

5. Further information

about section 5

This Section includes a select list of organisations involved with women, the environment and development issues, followed by a select bibliography.

Select list of organisations

Bangladesh

Women's Programme

Bangladesh Rural Development Board,
Palli, Bhaban 5,
Kawaran Bazar, Dhaka

Nijera Kori

10/9, Iqbal Road,
Mohammadpur, Dhaka 1207
Tel: 32 34 27 Fax: 880 2 813095

Proshika Mandbik Unnayan Kendra

5/2 Iqbal Road,
Mohammadpur, Dhaka 1207
Tel: 315068/315089 Fax: 813052

Ubiniq

5/3 Barabo Mahanpur Ring Road,
Shyamoli, Dhaka 1207
Tel: 329620/318428/811465 Fax: 880-2-813065
Tlx: 632362 MASIS BJ

BRAC

66, Mohakhali Commercial Area,
Dhaka 12,
Tel: 601604/600161-4 Fax: 880-2-883542
Tlx: C/O 65612 ICDD BJ Attn. BRAC

Grameen Bank

2-G, Shyamoli, Dhaka 7
Tel: 326619/315281

Rangpur Dinajpur Rural Service

House No. 62, Road 7-1,
Dhanmondi, Dhaka 1209
Tel 310101-5, 317872/411416,
Tlx: 642428 Snht BJ. Attn. RDRS

**Institute for Environmental and Development
Studies (IEDS)/ Friends of the Earth**
Bangladesh House No. 79 (1st floor),
Road No. 11-A,

Dhanmondi Residential Area, Dhaka
*Activities: Seeks to promote awareness through
environmental education, research and
publications and training. Hopes to include a
component on women and environment in
future programmes.*

International Union for Conservation of Nature & Natural Resources (IUCN) Office

35-B/1, Indira Road,
Dhaka 1215
*Activities: Establishing a Natural Resources
Information Centre, preparing a National
Conservation Strategy; Programme for
Environmental Awareness and Education.*

Polli Unnayan Sangstha (POUSH)

43 New Eskaton Road,
Dhaka 1000

Department of Women's Affairs

37/3 Eskaton Garden Road,
Dhaka 1000

Department of Environment

House No 2, Road No 16 (New)
Dhanmondi R/A, Dhaka 1209

Gonashasthya Kendra

Nayarhat, Savar,
Dhaka

Gonakalyan Trust

Saturia,
Manikganj

Association for Development Agencies of Bangladesh

Lalmatia, Dhaka 1207
Envirocare
Mirpur Road
Dhanmondi R/A, Dhaka 1209

India

Centre for Women's Development Studies

25 Bhai Veer Singh Marg, New Delhi
Centre for Science and Environment
41, Tughlakabad Institutional area,
New Delhi 110 062

Activities: Researches and publishes on environment and development issues, with specific emphasis on the role of women. Actively involved in NGO coalition work and the issue of sustainable development. Produces factsheets on the state of India's environment as well as larger, in-depth reports on the same topic.

Chipko Movement

Chipko Information Centre,
P.O. Silyarea via Ghansali
Tehri Garwhal, Uttar Pradesh 249 155

Activities: The centre provides information on the effects of development on women and puts up peaceful resistance against further deforestation in the Himalayas.

Seva Mandir

Udaipur, Rajasthan 313 001

Society for Participatory Research in Asia (PRIA)

42, Tughlakabad Institutional Area
New Delhi 110062

Research Foundation for Science and Ecology

105 Rajpur Road,
Dehra Dun,
Uttar Pradesh

Activities: Aims to influence policy and legislative decisions, while providing information through its publications of environmental concerns in the area. The organisation is involved in two movements: one against teucalyptus cultivation on farmland, and the other to save water resources by stopping limestone mining.

Self Employed Women's Association (SEWA)

Sewa Reception Centre,

Opposite Victoria Garden,
Ahmedabad 380 017

Activities: Aims to influence policy and legislative decisions. Organises meetings, training, operational projects for self-employed women to unionise. Their projects include wasteland afforestation activities and tree planting activities by members of their many cooperatives.

Society for Promotion of Wastelands Development

Shriram Bharatiya Kala Kendra,
2nd Floor, 1, Copernicus Marg,
New Delhi 110 001

Research Centre for Women's Studies

SNDT Women's University,
Vithaldas Vidyavihar,
Santacruz (West), Bombay 400 049

Gandhi Peace Foundation (GPF)

223 Deen Dayal Upadhyaya Marg,
New Delhi 110 002

Activities: Promotes networking amongst rural NGOs and consideration of Gandhian perspectives on various national and international problems, including those of environmental degradation.

Indian Social Institute

10 Institutional Area,
Lodi Estate, New Delhi 110 003

Activities: Primary concerns include tribal rights, renewable natural resources and environmental concerns as they pertain to rural and tribal folk. Publishes material on forest dwellers and environmental degradation.

Lokayan

13 Alipur Road, New Delhi 110 054

Activities: Social activism and environmental work. Publishes a newsletter that monitors social and environmental issues. Also houses the Delhi Committee on Bhopal Gas Tragedy.

Social Action for rural & Tribal Inhabitants of India (SARTHI)

P O Godhar West,

Further information

Via Lunawada,
Taluka Santrampur,
Panchmahals 389 230, Gujarat

Development Alternatives

B-32 Tara Crescent,
Qutub Institutional Area,
New Delhi 110016

The Orissa Mahila Vikas Nigam

A G Square,
Bhubaneshwar 751 009, Orissa

Malaysia

Third World Network

87 Cantonment Road,
10250 Penang,
Malaysia

International Organisation Of Consumer Unions

PO Box. 1045,
10830 Penang, Malaysia

Friends of Women

47C Jalan SS 6/12,
47301 Petaling Jaya,
Selangor, Malaysia

Consumer Association of Penang (CAP)

87 Cantonment Road,
10250 Penang

Activities: Aims to influence policy and legislative decisions and carries out extensive research and publishes on a wide range of environmental issues concerning both local and international concerns. Has strong links with the Asia-Pacific People's Environment Network, the Third World Network and the World Rainforest Movement. Has organised ad hoc campaigns to support citizens' action. Produces two monthly newsletters Utusan Konsumer (English) and Utusan Pengguna (Bahasa Malaysia).

Education and Research Association for Consumers (ERA Consumer)

11 Lorong Kilat, Grand Silibin Park,
30100 Ipoh, Perak

Activities: Has begun developing a programme of activities that address women and environment questions. Recently produced a book Our Common Future; Making it Happen (1991) on action that women and men can take as individuals and organisations towards a more environmentally viable community.

Environmental Protection Society Malaysia (EPSM)

71 Jalan SS2/53,
47300 Petaling Jaya

Activities: Aims to protect and improve the Malaysian environment through education, monitoring and disseminating information on pollution and research. Has launched various environmental campaigns and organises 'envirowalks' to heighten environmental awareness.

