showed that some of the participants were experienced trainers, which augured well for future national training workshops.

However, the trainees also felt that the teaching practice was difficult because of the limited time provided. Perhaps this shows that trainees need to work on being able to budget their time more effectively.

Some participants clearly found it quite an obstacle to teach in English. However, from the limited presentations, the trainers were convinced that the teaching would be a lot smoother and more effective if done in the participants' own languages.

One of the positive things about the teaching practice was the serious response from the other trainees while their colleagues were engaged in teaching. No one regarded the teaching practice as unimportant and all gave it their full attention. In summary, the teaching practice sessions were successful and all trainees claimed that they benefited greatly from the feedback from their fellow trainees and from the training team.

There was no doubt that the country teams will be effective in providing future national training workshops in their respective countries.

A more detailed description of the teaching practice sessions and general feedback comments are provided in Appendix 3.

7. FORMULATION OF NATIONAL TRAINING PLANS

After the ten-day learning process, the country training teams were asked to develop national training plans. This was designed to:

- enable the country training team members to work together and begin planning for their respective national training workshops.
- give the country training teams time to review the training module and discuss possible modifications for their countries.
- give the country teams time to start planning a national training workshop in their respective countries by considering such aspects as logistics, sites, venues, lead organisation to host the training, modifications and translation of training materials, the trainers, etc.

The national training plan session was introduced along with some general guidelines for formulating the “Background” section of a preliminary workshop proposal. This included the following:



The Myanmar team developing their national training plan

Background

Details of the current situation

- Target area of program
- Population
- Natural resources
- Energy problems
- Level of community participation

Readiness of implementing organisation

- Staffing
- Working style with communities
- Financial resources available

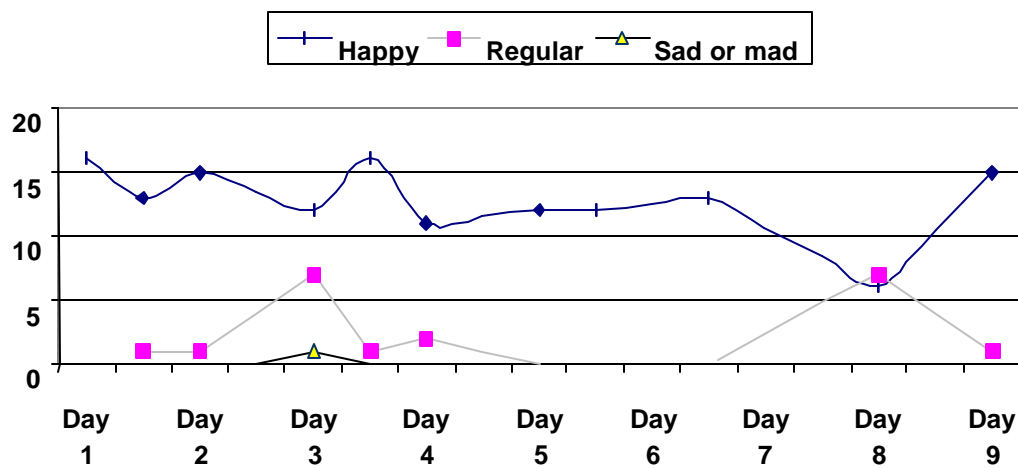
Trainees were given time to work in their national training team groups to develop their plans as far as possible within the constraints of the limited time available. The plans were not presented, but photocopied and distributed to fellow trainees and the trainers. The country plans are provided in Appendix 4.

8. COURSE EVALUATION

The evaluation was carried out using two different methods. The first method involved asking the trainees to fill out a post-test questionnaire. Unfortunately it was difficult to compare the pre- and post-test results. The pre-test was given when trainees were fresh and many of them used their manuals freely to answer the questions. Those who completed the post-test questionnaire were tired at the end of the training course. In contrast, those who completed the pre-test questionnaire could work on it for as long as they liked, wherever they liked, whereas those who completed the post-test questionnaire had limited time. Also, whereas all participants filled out the post-test only, 12 participants, self-selected, completed the pre-test.

Before starting each day's activities, a mood meter was used to monitor the mood of the trainees. The idea was to alert the trainers to negative emotional states that might inhibit learning. If these were present the trainers would conduct an energising session before continuing with the training. The mood meter reading during the workshop is shown below.

The Mood Meter



The second method used to evaluate other aspects of the training involved using differently coloured index cards labelled “logistics”, “flow”, “methods” and “recommendations”. The participants were asked to take the index cards and write comments on each.

The results were generally favourable, some recommendations are:

- Training course should be shorter, as it exhausted a number of trainees
- Field visit should be better prepared
- WBT/cooking tests of the stoves should have been conducted during the workshop
- Sitting arrangements should be changed from time to time
- Mood meter should be used much more frequently
- Representatives of ARECOP should attend future national training workshops
- Fishbowl method of evaluation should be used
- A mid-course evaluation should be introduced

APPENDIX 1: TRAINING SESSIONS COVERED BY ARECOP MODULE

| No. | Session | Duration | Major Objectives | Methods |
|-----|--|----------|--|--|
| 1 | Introductions | 1:00 | <ul style="list-style-type: none"> ▪ to facilitate introductions | Concentric circles mapping |
| 2 | Goals and expectations | 0:45 | <ul style="list-style-type: none"> ▪ to make sure trainer and trainee expectations match | Individual exercise sharing |
| 3 | Framework and content | 0:45 | <ul style="list-style-type: none"> ▪ to clarify the objectives/expected outputs of the training | Lecturette posters of training process |
| 4 | Principles of design | 1:00 | <ul style="list-style-type: none"> ▪ to use pre-workshop exercise information and participants' experience and knowledge and link these with stove designs and stove projects | Brainstorm transfer to index cards Pair work Sharing |
| 5 | Raw materials | 1:00 | <ul style="list-style-type: none"> ▪ to provide guidelines for choosing stove materials | Lecture with transparencies |
| 6 | Promotion and benefits | 1:00 | <ul style="list-style-type: none"> ▪ to brainstorm possible benefits, indirect and direct, from an improved cookstove and project | Consumer and seller game discussion |
| 7 | Combustion stations and processing | 2:00 | <ul style="list-style-type: none"> ▪ to fulfill participants expectations for technical information before addressing gender and field exercise 1 | Short introduction with transparency Experiment stations Question and answer based lecture |
| 8 | Gender | 1:30 | <ul style="list-style-type: none"> ▪ to challenge the idea that gender is only related to women | Drawing and gallery viewing Lecturette with transparencies |
| 9 | Overview of mud stove construction | 0:45 | <ul style="list-style-type: none"> ▪ to explain the purpose of mud stove construction | Lecturette with transparencies |
| 10 | Mud stove construction | 4:00 | <ul style="list-style-type: none"> ▪ to construct different mud stove designs | Stove construction |
| 11 | Guidelines for field exercise 1: community context | 1:00 | <ul style="list-style-type: none"> ▪ to explain the purpose of the field exercise | Observing and listening games Working through examples |
| 12 | Field exercise 1: community context | 2:30 | <ul style="list-style-type: none"> ▪ to observe and collect real information about the community context from a case study community based on new understanding | Field exercise |

| No. | Session | Duration | Major Objectives | Methods |
|-----|--|----------|--|---|
| 13 | Stove selection stage 1 | 2:30 | <ul style="list-style-type: none"> to critically analyze information gathered to determine parameters of a stove design and stove project | Group work Poster making Presentations Question and answer, discussion |
| 14 | Heat transfer and heat loss | 1:30 | <ul style="list-style-type: none"> to provide information on the mechanisms of heat transfer, maximizing heat use in a stove design and decreasing heat loss | Lecture with written exercise sheets |
| 15 | Kitchen | 2:00 | <ul style="list-style-type: none"> to illustrate the importance of the kitchen in assessment and the consequences of ignoring the kitchen environment | Role plays lecturette |
| 16 | Combustion quiz | 1:00 | <ul style="list-style-type: none"> to get participants to use basic combustion concepts to make decisions about stove design | Game show quiz with one-minute lectures when necessary |
| 17 | Stove parts | 1:00 | <ul style="list-style-type: none"> to give an overview of the stove parts | Lecture with transparencies quiz |
| 18 | Stove types | 1:45 | <ul style="list-style-type: none"> to get participants integrating technical and social information in modifying or choosing stove designs for certain social contexts (some participants' working areas) | Small group work presentation and discussion |
| 19 | Combustion and heat transfer | 1:00 | <ul style="list-style-type: none"> to evaluate traditional stove designs from participants' working areas based on combustion and heat transfer concepts | Question and answer led discussion |
| 20 | Overview of brick stove construction | 0:30 | <ul style="list-style-type: none"> to explain the purpose of brick stove construction | Lecturette with transparencies |
| 21 | Brick stove construction | 4:00 | <ul style="list-style-type: none"> to construct different brick stove designs | Stove construction |
| 22 | Guidelines for field exercise 2: kitchen, user and traditional stove | 0:30 | <ul style="list-style-type: none"> to explain the purpose of the field exercise | Lecturette |
| 23 | Field exercise 2: kitchen, user and traditional stove | 2:45 | <ul style="list-style-type: none"> to observe and collect real information on a specific user and her kitchen on a specific user and her kitchen and traditional stove from the case study community based on new understanding | Field exercise |
| 24 | Stove selection stage 2 | 2:30 | <ul style="list-style-type: none"> to give participants and training team the opportunity to ask clarifying questions and challenge modifications/stove designs decided upon by the field exercise groups | Gallery viewing question and answer, discussion |
| 25 | Stove dissemination | 2:15 | <ul style="list-style-type: none"> to introduce dissemination and listen to what participants want and need to learn about dissemination | Small group work Reporting Role play Lecture with transparencies |
| 26 | Subsidies | 0:30 | <ul style="list-style-type: none"> to debate the issue of subsidies | Debate |

| No. | Session | Duration | Major Objectives | Methods |
|-----|--|-------------|---|---|
| 27 | Overview of mud stove finishing | 0:30 | <ul style="list-style-type: none"> to give an overview of the mud stove finishing the needs to be done | Lecturette |
| 28 | Mud stove finishing | 4:00 | <ul style="list-style-type: none"> to finish constructing the mud stove designs | Finish stove construction |
| 29 | Guidelines for field exercise 3: dissemination | 0:30 | <ul style="list-style-type: none"> to explain the purpose of the field exercise to familiarize participants with the tools and techniques used during the field exercise (resource profile) | Working through examples |
| 30 | Field exercise 3: dissemination | 2:45 | <ul style="list-style-type: none"> to explore the dissemination of the current stove and other technology dissemination systems in existence in the case study community | Field exercise |
| 31 | Stove selection stage 3: | 1:30 – 2:00 | <ul style="list-style-type: none"> to critically analyze information gathered to determine dissemination strategy | Presentation Question and answer, discussion |
| 32 | Monitoring and evaluation | 1:00 | <ul style="list-style-type: none"> to give an opportunity for participants to express their understanding and feelings for m&e | Free brainstorming |
| 33 | Indicators | 1:00 | <ul style="list-style-type: none"> to define indicators to come up with indicators to monitor whether benefits are actually provided | Brainstorm |
| 34 | Guidelines for field visits/stove performance analysis | 0:30 | <ul style="list-style-type: none"> to explain the purpose of the field exercise to familiarize participants with the tools and techniques used during the field exercise | lecturette |
| 35 | Field visit | 3:00-4:00 | <ul style="list-style-type: none"> to make participants critically think about and discuss the varied reasons for stove acceptance or rejection to bring together various themes from the training to observe the process of making a ceramic improved stove | Small group work Discussion led by participant |
| 36 | Trouble shooting | 1:00 | <ul style="list-style-type: none"> to emphasize that m&e must result in action and thereby stress the purpose of m&e | Brainstorm Pair work Sharing |
| 37 | Stove selection stage 4: workplan | 2:00 | <ul style="list-style-type: none"> to critically analyze information based on stove design and dissemination pattern selected for the case study community to determine a workplan | Group work Poster making Presentation Question and answer, Discussion |
| 38 | Overview of training | 1:30 | <ul style="list-style-type: none"> to review the content of the training to prepare participants to work on their own using new knowledge and skills in developing stove designs and program plans for their working areas | Lecture |

| No. | Session | Duration | Major Objectives | Methods |
|-----|------------------------|----------|---|---|
| 39 | Application | 6:00 | <ul style="list-style-type: none"> ▪ to get the participants deciding about a future stove design and program in their own working areas | Individual work with possibility for private consultation with training team Poster making Gallery viewing Question and answer, inputs, general discussion |
| 40 | Evaluation of training | 0:45 | <ul style="list-style-type: none"> ▪ to evaluate the training ▪ to collect suggestions for future trainings courses from participants | Individuals write on index cards Index cards grouped and taped up |

Source: Adapted from Asia Regional Cookstove Program (ARECOP) (no date).

