

Session 7

Introduction of Drudgery-Reducing Energy and Water Technologies

Time: 1½ hours

Preparation

Purpose

The purpose of this session is to provide participants with knowledge about different forms of energy and water technologies that could be initiated in their own local areas to reduce drudgery. Participants will also discover the benefits of various water and energy technologies for meeting their practical, productive, and strategic needs.

Learning Objectives

By the end of the session the participants will be able to

- understand various drudgery-reducing technologies
- understand the utility of various energy interventions in meeting their practical, productive, and strategic needs

Session content

- A. Different forms of drudgery-reducing water and energy technologies
- B. Meeting women's needs through energy and water interventions

Materials

Charts, flipcharts, markers, white board, coloured pens, masking tape, overhead projector and transparencies

Handouts

- 7A Worksheet – Water and Energy Technologies Used/Desired at Home
- 7B Different Forms of Technologies and Their Uses
- 7C Worksheet – The Practical, Productive, and Strategic Needs Fulfilled by Water and Energy Technologies
- 7D Meeting the Needs of Women through Various Energy Interventions
- 7E Multiple Effects of Women-oriented Energy Interventions

Trainer's Preparations

Collect together the materials and handouts for the session. Prepare transparency of Handout 7E.

Activities

A. Different Forms of Drudgery-reducing Water and Energy Technologies

Step 1

- Divide participants into 2 groups: one for water-related technologies, one for energy-related technologies. Ask each group to briefly fill out the worksheet in Handout 7A.
- Reassemble the participants and ask each group to present their outcomes to the plenary.

Step 2

- Distribute Handout 7B with examples of water and energy related technologies and briefly describe each technology, including benefits and precautions.

B. Meeting Women's Needs Through Energy and Water Interventions

Step 1

- In the plenary group, explain in detail the different needs of women – practical, productive, and strategic – using the Moser framework presented in Session 4.

Step 2

- Ask participants to form 3-4 small groups. Give each group a copy of Handout 7C and ask them to list the practical, productive, and strategic needs that they think can be fulfilled by the different energy and water technologies.
- Distribute Handout 7D and let each group compare this with their own findings.
- Reassemble the participants and ask each group to report on their findings in the plenary (differences between their list of needs fulfilled and the one distributed; their understanding of practical, productive and strategic needs, and so on).
- Distribute Handout 7E and display it on a transparency. Use it to show and discuss the multiple effects of energy interventions.

Trainer's Notes

The list of technologies provided should only include technologies that can be implemented in the participants' own households. However, trainer(s) should familiarise participants with many renewable energy technologies and their advantages and disadvantages.

Electricity can fulfil many needs and is easy to operate, but it is only feasible to suggest electrical technologies in areas connected to the grid or where it is feasible to supply electricity through micro-hydropower or peltric sets. In general, electricity is expensive, however it is supplied, and not a realistic option for rural people for most uses, especially cooking and heating. Since biomass is, and will continue for many years to be, the primary source of energy in the rural areas of the Himalayan region, technological options should focus on fuel-efficient, biomass-based energy saving devices. Typical labour saving and water and energy saving devices include water pumps, drip irrigation, rainwater harvesting tank, pressure cookers, improved cooking stoves, solar cookers, and many others. These are simple, cost-effective, and feasible in rural areas.

If there is time to extend the session, the trainer can provide suggestions or help participants learn how to install these technologies and how to get financial or technical help through local NGOs or government agencies providing support or loans. It is better if the agency representative is brought into the session to provide the necessary information.

7A: Worksheet – Water and Energy Technologies Used/Desired at Home

Water and Energy Technologies Used at Home	Desired New Technology	Purpose/Why?
Improved cooking stoves (type)		
Biogas		
Solar drier		
Drip irrigation		
Others that are used (please add)		