Institute for Community Education (ICE)

PO Box 8,
96007 Sibul,
Sarawak

Activities: Grassroots activism and awareness-raising. Produces a newsletter, Panchar Penemu which highlights the struggles of tribal peoples of Sarawak in the face of heavy logging and commercial agricultural activities.

National Council of Women's Organisations (NCWO)

157 Jalan Tun Razak,
50440 Kuala Lumpur

Activities: A national network of women's NGO organisations. In response to the government National Policy on Women, NCWO has set up several commissions for implementing various aspects of the policy, including a component on women and environment.

Sahabat Alam Malaysia

43 Salween Road,

10050 Penang

Activities: Campaigns for environmental protection and conservation of natural resources in Malaysia. Assists different marginalised groups and lobbies their concerns on environmental degradation. Monitors pollution and other environmental concerns in their bimonthly newsletter, Suara Sam and a journal, Environmental Digest.

SUSDEN Malaysia

c/o Management Institute for Social Change (MINSOC),

B-2114,

1st Floor, Jalan Merpati,

25300 Kuantan,

Pahang Darul Makmur

Activities: Provides a forum for the exchange of ideas, to motivate and promote the practice of environmental conservation and sustainable development as a way of life and as part of the value system in the community.

Women's Crisis Centre

School of Social Sciences,

University Sains Malaysia,

Penang 11800

Asia Pacific Resource and Research Centre for Women

ARROW,

Room 608, 6th Floor APDc Building,

Persiaran Duta,

54080 Kuala Lumpur

Gender Studies Association of South East Asia

c/o The Population Studies Unit,

Faculty of Economics and Administration,

Lembah Pantai,

59100 Kuala Lumpur

Maldives

Environmental Research Unit

Ministry of Planning Human Resources and Environment,

Ghazee Building,

Male

Marine Research Section

Ministry of Fisheries and Agriculture,

Ghazee Building,

Male

Volunteers for Environment, Social Harmony and Improvement (VESHI)

Kinbi,

Machchan Golhi,

Buruzu Magu,

Male

Society for Health Education

Kothanmaage,

Maafannu,

Male

Pakistan

Aga Khan Rural Support Programme (AKRSP)

Baber Road, Gilgit,

Northern Areas

Activities: The Aga Khan Rural Support Programme is a non-profit, private company established by the Aga Khan Foundation to help improve the quality of the lives village people in Northern Pakistan. Activities include a village organisation and collective saving programme with a view towards prompting cooperative endeavour. Encourages accumulation of capital, provides productive physical infrastructure, credit facilities, marketing of products, training programmes for workers and special women's programmes.

Further information

Applied Socio-Economic Research (ASR)

Flat #8, 2nd Floor, Sheraz Plaza,
Main Market, Gulberg,
Lahore

Activities: Research and the publication of books, reports and papers. Acts as a documentation and resource centre with a special emphasis on women and environment. Audio-visual programmes include two video films on the environment. ASR also gives training on the variety of issues, including women and environment.

Aurat Foundation

Head Office,
4-A LDA Garden View Apartments,
Lawrence Road,
Lahore

Activities: An NGO set up to encourage the dissemination of information for women, so as to promote a more humane environment for the participation of women in society. It also provides information in the fields of health, environment, consumer protection, education, training and skill development, law, employment and finance.

International Union for Conservation of Nature and Natural

Resources (IUCN) Office,
1 Bath Island Road,
Karachi 0402

Activities: Projects include the preparation of the National Conservation Strategy, design of courses for training trainers involved in the Women in Development sector of rural development projects, sustainable forestry programme, creation of a Journalists' Resource Centre for Environment. Other projects include an Environmental Awareness and Education Programme consisting of adult literacy projects, health and family planning extension schemes, the formal education system, and media.

Organgi Pilot Project (OPP)

Sector 1-D, 26 Daulat House,
Orangi Town,
Karachi 41

Activities: Has conducted research and extension work focusing on the problems of low-income squatters. Developed a low-cost sanitation system managed and maintained by local women, and has promoted urban regeneration, targeting women as central to the success of any waste and water management activity.

Shirkat Gah

1 Bath Island Road,
Karachi 75530

Activities: A women's collective that works to encourage, support and promote the participation of women in national development. Shirkat Gah has also been working in collaboration with IUCN for the protection of environment in Pakistan.

World Wide Fund for Nature (WWF) Pakistan

1 Bath Island Road,
Karachi 402

Activities: Strategies on environment and development programmes. Works in close collaboration with women's organisations.

Sri Lanka

Envi Foundation Limited

6, Boyd Place,
Colombo 3,
Sri Lanka

Centre for Women's Research (CENWOR)

121/1 Ascot Avenue, Thimbrigasyaya,
Colombo 5

Activities: Research and publications on women and development issues.

International Union for Conservation of Nature and Natural Resources (IUCN) Office

7 Vajira Lane,
Colombo 5

Activities: Preparation of management plan for Knuckles Reserve. Preparation of management plan for Sinharaja Reserve, incorporating an

environmental component into forestry development.

Marga Institute

PO Box. 601,
61, Ispathana Mawatha
Colombo 5

Activities: Research-based organisation that seeks to influence policy making and social process relating to economic growth and social equity. One of their research projects in the rural agricultural sector is to examine the specific nature of the link between women's functions, customs and rituals in rural society and the environment.

**Sri Lanka Environmental Federation/
Sri Lanka Development Confederation**

215, G-2/5 Park Road,
Colombo 5

Activities: A citizens' action group that works to coordinate environmental NGOs in Sri Lanka, and carries out research on various development issues. It highlights the state of the environment in Sri Lanka and assists in formulating legislation.

Sri Lank Environment Congress (SLEC)

17/1 Barnes Avenue,
Mt. Lavinia

Activities: Started as a public interest law firm, then formed as an umbrella organisation for non-governmental organisations throughout the country. It produces two publications; Mhikiatha, a monthly magazine and an environmental quarterly, Biophere. SLEC's basic aim is to provide a forum for discussion amongst environmental NGOs.

The Environmental Foundation Ltd (EFL)

29 Siripa Road,
Colombo 5

Activities: An environmental public-interest organisation which monitors and promotes environmental protection largely through legal means. EFL has a number of major environmental projects and works with women's

groups to help create public awareness. EFL publishes a quarterly newsletter in English called Biosphere and a Sinhala newsletter, Surekera.

Sarvodaya Women's Movement

32 Rawatawatte Road,
Moratuwa

Activities: Organises communication programmes, training programmes, and village/district level projects on natural resource management and coordination with government and non-government agencies at national and field level.

Kantha Shakthi

Thimbirigasyaya Road,
Colombo 5

Activities: awareness creation on women's role in agriculture, the safe use of pesticides and safe handling of household chemicals.