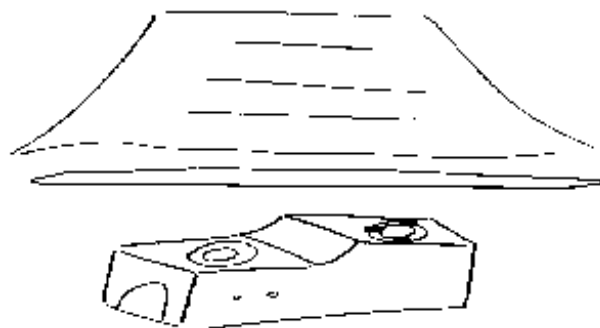
Trainer Manual : Improvement Stove Selection and Dissemination, Yogyakarta, Indonesia.

APPENDIX 2: RESULTS OF FIELD EXERCISES AND STOVE SELECTION STAGES 1 TO 4

Group 1 – Merembu

Stove Selection Stage 1: Identifying Community Context and Stove Selection
Stage 2: Assessing Kitchen, User and Traditional Stove

| Stoves | Current stove | Suggestions |
|-------------------------------|---|---|
| Quantity | 2 stoves | 1-2 stoves (1 pothole stove and a small scale industry stove) |
| Stove function | Cooking, drying | Cooking, drying |
| Raw materials | Sand, mud, clay, brick | Mud, clay, sand, straw, rice husks |
| Cost | Rp. 2000 | Rp. 3000 or a mud stove (no cost) Should be around the cost of the traditional stove |
| Fuel | Fuelwood, coconut leaves, cassava sticks | Increase fuelwood plantation |
| Program Considerations | | |
| Traditions, culture, habits | Sitting for cooking, Islam | |
| Promotion | Fuelwood scarcity, reduce amount of smoke, health benefits, time saving, reduce pollution, Poster, introduce stove design | |
| Integration | Health, forestry, income generation, energy program, sanitation, women's organizations, block development office | |
| Human Resources | | |
| Collect raw materials | Women | |
| Build stoves | Women & men | |
| Install stoves | Women & men | |
| Sell stoves | Women | |
| Promote stoves | Women & men | |
| Trainers | Women & men | |
| Program leaders | Women | |



The traditional stove (left) and the improved cookstove (right)

The Merembu team evaluated the current stove as resulting in poor, smoky combustion with poor heat transfer. Unnecessary heat loss was caused by the pot rests being too high.

Food preparation, cooking and serving from the pots were all done sitting.

ICS functions remained the same as those of the traditional stove, that is cooking and drying. Wood and agri-residues would be the fuel of the improved stove. Raw materials were mud, sand, ash, brick and bamboo for a chimney hood. Under the chimney hood, the design included a rack for drying. The food preparation, cooking and serving positions would be the same.

Stove Selection Stage 3: Dissemination of the ICS

| Dissemination strategy | User based |
|----------------------------------|---|
| Cost of ICS | A little more expensive than the traditional stove |
| Promotion | In the village, training and IEC (information, education and communication) |
| Training and other interventions | Stove construction use and maintenance |
| Collection of raw materials | Men and women |
| Construction of ICS | Women |
| Selling the stove | Women, local NGOs |
| Program leaders | Women leaders |

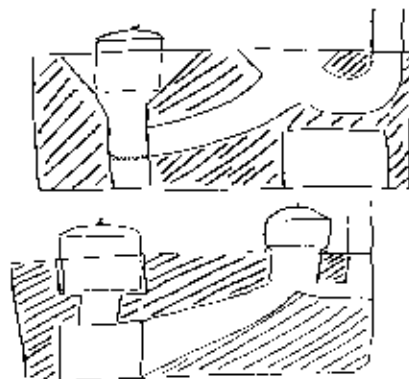
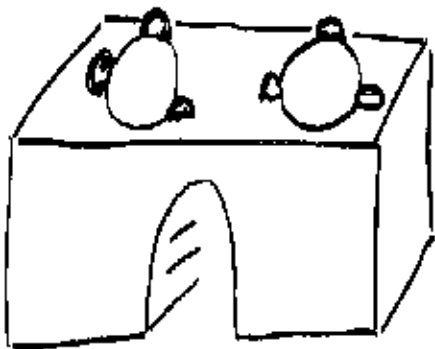
Stove Selection Stage 4: Formulate a Workplan for Introducing ICS on Pilot Scale

| Activities | Appropriate involvement of men and women | Objectives |
|------------------------------------|---|--|
| Introduction of ICS on pilot scale | Through local NGOs, local women and men | To introduce the stove to potential users and to create demand |
| Review, analyze and optimize | Both women and men and project staff | To optimize the ICS if necessary |
| Organize training program | Local women and project staff | To upgrade stove construction and maintenance skills |
| Dissemination | Through local NGO (PSP)/, women and men | To improve the living conditions of the community |
| Monitoring & evaluation | Local NGO, women and men and project staff | To know whether the ICS is really providing benefits to the community or needs any improvement |

Group 2—Bedugul Village

Stove Selection Stage 1: Identifying Community Context and Stove Selection Stage 2: Assessing Kitchen, User and Traditional Stove

| Stoves | Current stove | Suggestions |
|-------------------------------|--|---|
| Quantity | Semi-portable mud stove with 1,2 or 3 potholes | Portable or fixed (based on traditional design) |
| Stove function | Cooking, drying | |
| Raw materials | Mud and sand | Ceramic or mud and sand |
| Cost | Rp. 1500, 2500, 3500 | Rp. 2500 |
| Fuel | Agricultural residues or loose biomass | Rice husks |
| Program Considerations | | |
| Traditions, culture, habits | Muslim community, eat two meals a day, squat while cooking, install stoves on Tuesday (fire day) There needs to be an awareness program for promotion | |
| Promotion | | |
| Integration | Child health programs (POSYANDU), women's savings group (ARISAN) | |
| Human Resources | | |
| Collect raw materials | Men | |
| Build stoves | Women | |
| Install stoves | Women & men & extension workers | |
| Sell stoves | Women & men & extension workers | |
| Promote stoves | Women & men & extension workers | |
| Trainers | Women & men & extension workers | |
| Program leaders | Women & men & extension workers | |



The traditional stove (left) and the improved cookstove (right)

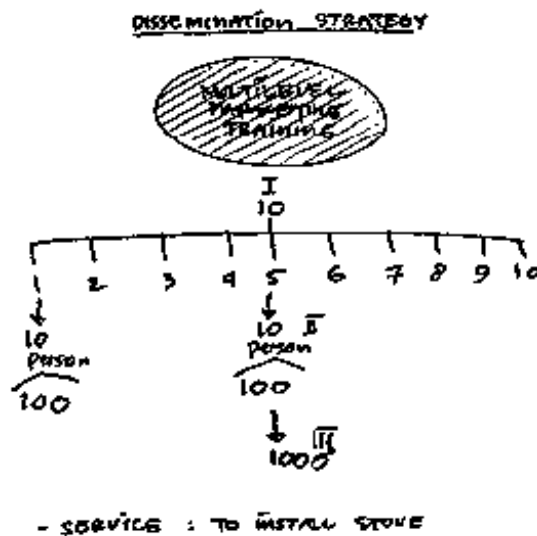
During stove selection stage 2 the Bedugul team made a technical evaluation of the current stove identifying design problems such as an oversized combustion chamber. They also gave credit to a fairly strong stove that was durable.

They noted that cooks sat for food preparation, cooking and serving. The ICS design was a two pot hole design, with the fuel entrance and combustion chamber at the first pot hole, not between the two pot holes. The materials were mud, sand, bricks and an iron rod; the price was Rp. 3000 and the size the same as the traditional stove. The cooking and drying functions were maintained.

Stove Selection Stage 3: Dissemination of ICS

| Dissemination strategy | Multilevel marketing training |
|----------------------------------|---|
| Cost of ICS | |
| Promotion | At buildings where social gatherings take place such as mosque, etc. Awareness program on health, benefits, income, time saving and small scale industry |
| Training and other interventions | |
| Collection of raw materials | User and field worker |
| Construction of ICS | User and field worker |
| Selling the stove | User and field worker |
| Program leaders | Existing development groups i.e., women's savings group, women's health care, religious groups |

The multilevel marketing training was criticized as being more comprehensive than necessary for the village of Bedugul.



The proposed stove dissemination strategy for Bedugul village.

Stove Selection Stage 4: Establishing a Workplan for Introducing the ICS on a Pilot Scale

| Activities | Time Period 1997-1998 | Appropriate involvement of men and women | Objectives |
|--|----------------------------------|---|---|
| Needs assessment study (environment, social, economic, infrastructure and political) | 3 months | Male and female field workers | To determine demand and needs, and to consider stove design possibilities based on technological and social factors |
| Stove design | 2 months | Male and female field workers | Appropriate stove design |
| Stove testing WBT, CCT, KPT | 1 month | Female field workers | |
| Dissemination to households and small scale industry | | Male and female field workers | |
| Training | | Field workers and male and female users | |
| Multi-level marketing | | | |
| Awareness program/promotion | 2 months | Male and female field workers | Raise the acceptability of the stove, information dissemination |
| Monitoring & evaluation | 1 month | Male and female field workers | To ensure that the ICP continues to meet the community's needs |

| Activities | Months | | | | | | | | | | | |
|-------------------------|---------------|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Needs assessment study | ■ | ■ | ■ | | | | | | | | | |
| Stove design | | | ■ | ■ | ■ | | | | | | | |
| Stove testing | | | | | ■ | ■ | ■ | | | | | |
| Dissemination | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ |
| Awareness/promotion | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ |
| Monitoring & evaluation | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ |

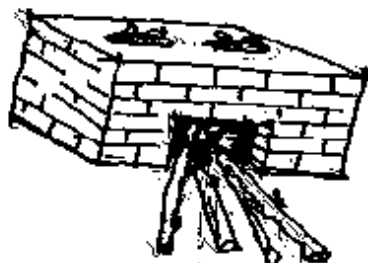
The Bedugul group was complimented on its time and activities chart. Some questions were raised about the workplan, including the use of stove testing and its objective, the exclusion of any stove design modification activity, the use of subsidies and possible commercialization, the placement of dissemination before awareness/promotion activities, and the involvement of the community in the early stages of the project.