Handout

7B: Different Forms of Technologies and Their Uses

Technologies	Benefits/Usefulness	Precautions
Improved cooking stove	Smokeless, cost effective, harmless to children, less firewood used	Dried firewood should be used, the chimney should not be attached to wooden walls, and when using only one pothole the others should be closed; the top metallic plate should not be touched during operation because it is hot; precautions will depend on the specific model. The ICS with water jackets, for example, will have multiple precautions on the rust-proof material to be used, scaling, and so on
Solar drier	Fast drying, no contamination with dust or insects, better quality of dried product, low cost, low repair and maintenance, ease of handling	Needs protection from rain and dust; if not in use the drier needs to be covered with a plastic sheet to save it from atmospheric exposure, which will otherwise quickly damage it; the door of the drier should be opened frequently and properly closed for optimum efficiency; drier requires painting from time to time to make it last longer
Solar lantern	Illumination for night-time	Need to maintain the panels, protect them from animals, children, dust, etc.
Biogas	Smokeless, cooks fast, illumination	The one essential requirement in producing biogas is an airtight (air leak-proof) container. Biogas is only generated when the decomposition of biomass takes place under anaerobic conditions, as the anaerobic bacteria (microbes) that live without oxygen are responsible for the production of this gas through the destruction of organic matter.
Drip irrigation/sprinkler irrigation	Irrigating kitchen garden Needs less water, good for sandy soil, easy to install and operate, does not wash away compost and nutrients mixed with soil	Water tank needs to be kept at the proper height. For a sprinkler, if the nozzle is clogged it should be cleared with a needle. To prevent the nozzle clogging, oil and grease should not be used at the mouth.
Rainwater harvesting tank	Comparatively good quality water, easily collected in any house with a corrugated sheet roof and stored, time saving for women, low cost	Lid of the tank must be kept closed to prevent contamination and pollution, flushing gate must be opened at intervals to flush out the dirty material, not drinkable if stored for a long period
Irrigation pond (cemented/plastic-lined)/	Comparatively good quality water, easily collected and stored, time saving for women, low cost	Pond should be cleaned out occasionally or will silt up.
Wastewater management	Wastewater from cleaning hands/utensils/ clothes etc. collected in a pond and used to irrigate kitchen garden	Solid waste must be filtered out of the water before use. Water containing cleaning materials (detergents and strong cleaners) may need to be diverted away.
Plastic greenhouse	For growing off-season vegetables, easy to manufacture, serves as a nursery	Should be safe from grazing animals and children and be covered with hay at very low temperatures; if the temperature is too high, then the end should be opened to let air enter.

Source: CRT/N 2004, TERI 2004, RSPN 2004

7C: Worksheet – The Practical, Productive, and Strategic Needs Fulfilled by Water and Energy Technologies

Practical needs: immediate necessities, e.g. water; shelter, food, income, and health care within a specific context, to improve inadequate living conditions.

Productive needs: economic needs to manage the needs of the household and community, e.g. crop and livestock production, handicraft production, marketing, and wage employment

Strategic needs: bringing parity to the status of women and men within society; involves their roles and expectations, as well the gender divisions of labour, control over resources, and power. Strategic needs include gaining legal rights, closing the wage gap, protection from domestic violence, increased decision making, and women's control over their own bodies.

Energy Forms	Women's Needs		
	Practical	Productive	Strategic
Improved biomass and renewable energy technology			
Solar energy			
LPG			
Biogas			
Electricity			