Women's Environment Centre

Ruk Rakaganno,
03 Campbell Terrace,
Colombo 10

Activities: Produces a newsletter for women on issues of environment and development. Also organises workshops and tree planting programmes.

**Select list of institutions working
with water harvesting systems**

Bangladesh

Caritas Bangladesh

2 Outer Cir Road,
Shantibagh,
Dhaka 1217

Rangpur-Dinajpur Rural Service (RDRS)

House 62, Road 7A,
Dhanbondi,
Dhaka 1209

Further information

India

Society for Promotion of Wasteland Development (SPWD)

1, Copernicus Marg,
New Delhi 110 001

Development Alternatives (DA)

B-32 TARA Crescent,
Qutab Institutional Area,
New Delhi 110 016

Madras Institute of Development Studies

Gandhinagar, Adyar,
Madras,
Tamil Nadu 600 020

Institute of Rural Management

Anand
Gujarat

Sadguru Water Development Foundation (SWDF)

PO Box 71,
Near RTO Naka,
Dahod Taluka,
Dist. Panchmahal,
Gujarat

Gram Gaurav Pratisthan

PO Box 1202,
67, Hadapsar Industrial Estate,
Dist. Pune,
Maharashtra 411 013

Tarun Bharat Sangh

Village Bhikampura,
Thanagazi Tehsil,
Dist. Alwar,
Rajasthan

Agha Khan Rural Support Programme

Choice-Premises,
Swastika Cross Road,
Navrangpura, Ahmedabad,
Gujarat 300 009

Malaysia

Asia Pacific People's Environment Network (APPEN)

43, Salween Road,
10050 Penang

Centre for Environment, Technology and Development (CETDEM)

71, Jalan SS2/53,
Petaling Jaya,
47300 Selangor

Pakistan

Al-Muhahid Welfare Council

Musakhel District,
Mianwali,
Punjab

Rural Development Foundation

16 Street 35,
F-6/1 (PO Box 1170),
Islamabad

Sindh Rural Workers Cooperative Organisation (SRWCO)

263-C, Block 2,
Near Tariq Hotel, Tariq Road,
P.E.C.H.S.,
Karachi 29

Sri Lanka

MARGA Institute

P.O. Box 601,
61 Isipathana Mawatha,
Colombo 5

A select bibliography

This bibliography gives a list of relevant publications on issues relating to women, natural resources and development. It includes two sections that relate specifically to the subjects discussed in Section 2 (Learning from Rural Women) and Section 4 (Conservation) of this manual.

General

Agarwal, Bina. *Cold Hearths and Barren Slopes: the Woodfuel Crisis in the third World.* Allied Publishers. New Delhi. 1986. p209.

Agarwal, B. (ed.), *Structures of Patriarchy: State Community and Household in Modernizing Asia,* Kali for Women, New Delhi, India. 1988. p209.

Chandler, G., Sullivan, N., Branson, J., (eds.), *Development and Displacement: Women in Southeast Asia,* Monash Papers on Southeast Asia, No.18, Centre of Southeast Asian Studies, Monash University, 1988. p136.

Dankelman, Irene and Davidson, Joan. *Women and Environment in the Third World: Alliance for the Future.* Earthscan Publications Ltd. London. 1988. p210.

Food and Agriculture Organisation of the United Nations (FAO). *Restoring the Balance: Women and Forest Resources.* Rome, Italy. 1987. p 32.

FAO. *Women in Community, Forestry.* Rome, Italy. 1989. p43.

Heyzer, N., (ed.), *Missing Women: Development Planning in Asia and the Pacific.* Asian and Pacific Development Centre, Kuala Lumpur, Malaysia, 1985.p419.

Heyzer, N, (ed.), *Women Farmers and Rural Change in Asia: Towards Equal Access and*

Participation. Asian and Pacific Development Centre, Kuala Lumpur, Malaysia, p. 428.

Jiggins, J. *Special Problems of Female Heads of Households in Agriculture and Rural Development in Asia and the Pacific.* FAO, Regional Office for Asia and the Pacific, FAO, Regional Office for Asia and the Pacific, Bangkok, Thailand, 1985. p 40.

King, Deirdie. *Rural Women and Environmental Sustainability. The Impact of the Fuelwood and Water Crises on Rural Women.* University of Bradford. West Yorkshire. 1989.

Levy, Caren. 'Gender and the Environment: The Challenge of Cross-cutting Issues in Development Policy and Planning' in *Environment and Urbanisation Vol 4, No 1,* April 1992. pp134-150

Loudiyi, Dounia. *Women and Natural Resources Management, An Annotated Bibliography.* IUCN, Social Sciences Division. Washington DC. 1991.

Rodda, Annabel. *Women and Environment.* Zed Books Ltd. London and New Jersey. 1991.

Unnevehr, C.J, Stanford, K.L. 'Technology and Demand for Women's Labour in Asian Pacific Farming', *Women in Rice Farming,* IRRI, Fower Publishing Co., U.S. and England, 1985, pp1-20.

Learning from rural women

Abel, N.O.J. et al. 1989. *Amelioration of Soil by Trees. Guidelines for Training in Rapid Appraisal for Agroforestry Research and Extension*. Commonwealth Science Council, UK and Forestry Commission, Zimbabwe.

These guidelines are designed for training research and extension personnel in rapid appraisal methods for development of agroforestry in peasant land use systems. The methods described are based on the principles of interactive research, learning-by-doing and are interdisciplinary.

Contact: Commonwealth Science Council, Commonwealth Secretariat, Marlborough House, Pall Mall, London SW1Y 5HX, UK

Davis-Case, D. 1989. *Community Forestry. Participatory Assessment, Monitoring & Evaluation. Forest, Trees and People, Community Forestry Note 2*. Food and Agriculture Organisation of the United Nations, Rome, Italy.

This book outlines the concepts, approaches and techniques that need to be an integral part of a truly participatory development strategy. It includes a section outlining 23 different tools for participatory analysis and communication

Contact: Community Forestry Officer, Room 823bis, Policy and Planning Service, Forestry Department, FAO, Via delle Terme di Caracalla, Rome 00100, Italy

Feuerstein, M.T. 1986. *Partners in Evaluation. Evaluating Development and Community Programmes with Participants*. Macmillan Publishers.

This guide is designed to be used in the field by busy practitioners with little or no formal training in evaluation methods. The methods, principles and examples it contains can be used in many different types of programmes, but they are particularly appropriate to development and community programmes.

Contact: TALC, Box 49, St Albans, Herts AL1 4AX, UK

Hope, A. and Timmek S. 1987. *Training for Transformation. A Handbook for Community Workers*. Mambo Press, Gweru, Zimbabwe.