Group 3—Mapak 1

Stove Selection Stage 1: Identifying the Community Context and Stove Selection Stage 2: Assessing Kitchen, User and Traditional Stove

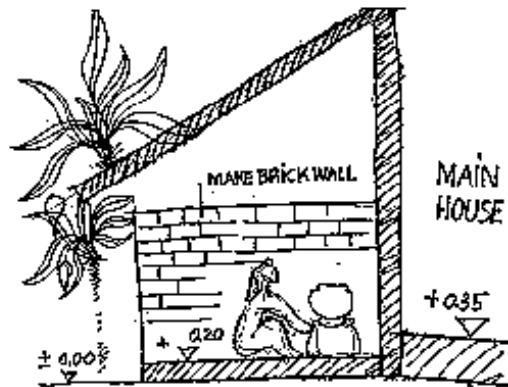
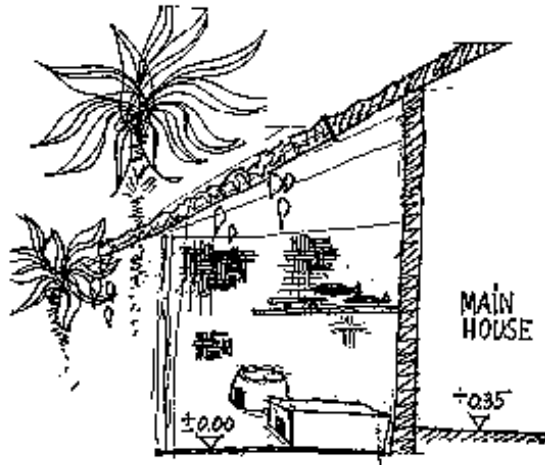
| Stoves | Current stove | Suggestions |
|-------------------------------|--|--|
| Quantity | 3 stoves (pottery, kerosene and brick) | |
| Stove function | Cooking, drying fuel, drying fish | |
| Raw materials | Brick, clay, metal | Mud/clay, brick, rice husks, sawdust, cowdung, metal rod/net, pipe |
| Cost | Pottery—Rp. 500, 2000 Metal—Rp. 8000 | Minimize cost |
| Fuel | Kerosene and wood | Rice husks |
| Program Considerations | | |
| Traditions, culture, habits | Kitchen work is women's work | |
| Promotion | Reduce cost of fuel, save time and reduce smoke | |
| Integration | MCH-FP, women's welfare, small credit, fish processing, other development projects can cooperate | |
| Human Resources | | |
| Collect raw materials | Women | |
| Build stoves | Women | |
| Install stoves | Women | |
| Sell stoves | Women & men | |
| Promote stoves | Women & men | |
| Trainers | Women | |
| Program leaders | Women & men | |

The Mapak 1 Group decided to introduce one ICS—a portable stove which would minimize fuel consumption and enable efficient cooking during the rainy season. Minimizing cost was also a consideration. They also planned some kitchen improvement activities, such as roof repair, addition of a cement floor and brick walls.



Traditional stoves found in Mapak I village

The improved cookstove proposed for Mapak I



A traditional kitchen in Mapak I and improvements proposed shown on the right

The proposed stove dissemination strategy for Bedugul village is shown below.

Stove Selection Stage 3: Dissemination of ICS

| Dissemination strategy | Training of potters, demonstration, leaflets |
|----------------------------------|---|
| Cost of ICS | Rp. 500-600 |
| Promotion | Village: Pengembur with the help of PSP |
| Training and other interventions | Training of potters |
| Collection of raw materials | Potters |
| Construction of ICS | Potters |
| Selling the stove | Traders and potters |
| Program leaders | Village leader, PSP field workers |

The Mapak 1 Group decided to improve the design at the production point they knew of, that is Pengembur, the site of the field visit and a potters village. However, no discussion of transport of the stoves took place. Also, it turns out that Mapak 1 is not supplied with stoves from Pengembur, but from Banyumulek.

Stove Selection Stage 4: Formulating a Workplan to Introduce the ICS on a Pilot Scale in a rural area

| Activities | Target | Time period July'97- Jun'99 | Who will be involved | Objectives |
|------------------------------|---|--|---------------------------------|--|
| Recruitment of field workers | 5 | 1/7/97—12/7/97 | PSP director | Ensure manpower |
| Training of field workers | 5 | 13/7/97—17/7/97 | Trainer | Human resources development |
| Workshop | 1 | 19/7/97 | Director and liaison officer | Involve a cross-section of people |
| Training of potters | 7 potters | 24/7/97—31/7/97 | Trainer and field workers | Develop skills |
| Loan disbursement | Rp. 100,000.00 per head | 1/8/97—6/99 | Field workers and potters | Create entrepreneurs |
| Production | 10,000 stoves | " | Potters | Promotion |
| Loan recollection | Monthly | " | Potters | Promotion |
| M&E | M: monthly E: Formative-1 Ex post-1 | " | Staff and external evaluator | Proper implementation and future direction |

Because of comments given during stove selection stage 3, the Mapak 1 Group decided to move production to Mapak 1, however Mapak 1 has no potters. This was the object of some discussion. The idea behind their choice to improve stoves at the current site of production was a good one—but the correct production site must be targeted. Further discussion centered on the use of field workers, the type of loan and its repayment and the scope of the program (10,000 stoves). A loan program may not be necessary when the ICS is so cheap. Also someone cast doubt on the earlier plan for kitchen improvement.

Group 4—Mapak 2

Stove Selection Stage 1: Identifying the Community Context and Stove Selection Stage 2: Assessing Kitchen, User and Traditional Stove

| Stoves | Current stove | Suggestions |
|-------------------------------|--|---|
| Quantity | 2 stoves (mud and ceramic) | Improve mud stove |
| Stove function | Drying, cooking, boiling water | Ensure efficient burning capacity |
| Raw materials | Mud, fibre | Use mud, fibre, rice husks, cow dung |
| Cost | Mud—free Ceramic—Rp. 500 | The cost of the stove should be around Rp. 500 |
| Fuel | Agricultural residues, coconut fibres, wood stems | The stove should have a bigger fire chamber in comparison to the wood stove |
| Program Considerations | | |
| Traditions, culture, habits | Farmers, separate kitchens, sitting position for cooking, mud stove for cooking two meals, ceramic stove for boiling water | |
| Promotion | By three organizations: women, youth and village defence | |
| Integration | Sanitation program, plantation program | |
| Human Resources | | |
| Collect raw materials | Women & children | |
| Build stoves | Women | |
| Install stoves | Women | |
| Sell stoves | Women & men | |
| Promote stoves | 3 organizations | |
| Trainers | Members of 3 organizations | |
| Program leaders | Heads of 3 organizations | |



Traditional stoves in Mapak II (above) and the proposed improved version on the right

The current stove was determined to result in poor combustion, evidenced by the production of too much smoke. No secondary air hole and a small firebox were also identified as problems. Heat transfer was determined to be okay but with some undesirable heat loss occurring. The group noted that food preparation, cooking and serving were all carried out in the sitting position.

The ICS design selected was to be made of mud and fibre and the same size as the traditional stove. Its functions remained the same as the traditional stove. The cost was determined at no more than Rp. 1000, with the option of no cash needed if the stove could be made by the users themselves.

Stove Selection Stage 3: Dissemination of the ICS

| | |
|----------------------------------|---|
| Dissemination strategy | Analyze the traditional stove in relation to combustion and heat transfer compare with ICS |
| | No more than Rp. 1000 |
| Cost of ICS | Demonstration in different focal points |
| Training and other interventions | Training for awareness, stove making skills, use and maintenance |
| Collection of raw materials | Women stove producers |
| Construction of ICS | Women stove producers |
| Selling the stove | |
| Program leaders | Male leaders |

Stove Selection Stage 4: Establishing a Workplan for Introducing the ICS on a Pilot Scale

| Activities | Appropriate involvement of men and women | Objectives |
|--|---|---|
| Workshop/meeting on stove efficiency | Men and women | To enable users to understand the efficiency of traditional stoves and compare with ICS based on combustion and heat transfer |
| Training on stove modification and building | Women | To enable users to modify and build their own improved stoves |
| ICP promotion through training of users on stove use, maintenance and trouble shooting | Women | To create awareness and increase acceptability |
| Monitoring and follow-up | Men and women | To assess progress and further development of ICPs |

Social Cost Benefit Analysis

To facilitate stage 3 of the stove selection process, a social cost benefit analysis was introduced and case study handouts were distributed. Field exercise groups selected a number of factors to conduct the social cost benefit analysis for their villages. After this, groups were given a stove selection stage 3 handout and asked to fill it out and prepare to present the information. The results below were summed up from each group's presentation.

| Benefits | | Merembu | Bedegul | Mapak 1 | Mapak 2 |
|--|---|----------------|----------------|----------------|----------------|
| Need to collect less fuel | M | ✓ | | | |
| | W | ✓ | ✓ | ✓ | ✓ |
| Gain skills as a leader | M | | ✓ | | ✓ |
| | W | ✓ | ✓ | ✓ | ✓ |
| Shorter cooking time | M | | | | |
| | W | ✓ | ✓ | ✓ | ✓ |
| Better kitchen environment | M | ✓ | | | |
| | W | ✓ | ✓ | ✓ | ✓ |
| Exposed to less smoke | M | | | | |
| | W | ✓ | ✓ | ✓ | ✓ |
| Choice of stove type | M | | ✓ | ✓ | ✓ |
| | W | ✓ | ✓ | ✓ | ✓ |
| Improved quality product | M | ✓ | ✓ | ✓ | ✓ |
| | W | ✓ | ✓ | ✓ | ✓ |
| Less time cleaning pots | M | | | | |
| | W | ✓ | ✓ | ✓ | ✓ |
| Less money spent on fuel | M | ✓ | ✓ | ✓ | ✓ |
| Disbenefits/Disadvantages | | Merembu | Bedegul | Mapak 1 | Mapak 2 |
| Need to spend more money for ICS | M | ✓ | ✓ | ✓ | ✓ |
| | W | | | | |
| Needs more time processing fuel | M | ✓ | | | |
| | W | ✓ | ✓ | ✓ | ✓ |
| Needs more time tending fire | M | | | | |
| | W | | ✓ | ✓ | ✓ |
| Change in cooking habits | M | | | | |
| | W | | ✓ | ✓ | ✓ |
| Displace indirect functions of traditional stove | M | | | | |
| | W | | ✓ | ✓ | ✓ |
| Need to buy new pots or pans | M | | ✓ | ✓ | ✓ |
| | W | | ✓ | ✓ | ✓ |
| Alters taste of food | M | | ✓ | ✓ | ✓ |
| | W | | ✓ | ✓ | ✓ |
| Negative ergonomic/working flow effects | M | | | | |
| | W | | ✓ | ✓ | ✓ |

The grid shows overall agreement between the groups on the social cost benefit analysis, including agreement on the benefits and disbenefits for men and women. Only in Merembu were men assessed as standing to benefit from less collection of fuel, to benefit from an improved kitchen environment and to lose from more fuel processing. This suggests that men are involved in fuel collection, processing and kitchen activities in Merembu but not in other places. Also, only in Merembu were men assessed as not standing to gain by another choice in stove technology. So perhaps this suggests that the choice of the stove is the women's, not the men's choice. It should be noted that Merembu is the most urban of all the four case study communities. Men's control over money and men's decision making power are also reflected in the social cost benefit analysis.

APPENDIX 3: TEACHING PRACTICE SESSIONS

The numbers appearing in parentheses are the session numbers as they appear in the Trainer Manual and in Appendix 1. The manual contains a total of 40 sessions but not all of these could be covered in the teaching practice sessions. Participants were therefore asked to make a selection.

Nepal

The sessions chosen by the Nepal team were:

- Introduction, goals and expectations (1,2) : Sushila Sharma
- Principles of design (4) : Kayeswar M. Sulpya
- Promotion and benefits (6) : Luitel Sita Ram

Introduction, goals and expectations

Sushila started well with a game (of her own devising) for introductions, where participants are divided into two groups arranged in two rows facing each other, but with a raised bed sheet preventing them from seeing each other. When the sheet dropped to the floor the first two participants in front competed to see who could yell out each other's name fastest. This continued until all members had competed. This was a good way of loosening up and getting to know each other's names in a fun way. She then moved onto a discussion of the background of the national training, using questions to try and get the participants to understand the goals and objectives of the national training.

Then she tried to brainstorm the problems which gave rise to the training. This resulted in a list of problems which hindered stove adoption from the point of view of the field workers.

Principles of design

Sulpya lectured about principles of design, using the whiteboard. He began by listing some aspects of traditional stoves—using some examples from the case study communities. He then lectured on various stove parts.

Towards the end of the session he talked about stove parts. He also talked about the combustion chamber and the concept of a heat sink.

During the subsequent discussion, Sulpya admitted that he lectured too much rather than allow the trainees to get involved. He recognised his need to adopt a more participatory style of training.

Promotion and Benefits

Luitel started by asking for two volunteers to sit back-to-back. He provided paper hats with the label of field worker and stove user written on them and asked the field worker to provide instructions to the stove user on how to arrange some physical objects that they both had in front of them. The user was not very successful in carrying out the instructions. Luitel used this exercise to show that simply giving instructions is an ineffective method of training. He stressed

the need for the trainer to get more involved with the user, to show the user what to do, or for the trainer and the trainee to carry out the instructions together.

Luitel then put up a poster of a house. A volunteer was asked to layout paper furnishings where he wanted them. After this Luitel asked if anyone wanted to layout the furnishings differently. A woman volunteer got up and moved the WC and water pump closer to the front door. Thong, a Vietnamese participant and architect, got up and moved the window away from its position close to the roof and made other changes. After this exercise he asked one of the participants what they felt about the exercise. They responded that it showed that people had different preferences. This was used to explain that stove users also have different preferences and that stove designers must be aware of and respect these as far as possible.