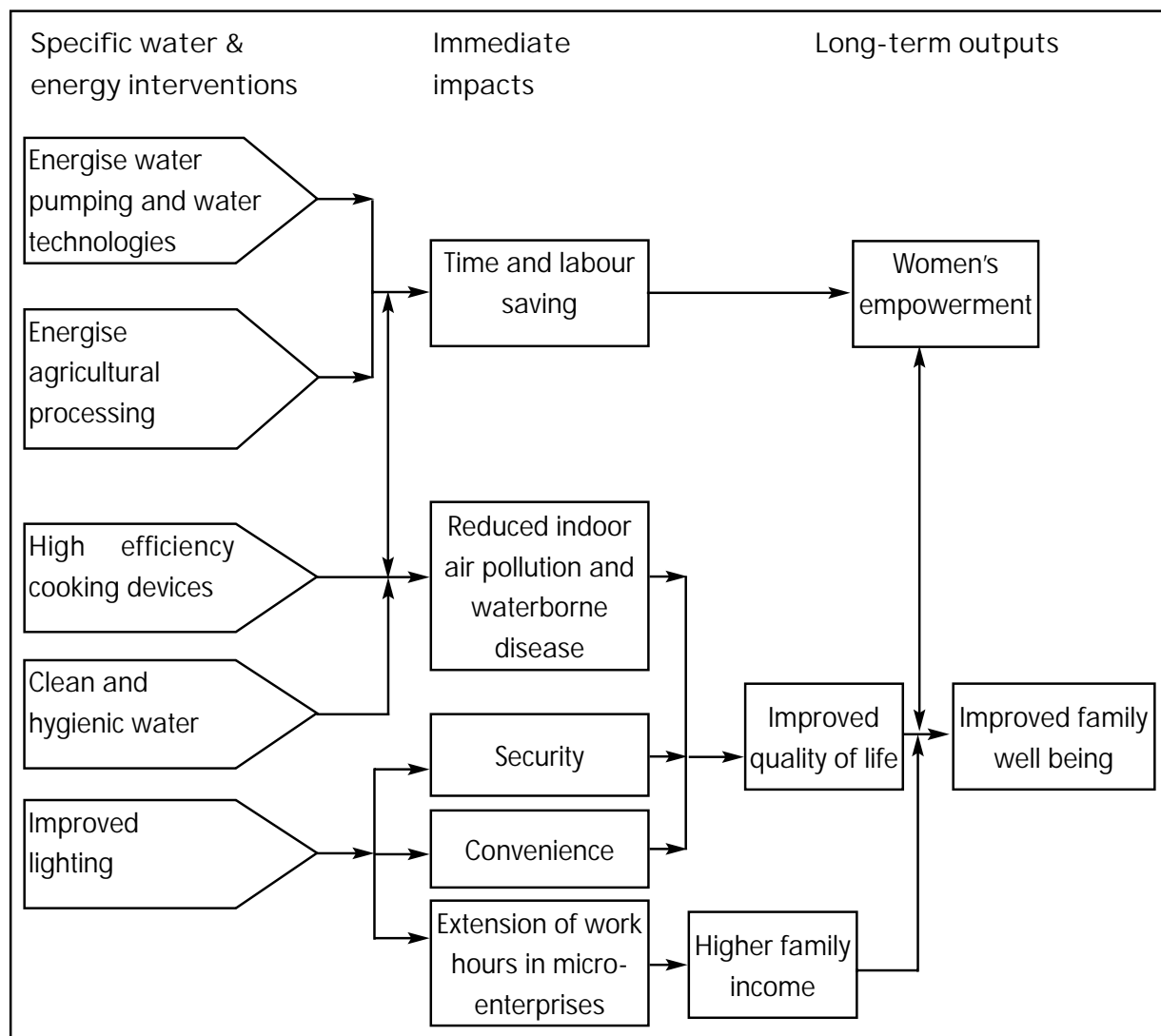
Handout

7D: Meeting the Needs of Women through Various Energy Interventions

Energy Form	Women's Needs		
	Practical	Productive	Strategic
Improved biomass and renewable energy technology	Improved health through better stoves Less time and effort in gathering and carrying firewood	More time for productive activities, Lower cost of processing heat for income-generating activities	Control of natural forests in community forest management framework
Solar energy	Better lighting improves working conditions	Food processing and small-scale enterprises	Opportunity for non-formal education (NFE), income generation, and social work
LPG	Less time taken for cooking	More time for productive work	Opportunity for income-generating activities
Biogas	Improved cooking and lighting conditions	Food processing and small-scale enterprises	Opportunity for NFE, income generation, and social work
Electricity	Pumping water reduces the need to haul and carry Mills for grinding Lighting improves working conditions at home	Increase activities during evening hours Power for specialised enterprises	Makes streets safer facilitating other activities e.g. NFE classes, women's group meetings Opportunity for radio, TV, and Internet facilities
<i>Source: Adapted from Clancy and Skutsch 2003</i>			

7E: Multiple Effects of Women-oriented Energy Interventions

The energy interventions oriented towards improving women's conditions and reducing drudgery bring multiple effects, as shown in the figure below.



Source: Adapted from Dutta 2003