This book, produced in three separate volumes, is aimed at educators and community workers in the field. Based on the approach by Paulo Freire, it gives practical advice on how to use participatory analysis and participatory education for the development of self-reliant communities

Contact: Mambo Press, PO Box 779, Gweru, Zimbabwe

McCracken, J.A., Pretty, J.N. & Conway, G.R. 1988. *An Introduction to Rapid Rural Appraisal for Agricultural Development*. Sustainable Agricultural Programme, IIED, London. £ 4.00 (free to Third World individuals and institutions).

An overview of the Rapid Rural Appraisal approach and some of its techniques. This publication is not designed as a field guide but provides examples of where the techniques have proved useful. Strong emphasis on diagramming.

Contact: Sustainable Agriculture Programme, IIED, 3 Endsleigh Street, London WC1H ODD, UK

McCracken, J.A. et al. 1991. 'Diagrams for Shared Learning and Analysis. Participatory Rural Appraisal Handbooks: No. 2' IIED, London and FAO, Rome (in press)

This handbook conveys a range of diagrams : maps, transacts, seasonal and daily calendars, historical and predictive diagramming, cartoons, flow diagrams, decision trees, pie diagrams and venn diagrams.

Contact: Sustainable Agriculture Programme, International Institute for Environment and Development, 3 Endsleigh Street, London WC1H ODD, UK

Pretty, J.N. et al. 1991. *A Guide for Trainers. Participatory Rural Appraisal Handbooks No. 3*, IIED, London and FAO, Rome (in press).

This handbook provides guidelines for trainers who wish to introduce the techniques of semi-structured interviewing, participatory diagramming, and ranking and scoring. General guidance is given on how to train groups.

Contact: Sustainable Agriculture Programme, International Institute for Environment and Development, 3 Endsleigh Street, London WC1H ODD, UK

McCracken, J.A. et al. 1991. 'Annotated Bibliography: Participatory Rural Appraisal Handbooks: No. 4' IIED, London and FAO, Rome (in press)

This bibliography includes approximately 250 references to publications on general participatory research and development approaches; case studies of RRA and related approaches, including non-agricultural applications; and documents on specific techniques.

Contact: Sustainable Agriculture Programme, International Institute for Environment and Development, 3 Endsleigh Street, London WC1H ODD, UK

Nichols, P. 1991. *Social Survey Methods. A Fieldguide for Development Workers. Development Guidelines No. 6*. Oxfam. Cost Unknown.

This manual is aimed at readers with no special knowledge of social research methods or statistics. In particular it is designed to help those working in remote rural area, with little money or technical back-up. Guidelines are provided on, for example the fieldwork team, choosing the sample, and presenting the findings.

Contact: Oxfam, 272 Bankbury Road, Oxford OX2 7DZ, UK

Participatory Rural Appraisal Handbook, 1990. National Environmental Secretariat, Kenya, Clark University, USA, Egerton University, Kenya and the Center for International

Development and Environment of the World Resources Institute.

This handbook explains the use of participatory rural appraisal (PRA) for developing community-based resource management plans. It uses case study material of RRAs conducted in Kenya. This handbook has also been summarised as a booklet: MWAGIRU, W., THOMAS-SLAYTER, B.P. AND FORD, R. 1989. *An Introduction to Participatory Rural Appraisal for Rural Resources Management*. Clark University, USA and National Environment Secretariat, Kenya.

For both these publications contact: The Director, National Environment Secretariat, Ministry of Environment and Natural Resources, PO Box 67839. Nairobi, Kenya

OR

The Director, Program for International Development, Clark University, Worcester, Massachusetts 01610, USA

Pretty, J.N. et al. 1991. *Semi-structured Interviewing. Participatory Rural Appraisal Handbooks No. 1*, IIED, London and FAO, Rome.

This handbook provides guidelines on how to select informants, how to prepare to interview, appropriate styles of questioning, how to avoid errors and biases.

Contact: Sustainable Agriculture Programme, International Institute for Environment and Development, 3 Endsleigh Street, London WC1H ODD, UK

Rojas, M. (FAO). 1989. *Women in Community Forestry. A field guide for project design and implementation*. Food and Agriculture Organization of the United Nations, Rome.

This guide focuses on practical ways to include women in project design and implementation and is meant to be a tool to facilitate discussion, offer options and promote action on behalf of women and forestry.

Further information

Rugh, J. 1986. *Self-Evaluation of Rural Community Development Projects*. A World Neighbours Publication, Oklahoma, USA. The basic purpose of this manual is to help those involved in running rural community development projects to learn how to do more effective and appropriate evaluation themselves. It discusses the questions : why evaluate, evaluation for whom, evaluation by whom levels of evaluation, when to evaluate, what to evaluate and how to evaluate.

Contact: World Neighbours Development Communications, 5116 North Portland Avenue, Oklahoma City, OK 73112, USA

Russo, S. et al. 1989. *Gender Issues in Agriculture and Natural Resources Management. The Gender Manual Series*. UB Agency for International Development. This manual provides methods, guidelines and examples for integrating women into agricultural and natural resource development projects. It includes lists and question sheets to identify gender issues that should be addressed by those involved in project assistance. The manual also presents case studies describing efforts to incorporate women in development activities.

Contact: Dissemination Manager, Office of Women in Development, US Agency for International , Development, Washington DC 20523-0041 USA

Training of Trainers. A Manual for Participatory Training Methodology in Development. Society for Participatory Research in Asia.

This manual deals with the topics of the role of trainer in participatory training, designing a training programme, small groups, learning-training methods, and evaluation and follow-up.

Contact: Society for Participatory Research in Asia, 42 Tughlakabad Institutional Area, New Delhi 110 062

Vella, J. 1989. *Learning To Teach. Training of Trainers for Community Development*. SCF and OEF International.

This manual is designed to be used in training of trainers workshops and includes guidelines on, for example, adult to adult communication, using pictures and sociodrama.

Contact: OEF International, 1815 H St, NW, 11th Floor, Washington DC 20006, USA

Wasonga, L.M. and Zwart, G. 1984. *A Manual for Extension Workers in Arid and Semi-Arid Zones. For Promotion and Management of Women's Group Projects*. Ministry of Finance and Planning, Kenya, and Food and Agriculture Organisation of the United Nations, Rome. The purpose of this manual is to provide workers with guidelines to assist them when working with women's groups who have organized themselves to undertake income generating activities. The manual contains case studies of projects in arid and semi-arid lands of Kenya.

Contact: Ministry of Finance and Planning, PO Box 30005, Nairobi, Kenya

Conservation

Soil conservation/land husbandry

Hudson, N.W. (1992). *Land Husbandry*, Batsford.

Lundgren L and Taylor C. (1993). *From soil conservation to land husbandry*. Guidelines based on the SIDA experience.

Wasteland Development. Training Manual. Development Alternatives. New Delhi. Not dated.

Water conservation

Aggarwal, Anil and Sunita Narain. (1989). *Towards Green Villages*, Centre for Science & Environment, New Delhi.