Finally Luitel asked the participants to compare stove users needs with the benefits field workers often stressed when promoting ICS. He highlighted the fact that these could often be quite different and that there was a need for congruence if the stove adoption rate is to be improved.

Bangladesh

The sessions chosen by the Bangladesh team were:

- Raw materials (5) : Abu Zaher
- Gender (8) : Lulu Bilquis Banu
- Field Exercise 1 : Guidelines for Identifying Community Context(11) : Nazmul Haque

Raw Materials

Using transparencies Zaher gave a lecture on how to choose appropriate stove materials. Again, it was felt that a more participatory form of communication would have been better.

Gender

Dr. Lulu began by introducing gender analysis and its relation to ICPs with transparencies. She also explained the difference between gender and sex. She asked participants to write down on cards one example of what men and women in their own culture exclusively wear and do. She taped the cards up on the back of a whiteboard and read them out. This was used to illustrate the fact that physical appearance was unrelated to the types of jobs assigned to men or women and that gender was culturally/socially defined.

Dr. Lulu then explained how information on gender roles helps ICS programmes to be successful and the necessity of involving men, women and children in any programme. She then received questions dealing with gender and maximizing participation, equity vs. equality, gender and men, etc.

Field Exercise 1: Guidelines for Identifying Community Context

Nazmul opened the session with a Bangladeshi greeting, asking everyone to shout back the appropriate response. This energised the participants. He then gave a short introduction to the need to assess community context and invited participants to ask questions throughout the session. Next he presented the objectives of the session as indicated below:

At the end of the session participants will be able to know the purposes of community context assessment.

At the end of the session participants will be familiar with the tools and techniques of community context assessment.

He then introduced an exercise where a volunteer is asked to connect 9 dots (arranged in 3 parallel rows giving the shape of a square) on the whiteboard using 4 lines, without lifting the pen from the board. He also asked participants to try on their own piece of paper. No one could do it. He asked why no one could solve this problem and explained that most people failed because they tried to complete the exercise by staying inside the boundary of the square formed by the dots. The solution required that you go outside it. He used this to illustrate that to be successful a stove program must not confine itself to a narrow set of considerations but should think of the wider context too, which involves a consideration of the community context of the stove program.

He then formed small groups of participants and asked them to think about the required information to collect for a field exercise on community context. For this he used the community context transparencies as included in the trainer manual. After two minutes he wrote some of the results on the board, asking participants to clarify or be more specific when necessary.

Problems related to cooking
Resources of the community
Social beliefs
Health
Social problems
Economy
Use of time
Superstitions and beliefs
Culture
Institutions
Organizations
Education

He then presented a transparency dividing community context subjects into five areas: social, economic, political, institutional and environmental with some examples, as included in the community context profile handout contained in the training manual.

He then asked about the methodology of the community context field exercise. Participants suggested using observation or informal interview. Nazmul introduced the concept of rapid rural appraisal (RRA) and participatory rural appraisal (PRA), including the objectives of each and some examples of tools. At this point time was up.

Methodology

- a. Census
- b. Sample survey
- c. RRA
- d. PRA

RRA: - Short time period
 - Secondary sources
 - Asking questions
 - Observation
 - Visit
 - Reference group
 - Academicians in the office
 - Analysis in the office

PRA: - Participation
 - Accuracy of information
 - Qualitative information
 - Field workers
 - Visualization
 - Analysis in the field by the people.
 - Small group

Tools: Mapping
 Matrix Ranking
 Transect etc.

Cambodia

The Cambodia team chose the following sessions for their micro-teaching:

- Energizer (can be done in all sessions) : Ly Chou Beang
- Heat transfer and heat loss (14) : Ly Chou Beang
- Kitchen (15) : Adhong Ramadhan
- Stove parts (17) : Chean Thayut
- Combustion and heat transfer/stove modification (19) : Yang Saing Koma

Energizer

Beang began with an energizing exercise called 7-Up.

Heat Transfer and Heat Loss

Then he continued with the session on heat transfer and heat loss. His objectives, as presented on a transparency, were:

At the end of the session the participants will understand the three types of heat transfer and how these affect stove design.

At the end of this session the participants will understand how heat transfer is optimized and how heat loss is minimized in stove design.

At the end of this session the participants will apply new knowledge to think critically about stove design.

These are the expected outputs defined by the trainer manual.

He opened by asking participants, “What is heat transfer?” He then presented the answer using a transparency. He progressed through the session building up on the participants knowledge (which he found out by questioning). He gave lots of examples and used a metal spoon to illustrate the conductivity of steel and then brainstormed about different materials. He then used the same questioning method to relate concepts of convection and radiation, always using visuals when he could.

Then he showed the transparencies for conduction, convection and radiation. Next he went on to explain mass and tried to explain how added mass with insulatory qualities can be used in stove design.

Kitchen

Adhong started by setting up a kitchen layout, using cards, chairs, and two model stoves. He asked for volunteers and asked other participants to serve as observers.



He then directed the first volunteer around the kitchen, giving her various tasks to perform. Afterwards he rearranged and improved the kitchen layout, and asked for another volunteer and went through the same procedure. From time to time he explained to the observers what was happening.

He then asked participants what information about the kitchen was necessary to design an ICP. This brainstorming resulted in the following:

- Cooking activities
- Stove location
- Space in the kitchen
- Construction materials used to build the kitchen

He then explained that kitchen improvement is a process which goes from observation, then analysis to planning and he explained some of the methods of kitchen observation.

| OBSERVE | ANALYZE | PLAN |
|-------------------------|--|---|
| DISCOVER THE KITCHEN | <ul style="list-style-type: none"> • READING THE KITCHEN • MEASURING | <ul style="list-style-type: none"> • DESIGN APPLICATION • CHANGING REALITY |
| CULINARY ACTIVITY CHAIN | SYSTEMS ANALYSIS <ul style="list-style-type: none"> • ARCH CONTEXT • STOVE • FUNCTIONS • CLIMATE | PRIORITY SETTING <ul style="list-style-type: none"> • SAFETY • COMFORT • HEALTH/HYGIENE • ENERGY EFFICIENCY |

Finally he wrapped up his session using some transparencies showing some issues of the kitchen as they related to the stove. The objectives of his session, as presented were:

To understand the importance of the kitchen for assessment and the consequences of not paying attention to the kitchen in an ICP.

To be aware of the possibility of integrating ICP and kitchen improvement and of some of the benefits that this union will bring.

To help the participants internalise some issues related to kitchen improvement, ergonomics, working flow, kitchen layout and how this influences the workloads of cooks.

Stove Parts

Thayut started by having the participants say their names while passing around a stove. Then the objectives were presented on a flip chart and read by one of the participants.

Understand the different technical parts of stoves.

Be able to answer questions about various improved cookstove designs.

Using a flip chart containing a list of the parts of a stove and models of stoves he asked participants where each part was and what the function of that part was and its implications for stove design. He asked the participants to think about changes that could be made to each part of the stove, for example changes in the size of the combustion chamber. He also used transparencies showing stove parts.

At the end of the session, he began to ask some questions about stove parts, but ran out of time.

Combustion and Heat Transfer

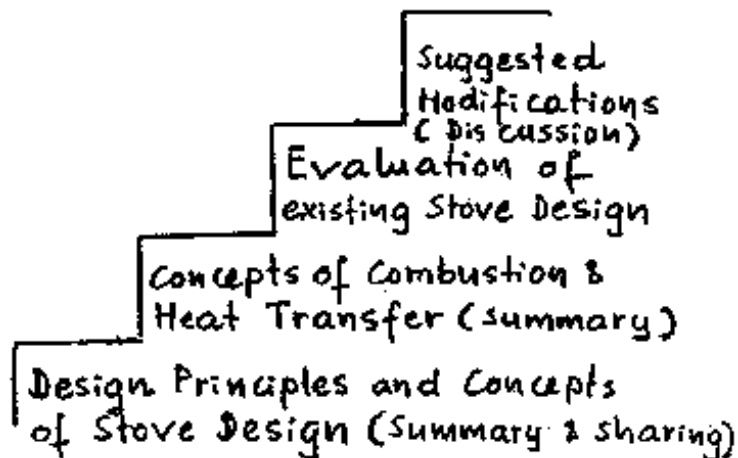
Koma started by tying his session to the previous sessions, inviting participants to use their new knowledge to talk about stove design. His objectives were to enable participants:

To recall and list the main principles of stove design and concepts of combustion and heat transfer

To apply the concepts of combustion and heat transfer to evaluate existing stove designs in their working areas

To make suggestions for modifications/improvements of existing stoves in their working areas

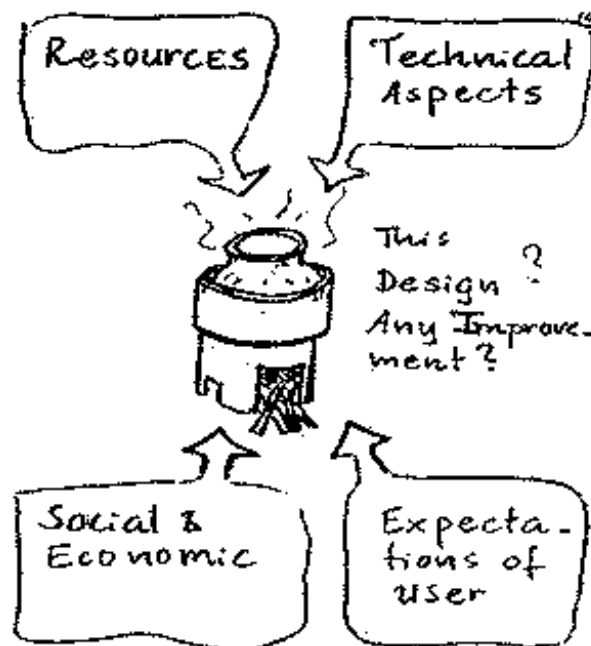
Koma also displayed a diagram of the steps of his session as shown below:



He formed groups of three participants to discuss the questions: “What is design?” “What have you ever designed (i.e. a building, a stove)? and “What did you need to consider before designing?”

One group discussed one participant’s experience of designing a building. Considerations were for whom the building was being constructed, the budget of the project and construction techniques.

Another group talked about the design for a stove, identifying the following factors: tradition, cooking position and types of food. Another group identified cooking practices, types of fuel, types of pots, climate and household structure. Koma used this to illustrate that many factors must be taken into consideration. He then showed a transparency of the factors for stove design as included here.



He defined design as a functional and intended arrangement to achieve a purpose. A good design for one person might be bad for another. He stressed that any stove can be improved. He then tried to invite participants to summarize combustion and heat transfer and ran into a problem when he asked one participant to choose another participant to summarize the technical theory. Answers given were very general and participants were not ready to summarize these concepts.

He wrote “Combustion with Inputs and Outputs” on the whiteboard, asking participants to recall these and then asked which of the outputs was most important. Participants answered, “heat.” This provided a transition into heat transfer theory. He asked how the heat could be transferred.

When it was apparent there was not enough time to evaluate stoves he opened up the session for questions. A participant asked how can you know when the design is good. The answer was that it depended on who the design was for. This turned into a good discussion on acceptability.

Myanmar

The sessions chosen by the Myanmar team were :

- Overview of Brick Stove Construction (20): : U Aung Kyaw Lwin
- Stoves Types (18): : U Nay Myo Zaw
- Assessment of Kitchen, Users and Traditional Stove (22): : Zaw Zaw Han

Overview of Brick Stove Construction

Lwin wrote down some social information important for stove design. He made a presentation about the necessary materials for brick stove construction, the five steps of brick stove construction, advantages and disadvantages of brick stove construction, and various brick stove designs, taken from the trainee manual. The five steps of brick stove construction were:

Choose the stove location

*Lay the first layer of bricks and fix bricks together with the mud mixture.
Cover with another layer of mud mixture.*

*Lay the second layer of bricks, adding mud mixture between the bricks;
cover with a layer of mud mixture; continue until all the layers are complete;
the top layer may be difficult because of the round pot holes—it will be necessary
to break up the stones into pieces to make the circle.*

Let the stove sit in the open air for 2-3 days until it is dry.