Deshpande, V.D., S.P. Salunke & D.C. Korten. (1988): 'Water for People' in *Farmer*

Managed Irrigation Systems : Indian Experience
Edited by K.R. Date & R.K. Patil.

Development Alternatives. (1992) *Community Based Water Management Systems: An Overview*, Project Report submitted by Development Alternatives to Ford Foundation, New Delhi.

Development Alternatives. (1992) *A Directory of Selected Community based Water Management Systems*, Project Report submitted by Development Alternatives to Ford Foundation, New Delhi.

National Academy of Science (1974) *More Water for Arid Lands – Promising Technology and Research Opportunities*. Washington, DC.

Patil, R.K., Datey, K.R., Paranjape, Suhas. (1989). "Story of Ralegan Siddhi" in *Science for Villages*, March-April edition. 1989.

Sengupta, N. (1993) *User Friendly Irrigation Systems Designs*, Sage Publications, New Delhi.

Sengupta, Nirmal. (1991). *Managing Common Property – Irrigation in India & Philipines*. Indo-Dutch Studies on Development Alternatives-6, Sage Publications, New Delhi.

Wade, Robert. (1989) *Village Republics – Economics conditions for collective action in South India*. Orient Longman, Bombay.

NOTE: SEE ALSO A SELECT LIST OF ORGANISATIONS WORKING WITH WATER HARVESTING SYSTEMS IN SECTION 5: FURTHER INFORMATION

Energy conservation

AFPRO. 1993. *Development and Ecology*. Vol I, Issue 1. Jan – March. 1993. Action for Food Production. New Delhi.

AFPRO. 1993. *Development and Ecology*. Vol I, Issue 2. April – June. 1993. Action for Food Production. New Delhi.

AFPRO. 1993. *Development and Ecology*. Vol I, Issue 3. July – September. 1993. Action for Food Production. New Delhi.

Abeywardena, Padmini. *Perspectives on Cookstoves – Users & Non-Users*. Centre for Women's Research, Sri Lanka

Caceres, R. 1989. *Stoves for People*. Proceedings of 2nd International Workshop on Stoves Dissemination, Intermediate Technology (IT), UK

Flintoff, Frank. 1984. *Management of solid wastes in developing countries*. WHO Regional Office for South East Asia.

Furedy, Christine. 1989. Appropriate technology for urban wastes in Asia in *Biocycle*. July 1989.

Foley, Moss and TimBerlake. 1984. *Stoves and Trees*. IIED, Washington, 1984, 89pp.

Joseph, S. 1990. *Guidelines for Planning, Monitoring and Evaluating Cookstove Programmes: Community Forestry Field Manual 1*. FTP, Rome,

Joseph, Prasad and Van der Zaan (Eds). 1990. *Bringing Stoves to the People: An Assessment of Impact*. Foundation for Woodstove Dissemination (FWD),

Joseph, Shanahan and Stewart. 1985. *The Stove Project Manual: Planning and Implementation*. Intermediate Technology (IT),

Micuta, Waclaw. 1985. *Modern Stoves for All*, revised edition. Intermediate Technology (IT),

Glossary

Nystrom, Maria. 1985. *Kitchen and Stove: The Selection of Technology and Design*. LCHS, Sweden,

Stewart, Bill. 1987. *Improved Wood, Waste and Charcoal Burning Stoves. A practitioners' manual*. Intermediate Technology Publications. London, UK.

Stewart, Bill. 1987. *Improved Wood, Waste and Charcoal Burning Stoves. A practitioners' manual*. Intermediate Technology Publications. London, UK.

Stove Programmes in Asia : A Status Report. Regional Wood Energy Development Programme – Project Document. Field Document No. 6, 1988

Stove Information. (General Information and Country Specific). Regional wood energy development programme. Documentation Centre. 1990. Bangkok.

Organic farming systems

Bull, David. 1982. *A Growing Problem: Pesticides and the Third World Poor*. Oxford, Oxfam, Critical examination of pesticide abuse and IPM.

Flint, M.L. & van den Bosch, R. 1981. *Introduction to Integrated Pest Management*. NY: Plenum Press,

Fukuoka, Masanobu. 1985. *The One-Straw Revolution*. Toronto: Bantam Books, The 'bible' of the natural farming movement.

Gips, Terry. 1987. *Breaking the pesticide habit. Alternatives to 12 hazardous pesticides*. International Organisations of Consumers Unions, Penang, Malaysia.

Green Leaf. A magazine on sustainable agriculture, published by the United Planters

Association of Southern India, R&D Centre for rubber, Union Club Road, Kottayam 686 001, Kerala, India.

Hansen, Michael. 1986. *Escape from the Pesticide Treadmill: Alternatives to Pesticides in Developing Countries*. Mt. Vernon, NY. Institute for Consumer Policy Research, Consumers Union, Case studies of successful IPM.

Healthy Harvest III: A Directory of Sustainable Agriculture and Horticulture Organisation, 1989-90. Washington, DC: Potomac Valley Press, and International Alliance for Sustainable Agriculture, 1989.

Jodha, N.S. 1992. *Sustainable mountain agriculture*. Volume 1. *Perspectives and issues*. Volume 2. *Farmers' strategies and innovative approaches*. International Centre for Integrated Mountain Development (ICIMOD). Kathmandu. ISBN 81 204 06206

Tools for organic farming: a manual of appropriate equipment and treatment. Intermediate Technology Publications. London. 1990. ISBN 1 85339 009 7.

Oelhaf, Robert C. 1978. *Organic Agriculture: Economic and Ecological Comparisons with Conventional Methods*. New York: John Wiley and Sons.

Planting the Future – Resource Guide to Sustainable Agriculture in the Third World. Minneapolis : International Alliance for Sustainable Agriculture, 1990. The first comprehensive documentation of both sustainable agriculture groups and resources, as well as actual farming practices (including pest control methods).

Rengam, Sarojini. 'Moving Towards Sustainable Pest Control' in *Ecoforum*. Vol 12, No 5.

Stoll, Gaby. 1986. *Natural Crop Protection Based on Local Farm Resources in the Tropics and Sub-tropics*. Gaimersheim, Federal Republic of Germany; Verlag Josef Margraf. Practical insect control for Third World food crops.

Sarrantonio, M. 1991. Soil improving legumes: methodologies for screening. Kutztown. Rodate Institute. ISBN 0 87857 989 3.

Tilth. 1982. *The Future is Abundant : A Guide to Sustainable Agriculture*. Lynwood, WA: Tilth. Covers most aspects of sustainable agriculture.

Bangladesh

Abdullah, T. 'Women in Rice Farming Systems in Bangladesh and How Technology Can Reach Them', *Women in Rice Farming*, IRRI, Gower Pub. Co., U.S. and England, 1985.

Ahman, M. 'Nijera-Kori in Retrospect - In Search of an Organisation of the Rural Poor', Proceedings of the Conference on Forest Resource Crisis in the Third World, Sahabat Alam, Penang, Malaysia. 1987.

Begum, S., 'Women and Technology: Rice-Processing in Bangladesh', *Women in Rice Farming*, IRRI, Grower Publishing Co. US and England. 1985.

Chen, M.A., *A Quiet Revolution: Women in Transition in Rural Bangladesh*, BRAC Prokashana, Dhaka, Bangladesh. 1986.

Chen, M., 'Poverty, Gender and Work in Bangladesh', *EPW*, V. 21(5), 1986.

CIRDAP. *Kitchen Gardening and Home-level Processing of Food (Phase I): An Experiment in Comilla - Bangladesh*, CIRDAP Series No 23, 1985.

Feldman, S., Banu, F., McCarthy, F.E., *The Role of Rural Bangladeshi Women in Livestock*

Production, Cornell International Agriculture Mimeograph No. 112. 1986.

ICIMOD. *Women and mountain Development*. Report of the International Workshop on Women, Development and Mountain Resources: Approaches to Internalising Gender Perspectives. Organised by the International Centre for Integrated Mountain Development, Kathmandu, Nepal. November 1988.

ILO. *The Rural Energy Crisis, Women's Work and Basic Needs*. Proceedings of International Workshops co-sponsored by the ILO and the ISS, The Hague. April 1986. Geneva. 1987.

IWTC. *Women and Water: A Collection of IWTC Newsletters on Issues, Activities and Resources in the Area of Women, Water and sanitation Needs*. New York. International women's Tribune Centre. 1990.

Jaim, W.M.H., Rahman, M.L., 'Participation of Women and Children in Agricultural Activities: a Micro-level Study in an Area of Bangladesh', *Bangladesh Journal of Agricultural Economics*, V.11(1). Bhaka. 1988.

Kabeer, Naila. *Gender Dimension of Rural Poverty. Analysis from Bangladesh in The Journal of Peasant Studies Vol 18 No 2* 1991 pp241- 262.

Kabeer, Naila. *Women: Agriculture and Rural Problems: Monitoring Poverty as if Gender Mattered. Methodology for Bangladesh*. IDS Discussion Papers D255 Sussex. 1989.

Lily, F.B., 'The Role of Rural Bangladeshi Women in Livestock Rearing', *Invisible Hands: Women in Home-based Production*, Singh A.M., Kelles-Viitanen, A., (eds.), Sage Publications, New Delhi, India. 1987.

Rahman, R.I. 'Seasonality of Workload of Women in Rural Areas of Bangladesh: Some Male-Female Comparisons in Bangladesh', *Bangladesh Development Studies*, V.14(4). 1986.

India

Acharya, S., Patkar, P., 'Technological Infusion and Employment Conditions of Women in Rice Cultivation Areas', *Women in Rice Farming*, IRRI, Gower Publishing Co. US and England. 1985.

Agarwal, B. 'Rural Women and High Yielding Variety Rice Technology in India', *Women in Rice Farming*, IRRI, Gower Publishing Co. US and England. 1985.

Agarwal, B., 'Neither Sustenance Nor Sustainability: Agricultural Strategies, Ecological Degradation and Indian Women', *Structures of Patriarchy: State, Community and the Household in Modernizing Asia*, Agarwal, B. (ed.), Kali for Women, New Delhi, India. 1988.

Agarwal, B. 'Who Sows? Who Reaps? Women and Land Rights in India', *JPS*, V.15(4). 1988.

Agarwal, B. 'Rural Women Poverty and Natural Resources: Sustenance, Sustainability and Struggle for Change', *EPW*, V.24(43). 1989.

Bannerjee, N.K. *Women, Participation and Development: A Case Study from West Bengal*, Occasional Papers, CWDS, New Delhi, India, No.5. 1985.

Beena, D. 'Technological Change and Women Workers: The Case of Fish Processing Industry in Kerala', *Technological Change, Labour Process and Employment, Sub-Theme 2*, FNCWS,IAWS. 1988.

Bhuyan, B., Tripathy, S.K. 'Role of Women in Agriculture: A Study of Ganjam District in Orissa', *Journal of Rural Development*, V.7(4), India. 1988.

Chen, M. 'Women's Work in Indian Agriculture by Agro-Ecologic Zones: Meeting Needs of

Landless and Landpoor Women', *EPW*, V.24(43).1989.

CWDS, Sharma, K., et al. 'The Chipko Movement in the Uttarkhand Region, U.P., Indian: Women's Role and Participation', *Rural Development and Women: Lessons from the Field*, Muntemba, S., (ed.), WEP,ILO, Geneva. 1985.

Duvury, N., 'Women in Agriculture: A Review of Indian Literature', *EPW*, V.24(43). 1989.

Fernandes, W., Menon, G. *Tribal Women and Forest Economy, Deforestation, Exploitation and Status Change*, Indian Social Institute, New Delhi, India. 1987.

George, S. 'The Female of the Species: Women and Dairying in India', *Women in Agriculture*, CP,CDS. 1988.

Ghosh, B., Mukhopadhyay, S.K. 'Gender-Differentials in the Impact of Technological Change in Rice-based Farming Systems in India', *Gender Issues in Farming Systems Research and Extension*, Poats, S.V., Schmink, M., Spring, A., (eds.), Westview Press, Colorado, US. 1988

Jefferey, R., Jefferey, P., Lyon, A. 'Taking Dung-work Seriously: Women's Work and Rural Development in North India', *EPW*, V.24(17). 1989.

Kelkar, G. *Women's Work and Agricultural Technology*, Occasional Paper No.3, CWDS, New Delhi, India. 1985.

Kelkar, Govind and Nathan Dev. *Gender and Tribe: Women, Lands and Forests in Jharkhand*. Kali for Women. New Delhi. 1991. p187.

Kishwar, M. 'Toiling Without Rights: Ho Women of Singhbhum', *EPW*, V.22 (3,4,5) (three issues). 1987.