Finish the stove by smoothing and adding a layer of cement and clay.

The objectives of the session were presented as:

*To give participants an overview of different brick stoves to be
constructed and understand the social context of the stove design.*

*To familiarise the participants with the tools and techniques used
during stove construction.*

At the end, Lwin passed out index cards and asked participants to find one brick stove design from the trainee manual stove design pages appropriate for their working area.

Stove Types

Myo introduced his session and immediately shared information on a particular community context. He distributed handouts on the community context and divided the participants into four groups, and asked them to use their trainee manual to select an appropriate stove design for that area.

Groups hung their designs in front of the class and explained their choice, with time for comments from other groups. The presentations explained design choices such as grate, portability, space heating, accommodation for fuel drying. Discussions were lively and informative.

Myo wrapped up the session by stressing that community context is a critical consideration for stove design. His objective was:

At the end of the session participants will understand why technical and social information is important for modifying or choosing a stove design for a target area.

Assessment of Kitchen, User and Traditional Stove

Han started by giving the opportunity for participants to relax.

He asked participants to recall field exercise 1 and the tools used. He asked if the information was general or specific. Moving on, he asked a participant what sort of information needed to be gathered from cooks in the field. He stressed that establishing a social link with the community would be the first step. He passed out various handouts from the manual and asked participants to look at each one and provide commentary on whether anything needed to be added. Then he divided participants into four groups and asked them to discuss one of the designs. Some commented on the need to enlarge the kitchen to improve the indoor climate. The objective of the session was:

To provide a clearer idea of the purpose of Stove Selection Step 2: Assessing Kitchen, User and Traditional Stove.

Vietnam

The Vietnamese team conducted the teaching practice session differently from the other teams because they covered only one subject : stove dissemination (session 25). However, since the subject is quite wide in scope they did it in three steps as follows:

Stove Dissemination

All three of the Vietnam training team members opened up the session singing a song with only two words “Vietnam, Ho Chi Minh.” This helped to energise both the Vietnamese group and the participants.

They introduced stove dissemination using a beautiful poster. The objectives (presented by Vu) were: By the end of the session participants will be able to:

Understand the full range of considerations that need to be taken into account in this step of the stove selection process

Recognize the benefits of an improved cookstove as perceived by potential users

Recognize that technology dissemination patterns already exist in every community

Understand how three of these pre-existing technology dissemination patterns can be used to successfully disseminate an improved stove.

Part 1

Vu divided participants into pairs and asked them to share experiences by answering the questions: “What is your experience in disseminating ICS?” and “What were the problems faced?” After their presentations Vu handed it over to Hong to wrap-up this part of the session.

Part 2

Hong started by wrapping up Vu’s session, with the use of a transparency. She summarized that their experiences included: stove demonstration, training of workers and women, information dissemination with leaflets and posters, providing knowledge and technology to people and the establishing of women’s savings groups. Some other issues raised were the stove’s acceptability and meeting users needs and habits. Problems shared were: difficulty in changing people’s habits, materials not easy to find, inability of the target groups to pay, limitation of budget and need to train field workers.

Hong organized a role play, as included in the trainer manual on dissemination and tried to analyze it with help from the participants. She concluded with factors related to stove dissemination. From here she tried to discuss steps in stove dissemination by brainstorming with participants and using pre-prepared cards which could be taped to a poster in different arrangements. The cards included:

Introduction to the community

Monitoring and evaluation

Communication

Stove demonstration

Baseline survey

Micro-enterprise development (women’s savings groups)

Stove modification

Stove maintenance

Sustaining use

Network development

Leader development

Part 3

Thong focused on dissemination strategy. Small groups were created and they were asked to write on index cards the strategies they had used. No sharing of the results was done. Three strategies were introduced with some requirements for each, such as:

User based dissemination

Users are trained in stove building and already have or are provided with necessary equipment.

Materials should be locally available.

Users do not need any financial resources if they collect their own materials.

Local mason based dissemination

Local masons have stove building skills and equipment.

The raw materials can be collected or bought locally.

Users need financial resources to pay for the skills of the local mason and possibly for the stove materials.

Market based dissemination

Stove building skills and equipment are centralized, perhaps located at some distance from the target community.

Raw materials are often located near to the production center, but can be transported there from other areas.

Users need financial resources to pay for the final product at the local market.

Thong then used transparencies to review the three dissemination strategies.

He then closed the session, asking for questions. One question referred to introducing specific skills in the community when no local masons exist.

Indonesia

Subsidies

The session chose by the Indonesian participant, Husni, was Subsidies (session 26). Since there was only one Indonesian participant, he carried out the teaching himself with some help from one of the volunteer organizers.

Husni started by referring to the outputs from stove selection stage 1 and 2 and Vietnam's session on dissemination.

He then used a set of transparencies to introduce the issue of subsidies. Then he identified the two sides of the debate as presented in the trainer manual, reading the two sides of the debate aloud.

At this point he divided the participants into four groups and handed out cards containing questions about the issue of subsidies.

Husni started by identifying where in the stove selection process his session came and the purpose of his session. He referred to a number of previous training sessions to make links to the material he was presenting, such as the field visit.

No debate was set up, although there was a natural place for it after the two sides were read aloud and one participant started to give her personal opinion on the issue of subsidies.

Bhutan

Indicators

There was also only one participant from Bhutan. The session selected was Indicators (session 33).

Jigmela started by sharing a little about Bhutan and his stove project there. He shared a number of indicators related to stove use, maintenance, efficiency, improved kitchen environment, stove durability, community members participation, etc. telling stories about how he uses these indicators in Bhutan.

At the end of the session a participant asked what the definition of "indicator" was.

India

The team from India consisted of two women trainers. The sessions chose were:

- Trouble shooting (36): : Indu Gupta
- Monitoring and evaluation (40) : Sadhana Gautam

Trouble Shooting

Indu began by passing out the cards from the trainer manual where problems of a stove were written. She asked each participant to write down three appropriate actions for the problem they received. She put up a transparency with the problems listed and then read off some examples of actions to rectify these problems.

Monitoring and Evaluation

Sadhana started with the objectives of her session:

To compare the wood consumption of traditional and improved stoves.

To understand the impact of the use of improved stoves on fuel consumption.

To understand the impact of the use of improved stoves on fuel savings.

To demonstrate the fuel savings potential of a new stove in the household.

To understand, illustrate and correct aspects of stove performance.

She then used a role play illustrating two methods of m&e, the first more effective than the second (the second used an imaginary ARECOP m&e staff member!)



Sadhana plays a part in the role play used for the m&e session.

She questioned a participant about the first objective who explained that the objectives should be more in line with user needs. Then she asked more questions, a little unclear, about the objectives listed above. After noting that this seemed to produce some confusion, she switched to a flip chart page with the following information:

Monitoring and Evaluation

Technical side: to know the performance of the stove in terms of fuel saving, time saving, cooking performance, etc.

WBT

CCT

KPT

Social side: more or less smoke?

cleaner kitchen environment

better health, less time cleaning pots and pans, less soot on walls and ceiling

fuel savings? Yes or no

time savings? Yes or no

convenient? Yes or no

wood burning? Yes or no

General Feedback

All teams from the eight countries doing the teaching practice sessions showed good team work and team enthusiasm in conducting the sessions. Very good teamwork in terms of division of tasks and mutual support was shown by most of the teams, especially those from Vietnam and Cambodia. The Cambodia team, which will be one of the first teams to organize a national training workshop, particularly impressed with its team work, training content and the different participatory training methods used.

One critical aspect which was revealed right from the first teaching practice session was the importance of formulating a teaching plan. This consists of determining the training GOAL based on training needs and then determining session OBJECTIVES showing how the goal will be achieved. Then in order to conduct effective training sessions, the trainer needs to identify the STEPS TO BE TAKEN, decide the METHODS TO BE USED and select the MOST SUITABLE VISUAL AIDS taking into account the AVAILABLE TIME. Then the team will more or less have a training schedule.

Participants were also reminded that lectures or theory based presentations will be less effective than using participatory methods. Fortunately, 80% of the participants used participatory methods and adopted some games and visual aids to suit their own country context.

The teaching practice sessions were considered an important part of the TOT and despite the language problems of some participants, most of them did extremely well. In general some of the things that the participants should remember to do when teaching are:

| | |
|--|--|
| <ul style="list-style-type: none"> ▪ Use teaching aids | <ul style="list-style-type: none"> ▪ Avoid lecturing or theory based presenting with white board |
| <ul style="list-style-type: none"> ▪ Make presentations with transparencies/flip chart | <ul style="list-style-type: none"> ▪ Avoid interfering too much in small group discussions |
| <ul style="list-style-type: none"> ▪ Project friendly behavior and appearance | <ul style="list-style-type: none"> ▪ Encourage more active participation |
| <ul style="list-style-type: none"> ▪ Ask questions to the participants and present results for all to see | <ul style="list-style-type: none"> ▪ Clarify objective of the topic to be covered and make sure the purpose of the session is clear |
| <ul style="list-style-type: none"> ▪ Speak clearly and make sure all participants hear clearly | <ul style="list-style-type: none"> ▪ Make adequate preparation before presentation |
| <ul style="list-style-type: none"> ▪ Start with review of previous sessions | <ul style="list-style-type: none"> ▪ Invite questions from participants |

APPENDIX 4: NATIONAL TRAINING PLANS

Cambodia's proposal for a national training workshop

| Objectives | Indicator | Means of verification | Assumption |
|---|---|---|---|
| To make more field workers in ICP available in many parts of the country | | | |
| Main Activities | | | |
| A. Preparation | | | |
| Translation of manuals Invitation and selection of participants TOT in Lombok Check and improve translation and layout of manual Identify venue, accommodation, sites for field visit and practice Develop training materials Meeting to finalize and ensure the implementation | Khmer manuals available List of organizations invited and selected (20) Number of trainers trained Improved Khmer version of manual Profile of sites Availability of training materials Number of trainers attended | Manuals Certificates awarded Manual Report Report Report (minutes) | Organizations working in fields relevant to ICP Time availability of trainers Availability of facilities in the provinces |
| B. Implementation | | | |
| Opening ceremony Indoor sessions Outdoor sessions (field visit and practice) Trainers meeting Energizing and relaxation activities Closing ceremony | Number of guests and participants Number of sessions to be covered Number of villages and activities Number of meetings and participants Awarding of certificates | Report Report Report Report | Security |
| C. Monitoring and evaluation | | | |
| During training Feedback sessions Review sessions Test After training Post-training evaluation Follow-up visit Follow-up workshop | Number of sessions Number of sessions Number of quizzes Number of evaluation sheets Number of sites and field workers visited Duration and number of participants | Report Questionnaire Report Report | Most of the field workers involved in ICP |

Bangladesh's proposal for a national training workshop

Background information

Participants from the different corners of Bangladesh will be involved in the training. Bangladesh is a densely populated country with a population of about 120 million people. The natural environment includes mountains, rivers, grasslands and biomass is abundant. Energy problems include degradation of forests, erosion, siltation in riverbeds and electrical load shedding. About 25% of rural people have been involved in different NGO development programs.

The Institute of Development Affairs (IDEA) will be the implementing organization. IDEA has 14 paid staff working in their project area. IDEA has a 21 member general body and a 7 member executive board. IDEA is registered with the NGO Affairs Bureau and the Social Service Department, Government of Bangladesh.

IDEA programs consist of macro and micro policy support, social contracting, and rural development, including social mobilization, ICS, child education and health.

Financial support comes from UNICEF, ITDG, local donations and sale of materials and consultancy services.