- Lakshmi, L.** 'Women's Role and Family Survival Strategies in Wet and Dry Villages of East Godavari District, Andhra Pradesh', *Family Survival Mechanisms, Sub-Theme 10*, CP,FNCWS,IAWS. 1988.
- Menon, G.** 'Tribal Women: Victims of Development Process', *Social Action*, V.37(4). 1987.
- Mitra, M.** 'Women's Work: Gains Analysis of Women's Labour in Dairy Production', *Invisible Hands: Women in Home-Based Production*, Singh, A.M., Kelles-Viitanen, A., (eds.), Sage Publications, New Delhi, India. 1987.
- Mitra, M.** 'Environmental Degradation and Regeneration; Efforts by Women's Grassroots Groups', *Environmental Degradation and Regeneration, Sub-theme 3*, CP,FNCWS,IAWS. 1988.
- Nayak, N.** 'Technological Change, the Labour Process and Employment in Relation to Women in the Subsistence Fishing Economy, Technological Change, Labour Process and Employment, Sub-Theme II', CP,FNCWS,IAWS, 1988.
- Ravini, Y.** 'Impact of Modernization of Fishing Industry of Women's Employment - A Case Study of Visakapatnam, Technological Change, Labour Process and Employment, Sub-theme No.2', CP,FNCWS,IAWS. 1988.
- Sanjanwala, Jyotsna (ed).** *Women's Perspective on the Environment*. Reading on Women's Studies Series: 6. Research Centre for Women's Studies, Bombay. India 1990. p124.
- Sardamoni, K.** 'Labour, Land and Rice Production: Women's Involvement in Three States', *EPW*, V.24(17). 1987.
- Saxena, N.C.** 'Women in Forestry', *Social Action*, V.37(2). 1987.
- Sharma, K.** *Interactions Between Policy Assumptions and Rural Women's Work*, Occasional Paper No.1, CWDS, New Delhi, India. 1985.
- Sharma, K.** *Gender Concerns in Development Debate: Emerging Perspectives*, Occasional Paper No.2,CWDS, New Delhi. 1985.
- Sharma, K.** *Macro-policies for Natural Resource Management; Marginalization of Poor Rural Women*, Occasional Paper No. 14,CWDS, Delhi, India. 1989.
- Sharma, M., Vajari, U.** 'Women's Work is Never Done: Dairy Development and Health in the Lives of Rural Women in Rajasthan', *EPW*, V.24(17).1989.
- Shiva, V.** *Staying Alive: Women, Ecology and Development*, Kali for Women, New Delhi, 1988.
- Srinivasan, V.** 'Mahila Navajagran Samiti (Women's Reawakening Association)', *Rural Development and Women: Lessons from the Field*, Muntemba, S., (ed.), Vol. II, WEP,ILO, Geneva. 1985.
- Srivastava, J.C.** 'Harnessing Technology for Eliminating the Drudgery of Rural Women Engaged in Rice-Production, Processing and Utilization', *Women in Rice Farming*, IRRI, Gower Publishing Co., U.S. and England. 1985.
- Van Der Velden, W.** 'Unequal Survival and Surviving Inequality in Uttar Pradesh', *Women Migrants and Tribals: Survival Strategies in Asia*, Lieten, G.K., Nieuwenhuys, C., Schenk-Sandbergen, L., (eds.), Manohar Publications, New Delhi, India. 1989.
- Venkateswaran, Sandhya.** *Environment, Development and the Gender Gap*. Sage Publications India Pvt. Ltd. New Delhi. 1995.

Glossary

Verma, D.P.S. *Women and Forest Resources in Ganeshpura Village*, International Tree Crops Journal, V.5(1-2), 1988.

Pakistan

Bahar, S. Women's Role in Barari Crop Production and Management Activities - A Research Study, *Progressive Farming*, V.8(3), Ludhiana. 1988.

Bhatti, B.M. Role of Women in Rural Poultry Development, *Journal of Rural Development and Administration*, V.19(2). 1987.

International Union for the Conservation of Nature and Natural Resources (IUCN). *The Training of Women and Forestry*. Pamphlet.

Rana, M.S.K., Sultan, S. 'Pakistani Women in Agriculture', *Journal of Rural Development and Administration*, V.21(3). 1989.

Shah, N.M., Anwar, M. 'Socio-Demographic and Economic Characteristics of Respondents', *Basic Needs, Women and Development: A Survey of Squatters in Lahore, Pakistan*, EWC, Honolulu, Hawaii, IDRC, Ottawa, Canada, 1986.

Sri Lanka

Bandarage, A. Women and Capitalist Development in Sri Lanka, 1977-87, *BCAS*, V.20(2), 1988.

Goonatilaka, H., Casinader, R. 'Gampubuduwa Organization at the Ralahamywatta Village, Sri Lanka', *Rural Development and Women: Lessons from the Field, Vol.I*, Muntemba, S., (ed.), WEP,ILO, Geneva. 1985.

Schampers, T., Belens, F. 'Survival Migration: The Sri Lankan Case', *Women, Migrants and Tribals: Survival Strategies in Asia*, Lieten, G.K.,

Nieuwerhuys, O., Schenk-Sandbergen, L., (eds.), Manohar Publications, New Delhi, India. 1989.

Schrijvers, J. 'Blueprint for Undernourishment: The Mahaweli River Development Scheme in Sri Lanka', *Structures of Patriarchy: State, Community and the Household in Modernizing Asia*, Agarwal, B., (ed.), Kali for Women, New Delhi, India. 1988.

Malaysia

Asian and Pacific Development Centre, *Agricultural Change, Rural Women and Organisations: A Policy Dialogue*. Proceedings of the APDC-ACWF International Seminar, Beijing, China, October 1986, Asian and Pacific Development Centre, Kuala Lumpur, Malaysia. 1987.

Hong, E. 'Rural Women in Development', *Malaysian Women: Problems and Issues*, Hong, E., (ed.), CAP, Penang, Malaysia. 1983.

Hodgerbrugge, J. 'The Economic Participation of Fishermen's Wives: Their Changing Role and Status', (source not mentioned). 1987.

Howell, S. 'Chewong Women in Transition: The Effects of Monetization on a Hunter-Gatherer Society in Malaysia', *Women and Development in South-East Asia*, Centre for South-East Asian Studies, Occasional Paper No.1, University of Kent, England. 1983.

Khoo, S.W., Pirie, P. 'Female Rural-to-Urban Migration in Peninsular Malaysia', *Women in the Cities of Asia: Migration and Urban Adaptation*, Fawcett, J.T., Khoo, S.E., Smith, P.C., (eds.), Westview, Boulder, Colorado. 1984.

Ling, Chee Yoke. Women, Environment and Development: The Malaysian Experience in *Development*, the journal of the Society for International Development. Vol2/3. 1989. pp88-91.

Mohamad, M. 'Gender, Class and the Sexual Division of Labour in a Rural Community in Kedah', *Kajian Malaysia*, V.2(2). 1984.

Ng,C., Mohamed M. 'Primary but Subordinated: Changing Class and Gender Relations in Rural Malaysia', *Structures of Patriarchy: State, Community and the Household in Modernizing Asia*, Agarwal, B.,(ed.), Kali for Women, New Delhi, India. 1988.

Nye, N.S. 'Status of Rural Women', *Malaysian Women: Problems and Issues*, Hong, E., (ed.), CAP, Penang, Malaysia. 1983.

Sundaram, J.K., Leng, T.P. 'Not the Better Half: Malaysian Women and Development Planning', *Missing Women: Development Planning in Asia and the Pacific*, Heyzer, N., (ed.), Asian and Pacific Development Centre, Kuala Lumpur, Malaysia. 1985.

Zakariah, M., Karim, N.S. 'Women in Development: The case of an All Woman and Youth Land Development Scheme in Malaysia', *Visibility and Power: Essays on Women in Society and Development*, Leacock, E., Archer, S., (eds.), OLP, New Delhi, India. 1986.

Maldives

Ministry of Fisheries and Agriculture, Republic of Maldives. *Status and Needs of Fisherfolk: Vaavu, Meemu and Faafu Atolls, Maldives*. Bay of Bengal Programme. Madras, India. 1991.

Some key concepts on sustainable management of resources

Some of the terms used in this manual are those typically used in the context of environment and development. Since some definitions may vary, depending upon the specific context, a list of the more frequently used terms along with definitions, follows:

COMMON PROPERTY RESOURCES are resources in a community has shared usage rights. Resources in this category could include community pastures, community forests, common dumping and threshing grounds, watershed drainages, village ponds, and rivers, as well as their banks and beds.

CONSERVING BIOLOGICAL DIVERSITY: The diversity of many of the countries in the Asia region is reflected in the differences of their living organisms. The region has one of the highest rates of diversity and existence of unique species in the world. This is, however, seriously threatened by development activities.

DEFORESTATION is the loss of trees by their dying or by human removal. Shifting cultivation or slash and burn methods are as much a danger as overlogging

DESERTIFICATION is the process whereby lands bordering deserts are reduced to desert-like conditions. It usually refers to the degradation of arid and semi-arid lands. Desertification can occur both naturally and through human activities or by the two acting together. It often results in a reduction in the amount and variety of plant and animal species, reduced soil fertility and a reduction in available water, and an increase in soil erosion.

ENVIRONMENTAL DEGRADATION is a reduction in either the usefulness of a natural resource, or in its capacity to be self-sustaining.

ENVIRONMENT AND HEALTH: In many Asian countries, infectious diseases associated with poor environmental conditions are widely prevalent.

NATURAL RESOURCES is everything we use from nature, and includes land, water, fisheries, forests, agricultural crops, animals and minerals.

NATURAL RESOURCES CONSERVATION describes the preservation of some, and the careful use of other natural resources, to ensure that the existing natural systems are not run down beyond their ability to recover

POLLUTION results from the release of harmful substances into the environment. It is usually classified according to the polluting element – air (emissions), water (effluents) and land (dumps and disposals). The cause can be natural but is usually a result of human activity.

RESOURCE MANAGEMENT is the way in which resources are used to meet human needs. For instance, the way in which a forest area is used by a local community to provide wood for construction and fuel, fodder for

animals, food and medicines for consumption and raw materials for cottage industries.

SHIFTING CULTIVATION slash & burn
Sgriculture concerns farming different plots of land in rotation. A patch of land is cultivated until the soil loses its fertility or is covered by weeds. New sites for planting are usually cleared by burning natural vegetation.

SALINISATION is the contamination of soil by excessive quantities of dissolved salts. This is a common problem not only in coastal regions but also where extensive irrigation is used.

SUSTAINABLE DEVELOPMENT is development without destruction. In the words of the World Commission on Environment and Development it is 'meets the needs of the present without compromising the ability of future generations to meet their own needs'.

TRADITIONAL SYSTEMS of resource management are systems developed by societies, often over many generations, which contribute to sustainable use of natural resources.

The following terms relate specifically to concepts and basic techniques referred to in relation to the conservation strategies discussed in Section 4 of this manual:

BIOGAS is a mixture of 60 per cent methane and 40 per cent carbon dioxide, and is produced by anaerobic bacteria through the fermentation of organic matter inside an airtight digester. Benefits include the removal of offensive smelling waste, a supply of organic compost, and the production of a gas that can be used for cooking.

BUNDING is a well tested and simple measure to minimise topsoil loss. The earthen bund is provided with an outlet for excess water to escape, which also enhances groundwater recharge. The outlet is located where the slope is steepest or the flow of water is highest. Legumes and grasses can be sown on these bunds to make them stronger while also providing a good source of forage.

CHECKDAMS are barriers built across the flow of water in a stream in order to reduce the damage caused by high-energy water flow as well as to store part of the excess flow that occurs during the monsoon. The advantage of these structures is that they store surface water for use both during and after the monsoon, and aid in groundwater recharge of the area.

COVER CROPS are grown to provide vegetative cover for the land during a season when it would otherwise be bare. An example of this is the growing of green fodder during summer months following wheat harvesting. Cover crops protect the soil against erosion and the loss of nutrients

CROP ROTATION/MIXED CROPPING involves the growing of several crops, singly or in combination, in a regular sequence rather than growing the same crop in a field year after year. When a crop such as wheat, barley or paddy is continually grown on the same plot, the plants feed on the same the soil, depleting it of nutrients. The introduction of a deep-rooted crop allows a period of rest for the depleted layer of soil.

COMPOSTING entails the decomposition of the organic content of waste under controlled conditions, either through anaerobic or aerobic bacteria, to produce manure. Anaerobic decomposition, takes place in the absence of oxygen and is a low-cost but lengthy process, whereas aerobic decomposition is much more rapid.

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GREEN MANURE CROPS are grown solely to be ploughed back into the soil. Usually, a green manure crop is fairly deep-rooted and its growth, followed by its ploughing results in a movement of plant nutrients from the deeper layers up to the topsoil.

GROWING GRASSES AND LEGUMES IN FALLOWS helps to reduce soil erosion, while ploughing the legume back into the land greatly improves the structure and nitrogen content of the soil.

LEGUMES, such as gram and soybeans, have the capacity to fix atmospheric nitrogen in the soil (50 to 100kg per hectare per year). Mixed cropping of cereal and legumes therefore ensures maintenance of soil fertility.

MULCHING is the spreading of crop residue or other vegetation over open field surfaces. Mulching minimises splash effect of rain drops, controls weeds on the crop land, and reduces water evaporation.

PROPER CROP AND LAND MANAGEMENT ensures crop cover for a maximum possible period, and helps to prevent soil erosion by wind and by splash of rain drops. Contour ploughing on sloping lands also helps to reduce soil erosion.

STONE DYKES are stone walls built in rocky terrain where the slope of the land does not have enough soil depth to allow digging.

USE OF ANIMAL MANURES, PLANT RESIDUES AND FERTILISERS represents a return of some of the nutrients that have been removed from it. A large share of the nutrients absorbed by the growing plant are

permanently lost to the soil due to consumption by human beings and animals.

Vegetative barriers are constructed by planting *Chrysopogon* or Vetiver along the contours of a slope. They help reduce soil erosion by slowing down the erosive velocity of fast-flowing water.

VERMI-COMPOSTING is the recycling of organic waste using selective tropical species of earthworms under semi-natural conditions. It is a economical and fast method of composting