Team from Bangladesh deliberates their proposal for a national training workshop

Bangladesh's proposal for a national training workshop

| Objectives | Indicator | Means of verification | Assumption |
|---|---|--|---|
| To organize a national training workshop and promote a new ICP approach | 16 organizations 20 participants | Training report Evaluation study | Organizations motivated to participate in the training |
| Main Activities | | | |
| A. Preparation | | | |
| Adaptation of manuals Task distribution among trainers Printing of manuals Organize training: announcement, brochure, selection of participants, etc. Develop audio-visual aids Video, camera, PC, photocopier Stationary Logistics support Contingencies | Bangla trainee manual and trainer manual adapted 3 trainers prepared for their own tasks All trainees have manual Training organized by IDEA Audio-visual aids developed Video, camera, PC and photocopier used Stationary for all made available Logistical support provided Contingencies according to need | Audit report Accounts Meeting proceedings Payment vouchers | No cash flow problems |
| B. Implementation | | | |
| Conduct training Hire venue in Sylhet, 350 km from Dhaka Field/village visit and field exercise | Training held in January 1998 RDTI venue used for training 3-4 villages visited for training purpose | FAO and ARECOP resource person's visit Field visit Training report Contract with RDTI | Selection of trainees appropriate Co-ordination of 3 trainers will be time-consuming but no real obstacle |
| C. Monitoring and evaluation | | | |
| Monitoring By team among participants Mood meter Management committee Steering committee Midterm evaluation: fish bowl Impact study | Different tools used for monitoring Participatory monitoring and review Study done 6 months after training | Presence of FAO-ARECOP Training report Study report | Trainers have sufficient skill at monitoring and evaluation Appropriate methodology for impact study available |

Vietnam's proposal for a national training workshop March 1998

Background information

Vietnam's population is more than 70 million. 80% of the population lives in rural areas. Almost all of the rural population uses biomass for cooking. It is necessary to introduce ICS to save fuel and protect user health.

Since 1980, many ICP projects, including SIDA's stoves and kitchens, CIDCE stove dissemination, ARECOP improved cookstove development, UNICEF revolving loan fund in stove construction and use have been implemented in rural areas of the north (Vin Bhu, Cau Bang, Yen Bai, Hung Yen, Thai Nguyen, Ha Tay). Some three day training on stove construction and the kitchen have been organized by RCAICE, RAFH and IEC department of the Vietnam Women's Union. However these projects and training were organized independently. Some of them have been good experiences; some of them bad.

In order to exchange experiences and make field workers capable in ICS programs, we would like to conduct a national training workshop on ICS.

Implementing agencies: RCAICE and VWU.

These two organizations with their expertise and strong networks currently work at encouraging community participation in ICS.

RCAICE will provide experiences and materials, while the Vietnam Women's Union will organize the training and contribute the counterpart budget. In addition, RAFH will be given a chance to integrate ICS with other development projects.



Vietnamese participants work on their plan with Mr, Koopmans

Vietnam's proposal for a national training workshop March 1998

| Objectives | Indicator | Means of verification | Assumption |
|--|---|--|---|
| To transfer knowledge, skills and experiences to field workers | 24 trainees | Training handbook, report | |
| Main Activities | | | |
| A. Preparation | | | |
| Meet with concerned organizations Develop training program Prepare training materials and translate into Vietnamese Select participants Arrange training venue and equipment Identify specific responsibilities of trainers (teamwork) Prepare logistics and support (car rental, accommodations, support staff) | 7 day training program 24 participants and invitations Vietnam women's union in Hanoi Thong, Hong and Vu | Manuals, handouts, posters 7 days venue Lesson plans | Time constraints for one group member resolved (Thong) No communication problems |
| B. Implementation | | | |
| Conduct training Field exercises Practical work Excursion trip Micro-teaching | Lecture, group discussion, sharing knowledge Asking questions, assessment Stove construction and stove finishing West lake, old city 30 minutes | 24 participants become trainers | |
| C. Monitoring and evaluation | | | |
| Daily review of training sessions Whole session evaluation Whole training evaluation | Asking for feedback Using mood meter | Evaluation form, evaluation report | |

Nepal's proposal for a national training workshop

| Objectives | Indicator | Means of verification | Assumption |
|--|--|---|---|
| <p>Main objectives: To introduce different designed stoves suitable for local conditions in order to increase the acceptability and rate of stove adoption among ICPs. Secondary objectives: To familiarise the participants with the concept of stove design and design principles so that they will be able to modify/improve traditional stoves. To make participants familiar with stove construction, kitchen improvement, gender analysis, training methodology. To determine an appropriate dissemination strategy based on the existing channels. To conduct M&E and troubleshoot during the stove program.</p> | | | |
| Main Activities | | | |
| A. Preparation | | | |
| <p>Meeting with training team to identify the possible participants from various agencies, development workers. Lead the training program with the support from the organization.</p> <p>Arrange meeting/orientation of NTP with identified agencies. Translate and modify the trainer and trainee manuals into local language. Select field areas for field exercises.</p> <p>Identify the materials needed for the training Select venue, identify appropriate time.</p> <p>Select participants</p> | <p>15-20 agencies</p> <p>Infrastructure and willingness</p> <p>Letters, phone calls</p> <p>Manual</p> <p>Has been visited and people willing to cooperate</p> <p>Visit Recommendation Team meeting</p> | <p>Meeting</p> <p>Meeting</p> <p>Manual</p> <p>Team meeting</p> <p>Team meeting</p> | <p>Familiarity with cookstove program Time, funds (both local and external funds) Time</p> <p>Funds/time</p> <p>Cooperative, willing, time, funds</p> <p>Fund, time</p> |
| <p>Prepare sessions, time, objectives and methodology for all sessions</p> | <p>Team meeting</p> | <p>Handouts</p> | <p>Funds, photocopy facilities available</p> |

Myanmar's proposal for a national training workshop

| Objectives | Indicator | Means of verification | Assumption |
|--|---|--|---|
| The training aims to transfer skills so that ICP field workers are able to determine an appropriate modification/improved stove design based on the needs, wants and conditions of the target group in addition to technical knowledge. To disseminate technical cookstove expertise to field workers so that they are capable of modifying ICS to address fuel shortage problems in their respective work areas | | | |
| Main Activities | | | |
| A. Preparation | | | |
| Meet and discuss with other interested organizations (leading agencies: FAO, CARE, PSI, FRED A) Prepare for selection of participants Specify responsibilities among the trainers Develop training module Make arrangements for venue accommodation and logistics Make arrangements for teaching materials and visual aids Select sites for field exercise Specify responsibilities of the leading agencies concerned | 4 NGOS, 2 GOs, 2 international agencies 25 participants 3 trainers 30 training modules prepared and 21 sent One venue selected (FRI-Center Myanmar) Posters Overhead Flip charts Whiteboard 2-4 field sites around FRI NGOs | Proposal prepared for the workshop Participants are selected and invitation letters are sent 3 trainers Training module 10 days Organization Responsibility Chart (ORC) | Trainers know their responsibilities |
| B. Implementation | | | |
| Conduct training Field exercises Practical sessions Logistics support Administrative arrangements | Modules and handouts 10 days training 4 sites Stove construction materials Transport, etc. | Training conducted Visits to the villages | Field workers are able to implement ICPs in their working areas |
| C. Monitoring and evaluation | | | |
| Each session Whole training Practical exercise for stove Construction Discussion | Discussion, asking comments, mood meter 2 mud stoves 2 brick stoves | Stoves constructed | Participants appear to understand the training materials |

India's national training workshop proposal

| Objectives | Indicator | Means of verification | Assumption |
|--|------------------|--|---|
| Main Activities | | | |
| A. Preparation | | | |
| Background of area Target group Stove selection Recruit field workers Develop skills Workshop Demonstration Sustainable | Users community | Training manual Audio visual Flip chart Posters Presentation Displays Stationary | No delay regarding financial assistance |
| B. Implementation | | | |
| Awareness Program Training Program Community Involvement Trainer (master) Involvement of women's training program Financial assistance Dissemination | | | |
| C. Monitoring and evaluation: | | | |
| Implementing agency Staff, expert Technician W.B.T. Acceptability | | | |

Bhutan's plan for a national training workshop

| Objectives | Indicator | Means of verification | Assumption |
|---|-----------------------------------|---|-------------------|
| Main Activities | | | |
| A. Preparation: | | | |
| To introduce new stove designs suitable for high & low altitudes To become familiar with stove construction, kitchen improvement, gender analysis Training methodology Trouble shooting during the stove program | Participants Participation | Role play Summarization Exercise Role play Brainstorming Discussion | |
| B. Implementation: | | | |
| Design concept Raw materials Design Gender Promotion and benefits Combustion and heat transfer | Participation | Brainstorming | |
| C. Monitoring and evaluation | | | |
| Identify the effectiveness | Training Demand from the users | Field visit Number of stoves | Funds available |

**Indonesia's action plan: Awareness and Dissemination of ICS
in East Timor Province**

| Objectives | Indicator | Means of verification | Assumption |
|--|--|--|---|
| Main Activities | | | |
| A. Preparation | | | |
| General survey | Data available | Report | Survey team available, human resources available |
| Background of project Selection of target communities | Proposal Meeting, decision | Proposal Report | Seed funding available Funding agency available and community interest |
| Assessment | Community and users for each village are known | Report | Time, funds, human resources available |
| Determine project approach | Meeting, decision | Report | Users needs are understood |
| B. Implementation | | | |
| Make an ICS | ICS | Build ICS | ICS appropriate for target community |
| Training of users and producers | Efficiency test Users are able to use the ICS well Producers are able to produce ICS well | Test Field visit, interview, observation Quality control | There is technical testing knowledge Users and producers available |
| Awareness of community targets | Awareness of community increases | Reduce fuel consumption Increase community health Increase ICS use | Community awareness of energy problems is low |
| Dissemination | Many people use ICS | House to house visit, interviews with producers | People able to buy ICS |
| C. Monitoring and evaluation | | | |
| Monitoring | Reduce fuel use of household | Test | There is knowledge of technical testing |
| ICS available | Commercialized | Check market price | People able to buy ICS No subsidies available |
| Health impact | Interview | Field visits | Health is perceived as a need |
| Fuel efficiency | Interview Efficiency test | Field visit Test | Saving fuel is perceived as necessary |

APPENDIX 5: SPEECHES AT THE OPENING CEREMONY

Opening Address

by

Christina Aristanti
Manager, Asia Regional Cookstove Programme

Your Excellency, Bapak Haji Warsito, Governor of NTB Province
Your Excellency, Bapak Ketua Bappeda Tk. I NTB
Your Excellency, Bapak Walikota Madya Tk. II Mataram (Mayor of Mataram)
Your Excellency, Bapak Bupati KDH Tk. II Lombok Barat
Your Excellency, Bapak Kakanwil Deptamben NTB represented by Bapak Sugito
Mr. Auke Koopmans, Wood Energy Specialist, FAO-RWEDP
Distinguished experts, guests, and participants

Good evening and welcome to Mataram, Lombok.

Mr. Governor: You may have noticed that this is the second time that ARECOP and FAO-RWEDP have held a training workshop in Mataram, Lombok. We do enjoy being here and are impressed with the pleasant atmosphere, support, and hospitality of the people of Mataram. All of this contributed to the success of the first national training workshop on the same subject that we held here in November last year. That is why we have come back.

The experience gained during the Indonesian National Training Workshop on Improved Stove Selection and Dissemination convinced us of the importance of the training module we used because it integrates many different aspects from specific to general, from social and gender aspects to technical aspects. Its highly specific content requires trainers with experience in participatory training methods and the use of a unique process of stove design selection. After the Indonesian workshop we felt that the module was ready for wider dissemination. That is why this Asia Regional Improved Stove Selection and Dissemination Training of Trainers Workshop has been organised.

The main objectives of this Training of Trainers Workshop are:

To familiarise trainers with the content of the training module and enable them to launch a national training workshop on Improved Stove Selection and Dissemination in their respective countries. It is expected that those who participate in the national training workshops will afterwards be equipped to be able to make and/or modify a stove design most appropriate for the target group in their project area. Thus, they should be able to improve the acceptability and adoption rates of improved stoves introduced in their respective countries.

This TOT is organised by the Asia Regional Cookstove Program based in Yogyakarta, Indonesia in collaboration with the FAO - Regional Wood Energy Development Program (FAO - RWEDP) which is also funding this TOT Workshop. Pusat Studi Pembangunan NTB, based in Mataram, Lombok has assisted ARECOP and FAO-RWEDP in all local preparations and have done a marvellous job to make this TOT Workshop possible.

20 participants from eight different countries are attending this TOT Workshop. They come from Bangladesh (3), Bhutan (1), Cambodia (3), India (2), Indonesia (2), Myanmar (3), Nepal (3), and Vietnam (3). Most of the participants are experienced trainers so we hope that a deep mutual learning process will unfold. The participants come from different backgrounds and institutions. Some are from government institutions, some from research institutions and universities, and some are from NGOs. This is part of the FAO-RWEDP and ARECOP approach to encourage collaboration among the different actors in the community so as to achieve a better result for the benefit of the community.

The TOT Workshop will be held from June 29 - July 8, 1997. It is pretty long compared to other training courses, but it is very important that we all are very familiar with the specific content of the training module. In addition, we are sure that the pleasant atmosphere and hospitality of the people at Mataram will make us all feel at home and comfortable and therefore make the 10 days feel like a short time.

I would like to take this opportunity to acknowledge the important role of Ms. Michelle Schulein who has dedicated herself for the past year to work on the development of the training module. Her hard work also marks an important change in the improved cookstove development program approach from a purely technical one to one which integrates community factors with technical factors.

I would also like to thank His Excellency, the Governor of NTB Province for giving us his full support and attention and for providing his precious time to be with us and to honour us by opening this Training of Trainers Workshop.

Thanks are due to Bapak Kakanwil Deptamben NTB, represented by Mr. Sugito, Representative of the Regional office of Mining and Energy Department for giving us support, and to Mr. Auke Koopmans, Representative of FAO-RWEDP for always being a supportive partner and helping to make this TOT Workshop possible.

Our sincere thanks also goes to PSP, Mr. Mudahan Hazdie as the director and to all staff for their continuous support and hard work because without their assistance this training may not have taken place today.

And of course I would like to thank our two lead trainers, Ms. Emma Wibowo and Mr Aryanto Soedjarwo for being willing to share their experiences, knowledge and skills with us. I wish you good luck and a successful workshop.

Keynote Speech

by

Mr. Auke Koopmans
Wood Energy Specialist, FAO Regional Wood Energy Development Program

Your Excellency, Haji Warsito, Governor of West Nusatenggara,
Your Excellency, Director of the Provincial Planning Department,
Your Excellency, Mayor of Mataram,
Chief of West Lombok District,
Distinguished Guests,
Ladies and Gentlemen

It is a great pleasure for me to be here at the opening ceremony of this regional Training of Trainers Workshop on Improved Stoves. As you know, fuelwood and other biomass are important sources of energy for many millions of people in the region. This is not only true for the past and present but will also be true for the future. This is evident from information provided by quite a few countries in the region. The information indicates that, although the share of wood and other biomass energy in the total amount of energy consumed may be falling, actual amounts are still rising. There is, therefore, ample reason not to sit back but to keep alert and take action where we feel that may be necessary and useful.

Such action may range from making policy makers aware of the importance of biomass energy, improving the resource base as well as energy conservation activities. With regard to the latter, the introduction of improved stoves should be mentioned. These are an important tool not only for energy conservation but also, and probably equally important, if not more important, for improving the working and living conditions of millions of people.

However, we have learned from experiences gained in many countries that disseminating improved stoves is not at all an easy matter. Why is this so? What can be the reasons that households do not always readily accept the improved stoves? It may be useful to ask ourselves such questions, because we should try to strengthen our cookstove dissemination efforts.

First of all, we should be very clear why these improved stoves are to be disseminated. The new stove can be time and fuel saving, or provide more healthy working conditions in the kitchen, or offer improved functions and convenience.

It could also be that an improved stove just adds to the status of the household. Which of these advantages are really important to the household? To whom in the household? Maybe the advantages are only perceived by the stove designer, and they are not so much valued by the user, or at least by the one in the household who decides on things like adopting a new stove. The one who makes the decision about buying a new stove may not be the user or the one who has to collect the fuelwood. In other words, we should not overlook the gender differences in the household.

We have to ask ourselves if the stove is really an improved one, not only in the view of those of us who are committed to stove programmes, but particularly for the user. Is the quality really as good as we like to believe? And do the characteristics of the new stove meet the needs and preferences of the user for which it is aimed? Do we sufficiently know and understand the needs of the prospective users? And do we know and understand the constraints? What are the problems perceived by the users themselves? There are an enormous variety of factors, which determine cooking practices. The improved stove must match with all the factors, as it is not likely that people will easily change their prevailing cooking habits. In most cases the users are women and we can only find out about their needs and constraints by consulting them on the basis of mutual trust and respect.

This is what I call a needs-oriented approach, which has proven to be more successful than a technology-driven approach. After all, when the requirements and preferences of the users are not taken seriously, how can we expect that they will accept and indeed use the stove?

Once we are sure the stoves are of good quality and meet the users needs, the next challenge is to design a strategy for producing and disseminating them. There should be quantitative targets for the numbers of stoves and the time period, as well as the geographical areas selected. We have to think about possible mechanisms for dissemination. How do we reach the prospective users? Which means of communication are available and suitable?

In order to know if the improved stove meets our objectives, we have to monitor the results. From such monitoring we can learn a lot about how effective our stove programme has been and, probably more importantly, we can also learn how we can further improve stoves and stove programmes.

Although profit is normally not an objective when an NGO or government project aims for the introduction and dissemination of improved stoves the profit motive nevertheless should not be forgotten. In the end the stove should be able to stand on its own merits or in other words dissemination of the stoves should become ingrained in the society. This will only work if all those involved--from stove makers to the users with everyone in between such as traders, shop keepers, etc-- get something out of it which normally will be in the form of financial profit, but could also be in the form of time savings, improved working conditions, etc.

As I said, designing and introducing improved stoves is not at all a simple matter. It requires the best professional ingenuity, experience and dedication from all involved. We have to be critical of our own products and performance, and we must be prepared to keep learning from both failures and successes. Some stove programmes have been very successful indeed and these results are encouraging us to proceed.

I am sure the present workshop will help you in this respect, and I wish you all success in your future programmes.

Inaugural Address

by

Mr. Sugito

Regional Office of the Department of Mining and Energy

Your Excellency, Bapak Haji Warsito, Governor of Nusa Tenggara Barat Province

Your Excellency, Bapak Ketua Bappeda Tk. I NTB

Your Excellency, Bapak Walikota Madya Tk. II Mataram (Mayor of Mataram)

Your Excellency, Bapak Bupati KDH Tk. II Lombok Barat

Your Excellency, Kakanwil

Your Excellency, Kepala Dinas

Before I begin with a few words please understand that the Director of the Regional Office of the Department of Mines and Energy cannot be here because he is now in the Philippines. Hopefully this does not lessen the meaning of this regional training.

First, let us be thankful to the one and all-powerful God that on this fine evening we are still given bodily and spiritual health and can gather together in this room, on our beloved Lombok Island.

Next, to the participants from the Department of Mines and Energy of neighbouring countries we also want to extend a special welcome to the Asia Regional Training of Trainers Workshop on Improved Stove Selection and Dissemination, organised by ARECOP (The Asia Regional Cookstove Program).

This event represents a unique honour for us because similar activities for improved cookstove program development have been held since 1995 on our beautiful Lombok Island. This shows that we have attracted the attention of the Food and Agriculture Organisation: Regional Wood Energy Development Program. For this we express sincere thanks and appreciation.

As energy is one of the basic needs of people, in addition to shelter, nourishment and clothing, we realise that we need to make appropriate efforts to find solutions to problems in the area of appropriate stove technology. These are stoves which truly save energy and are environmentally friendly. In other words, by using them we can cut down on waste and conserve scarce energy resources and encourage their efficient and rational use.

Improved Cookstove Programs were started in Indonesia more than 15 years ago and there is a close relationship between these and the availability of biomass energy resources. As we know the majority of Indonesians in general and in Lombok specifically have various household and industrial energy needs and are still dependent on fuelwood or other forms of biomass. This of course is not a situation we would choose because environmental quality is adversely affected when fuelwood consumption is not properly managed. Thus people need to be aware of the availability of ICS. Because of this we fully support this training for improved stove selection and dissemination and hope that this will represent one solution so that the waste of energy sources, especially biomass, can be cut down with the introduction of a more efficient stove. In addition these will provide optimal energy and, at the same time, preserve the environment.

We understand that the methodology of the training will include a case study and field practice in various communities of different conditions with different targets. In turn it will bring true benefits for rural peoples, especially in NTB. The only thing that remains to be said is that hopefully this workshop will go according to plan and, even more important, that the participants will be able to apply their new skills and knowledge amongst rural peoples after this training. Finally, for all of the participants from different countries, we hope you have a good training workshop and are diligent, patient and sincere for the next 10 days.

Thank you. We wish you good luck and success in this endeavour.

Thank you for your attention.

Opening Speech

by

Dr. H. Warsito
Governor of West Nusa Tenggara Province

Ms. Christina Aristanti, ARECOP Manager
Mr. Auke Koopmans, Wood Energy Specialist of the FAO Regional Wood Energy Development Program
Mr. Sugito, Representative of the Regional Office of the Department of Mines and Energy
Mr. Mudahan Hazdie, Director of PSP-NTB
Distinguished experts, Ms. Emma Wibowo and Mr. Aryanto Sujarwo
The honourable chairman of DPRD and senior officials of regional government
The heads of the civil administration authority
The participants

Praise be to God, that this evening, we are able to begin one more strategic activity which will lead to the effective solution to one of our pressing energy problems, i.e. the need to develop and widely disseminate an energy thrifty cookstove. This is being carried out by the Asia Regional Cookstove Programme (ARECOP) in Yogyakarta and the Food and Agriculture Organization - the Regional Wood Energy Development Program (FAO - RWEDP) in Bangkok, and in co-operation with the Development Study Center of West Nusa Tenggara (PSP - NTB) in Mataram.

While we are implementing this training various events associated with our annual World-Life-Environment celebrations are being conducted. And for West Nusa Tenggara the main commemoration will be held on 30th of June 1997, in Sesat Forest of West Lombok Regency. This is very auspicious indeed because this workshop will help to support our strong determination to save the environment from various disasters resulting from over-use of our energy resources.

On behalf of the Regional Government and the people of West Nusa Tenggara, I thank you very much for undertaking this activity, and I welcome all participants especially the participants from overseas--a warm welcome to this island or our beloved Bumi Gora. We hope that during this time, you will always be in good health and experience happiness, so that you can fulfil your intentions regarding this workshop.

Ladies and gentlemen,

Thank you

Wassalamu'alaikum WR.WB.

The Governor then formally opened the Training of Trainers Workshop on Stove Dissemination and Selection

A Welcome Dinner, was then hosted by ARECOP and RWEDP and various cultural performance were presented by the participants and the TOT team.

APPENDIX 6: LIST AND PROFILES OF PARTICIPANTS

LIST OF PARTICIPANTS

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PROFILES OF PARTICIPANTS

India

Indu Gupta (government: All India Women's Conference, Bihar) age: 49

Works as a social worker. Has a MA in ecology. Has trained as a lead trainer for field, practice and theory based trainings, including TOT for ICS, energy awareness. Has experience in participatory methods, participatory rural appraisal, activity profile of gender analysis, M&E, program planning.

Ms. Sadhana Gautam (government: All India Women's Conference) age: 40

Works as a program officer. Has an MA in Music, and a three year social worker diploma. Has experience as a lead trainer in field based and practice based training. Has experience in stove construction, trouble shooting; knowledge in combustion. Knowledge of participatory methods, group dynamics, PRA, activity and resource profiles of gender analysis, M&E and program planning.

Vietnam

Le Van Thong (research institute) age: 49

Director of a research institute with an architectural design degree. Has conducted training courses on ICS and kitchen improvement in Vietnam. Knowledgeable on stove design and stove construction, combustion, heat transfer and heat loss. Has limited knowledge on participatory methods, participatory rural appraisal, gender analysis, M&E and program planning. ARECOP works with his research institute as a country contact point.

Le Anh Vu (center for reproductive and family health) age: 24

Works as a project manager in the center and graduated from Hanoi Medical College. Has conducted lecture, practice and theory based training on ICS construction and safer motherhood, STD prevention as assistant trainer. Has experience in stove construction, stove repair and trouble shooting. Knowledge on combustion. Experience in organizing training and management projects. Sensitive to women's health.

Tran Thi Hong (government: Vietnam Women's Union), age: 42

Graduated from Pedagogy . University in Leningrad, USSR. Post-graduate work at university in Bulgaria. A lead trainer for the Vietnam Women's Union who has conducted training on community participatory development tool kit, community mobilization, management skills, construction and use of ICS, revolving load fund for ICS construction. Has experience in designing and constructing ICS. Experience with participatory training, PRA, RRA, activity profile, community participatory approach, M&E, program planning.

Nepal

Sushila Sharma (government: Women Development Division) age: 43.

Works with environment and appropriate technology projects. Has a Masters degree in Sociology and a diploma in population science. Has conducted on the spot training for rural women on credit management, environment protection, health/sanitation as a lead and assistant trainer. The trainings were lecture and practice based. Has been promoting ICS in her project areas. Has attended an ARECOP training on kitchen improvement. Largely field based experience.

Luitel Sita Ram (international NGO) age: 34

Works in sustainable agriculture and natural resource management. Has a Bachelor of Education and B.Sc. in Agriculture. He has run field, practice, lecture and theoretical training as lead trainer, including a TOT on ICS, horticulture promotion, environment protection and plantation and integrated pest management as a lead trainer. Is experienced with two ICS designs and construction (mud brick and ceramic) and has limited technical knowledge. Some knowledge on participatory training, PRA and RRA. Has participated in a seven day training on PRA. General knowledge of M&E and program planning.

Kayeswar Man Sulpya (research institute affiliated with a university) age: 38

Works in research and development, promotion, training and field work. Has a MSc. in Botany and special training in energy management and biomass energy conversion. Has run lecture, field, practice and theoretical trainings as lead trainer.

Has extensive experience in stove design, stove construction, trouble shooting, knowledge of combustion, heat transfer and heat loss. Somewhat familiar with participatory training techniques and social assessment, monitoring and evaluation and program planning. A stove designer and technician with sensitivity for social issues.

Bangladesh

Nazmul Haque (national NGO) age: 39

Works in training, planning, research and evaluation. He has an MA in development studies from an institute in the Netherlands. Also a MSc and a BSc from Bangladesh and has been trained in the UK. He has run participatory training for national and international NGOs on PRA, RRA, Development Communication, TOT, Participatory Planning Process, Monitoring and Evaluation and ICS as lead trainer. Familiar with Gender and Development studies. Has technical construction and trouble shooting knowledge for 6 ICS designs. Has also worked as a field worker. Is working as a team leader for independent evaluation of three NGOs' community development projects.

Dr. Lulu Bilquis Banu (research institute) age: 43

Works in scientific research and dissemination. Has an MSc. In Botany and a PhD. in fuel technology. Has trained and co-ordinated a one week training course on ICS that was lecture, field and practice based. Knowledgeable in stove design, stove construction and trouble shooting and biomass energy combustion, heat transfer and heat loss. Has attended a gender training and has a basic idea of the activity and resource profiles. Has basic general knowledge on participatory training, social assessment, community outreach, M&E and program planning.

Abu Zaher (local NGO) age: 44

Works to implement, supervise and monitor field programs, including ICS. Has an MA in history. Has trained disaster preparedness, ICS construction, water and sanitation, nonformal education as a lead trainer and assistant trainer for lecture based and field based training's. Has knowledge on ICS design, construction and dissemination. Has experience in participatory training methods and group formation. Experience in gender analysis and social assessment. Experience in program planning and M&E.

Myanmar

Zaw Zaw Han (national NGO) age: 27, fluent English

With a B. Sc. in forestry Zaw is a junior research officer involved with forest resources. Has been a lead trainer on a lecture based training course on construction of ICS and on a field based/practice based course on mud stove construction. Has good basic background on stove technical subjects. Has some background on social issues.

U Nay Myo Zaw (international NGO) age: 25

Works as a junior program officer responsible for community forestry projects, including ICS. Has a B. Sc. in chemistry. Has conducted training's on income generation and PRA training. Has overall basic knowledge in social aspects.

U Aung Kyaw Lwin (international NGO) age: 56

Works as logistical coordinator; has served as project officer for an ICS. Has a Bachelor of Economics: Planning and Development. Has trained as a lead trainer for theory and lecture based trainings such as stove consumer surveying and stove market analysis survey, manpower planning techniques for manpower development program. Has practical biomass technical knowledge. Worked as a UNV in Guyana.

Cambodia

Chean Thayut (international NGO) age: 26

Works as a PRA Provincial Coordinator. Has a B.Sc. in Forestry. Has conducted field based training as an assistant trainer. Has some technical cookstove knowledge. Has knowledge of participatory methods, participatory rural appraisal and participatory planning and monitoring and evaluation.

Ly Chou Beang (international NGO) age: 33

Works as a community forestry project manager. Has a B.Sc. in forestry and certificates of community forestry and community forestry extension from RECOFTC. Has worked as a lead trainer in community forestry issues for lecture, field, practice and theory based training courses. No technical cookstove knowledge but six years experience in participatory training, social assessment, gender analysis, community outreach, M&E and project planning.

Yang Saing Koma (international NGO) age: 30

Works as research and training coordinator and lecturer. Has a doctor's degree in agriculture, farming system research and development. Has trained in home gardening and natural resource management. Lectures in farm management economics and sustainable agriculture. Has served as training coordinator, trainer and assistant trainer. Limited technical knowledge. Good knowledge on participatory training, social assessment, program planning and community outreach. Some knowledge on gender analysis and M&E.

Adhong Ramahdan (Indonesian NGO working in Cambodia) age: 31

Works on rural community development projects. Has a BA in Philosophy. Has trained in ICS as a lead trainer. Fair knowledge of technical ICS aspects, including construction of ceramic and mud stoves and some knowledge of non-technical. Works for YDD.

Bhutan

Jigmela (government: public health engineering). Works on rural development projects. Has experience with ICPs.

Indonesia

Husni Safruddin (government: energy directorate) age: 29

Works on the utilization of renewable energy. Is an electrical engineer. Some knowledge of stove construction, combustion participatory methods, participatory rural appraisal, and communication skills.

APPENDIX 7: TOT WORKSHOP SCHEDULE

The training schedule is included below, as implemented

| Time | Session | Facilitator |
|--------------------------|---|-------------|
| Saturday, June 28 | | |
| 19:00 | Welcome address by Mrs. Christina Aristanti, Manager, ARECOP Keynote address by Mr. Auke Koopmans, Wood Energ, Conservation Specialist (RWEDP) Inaugural address by Mr. Sujito, Director General, Office of the Department of Mining and Opening address by Drs. Haji Warsito, Governor of West Nusa Tenggara Province | |
| Sunday, June 29 | | |
| 08:00 - 09:00 | Introductions | Emma |
| 09:00 – 10:00 | Objectives and agenda TOT/ Objectives, target group and process for national training workshops | Michelle |
| 10:00 - 10:30 | Break | |
| 10:30 - 13:00 | Teamwork | Emma |
| 13:00 - 14:00 | Lunch | |
| 14:00 - 16:00 | Combustion stations and processing | Aryanto |
| 16:00 - 16:30 | Break | |
| 16:30 - 17:30 | Learning styles/adult learning | Emma |
| Monday, June 30 | | |
| 08:00 - 08:30 | Overview of day 2 and mood meter | Chris |
| 08:30 - 10:00 | Gender | Emma |
| 10:00 - 10:30 | Break | |
| 10:30 – 11:00 | Guidelines for field exercise 1 | Michelle |
| 11:00 - 12:00 | National training team contract and selection of national training team teaching practice sessions | Michelle |
| 12:00 - 13:00 | Lunch | |
| 13:00 - 14:00 | Discussion | Emma |
| 14:00 – 14:30 | Break | |
| 14:30 – 17:30 | Field exercise 1 | |
| Tuesday, July 1 | | |
| 08:00 - 08:30 | Overview of day 3 and mood meter | Michelle |
| 08:30 – 11:30 | Stove selection stage 1 (with break) | Chris |
| 11:30 - 12:30 | Heat transfer and heat loss | Aryanto |
| 12:30 - 13:30 | Lunch | |
| 13:30 – 14:30 | Heat transfer and heat loss II | Aryanto |
| 14:30 - 15:00 | Giving and receiving feedback | Emma |
| 15:00 - 15:30 | Break | |
| 15:30 – 17:00 | Nepal teaching practice sessions | Emma |
| 20:00 – 21:30 | Nepal feedback | Emma |

| Time | Session | Facilitator |
|--------------------------|---|--------------------|
| Wednesday, July 2 | | |
| 08:00 - 08:30 | Overview of day 4 and mood meter | Chris |
| 08:30 - 09:30 | Dealing with problems that may come up... | Emma |
| 09:30 - 10:00 | Break | |
| 10:00 - 12:00 | Bangladesh teaching practice sessions | Emma |
| 12:00 - 13:00 | Lunch | |
| 13:00 - 13:30 | Overview of mud stove construction | Aryanto |
| 13:30 - 17:30 | Mud stove construction | Aryanto |
| Thursday, July 3 | | |
| 08:00 - 08:30 | Overview of day 5 and mood meter | Michelle |
| 08:30 - 10:30 | Bangladesh feedback | Emma |
| 10:30 - 11:00 | Break | |
| 11:00 - 12:00 | Stove modification | Aryanto |
| 12:00 - 14:00 | Lunch | |
| 14:00 - 16:00 | Cambodia teaching practice sessions | Emma |
| 16:00 - 16:30 | Break | |
| 16:30 - 17:00 | Cambodia feedback | Emma |
| Friday, July 4 | | |
| 08:00 - 08:15 | Overview of day 6 and mood meter | Michelle |
| 08:15 - 08:45 | Guidelines for field exercise 2 | Michelle |
| 08:45 - 11:00 | Field exercise 2 | |
| 11:00 - 12:00 | Stove selection stage 2 group work (with break) | Michelle |
| 12:00 - 13:30 | Lunch | |
| 13:30 - 15:00 | Stove selection stage 2 reporting | Chris |
| 15:00 - 15:30 | Break | |
| 15:30 - 16:30 | Cambodia feedback / participatory methods | Emma |
| 16:30 - 18:00 | Myanmar teaching practice sessions | Emma |
| Saturday, July 5 | | |
| 08:15-08:15 | Overview of day 7 and mood meter | Chris |
| 08:15 - 08:45 | Guidelines for field visit / stove performance analysis | Chris |
| 08:45 - 12:00 | Field visit / stove performance analysis | Chris |
| 12:00 - | Lunch and relaxation | |

| Time | Session | Facilitator |
|------------------------|--|--------------------|
| Sunday, July 6 | | |
| 08:00 - 08:15 | Overview of day 8 and mood meter | Chris |
| 08:15 – 10:00 | Myanmar feedback | Emma |
| 10:00 – 10:30 | Break | |
| 10:30 – 12:00 | Vietnam teaching practice sessions | Emma |
| 12:00 – 12:30 | Group dynamics | Emma |
| 12:30 – 13:30 | Lunch | |
| 13:30 – 14:30 | Stove selection stage 3 | Chris |
| 14:30 – 15:00 | Overview of mud stove finishing | Aryanto |
| 15:00 – 18:00 | Mud stove finishing | Aryanto |
| 19:30 – 18:30 | Vietnam feedback | Emma |
| Monday, July 7 | | |
| 08:00 - 08:30 | Overview of day 9 and mood meter | Chris |
| 08:30 - 10:30 | Indonesia, Bhutan and India teaching practice sessions | Emma |
| 10:30 – 11:00 | Break | |
| 11:00 – 12:30 | Indonesia, Bhutan and India feedback | Emma |
| 12:30 - 13:30 | Lunch | |
| 13:30 - 14:00 | Overview of stove testing | Aryanto |
| 14:00 - 14:30 | Overview of brick stove construction | Aryanto |
| 14:30 - 17:30 | Brick stove construction | Aryanto |
| Tuesday, July 8 | | |
| 08:00 - 08:15 | Overview of day 10 and mood meter | Chris |
| 8:15 - 10:30 | Stove selection stage 4 | Chris |
| 10:30 - 11:00 | Break | |
| 11:00 - 13:00 | National training plan | Emma |
| 13:00 - 14:00 | Lunch | |
| 14:00 - 16:00 | National training plans | Emma |
| 16:00 - 16:30 | Evaluation of content | Michelle |
| 16:00 - 16:30 | Break | |
| 16:30 - 17:30 | Evaluation of methods/logistics of TOT | Emma |
| 19:30 | Closing | Chris |
| | Closing dinner | |