



Gender Community



Environment

Water Community



Solution Exchange for the Gender Community

Solution Exchange for the Water Community

UNDP Gender Network

Consolidated Reply

Query: Gendered Adaptation to Water Shortages and Climate Change - Experiences

Compiled by Bonani Dhar and Nitya Jacob, Resource Persons and Sarika Dhawan and Ramya Gopalan, Research Associates with support from Laura Hildebrandt, UNDP Gender Network Facilitator with editorial support from Sarah Figge

Issue Date: 26 March 2008

From [Meenakshi Kathel](#), United Nations Development Programme (UNDP), New Delhi

Posted: 15 December 2007

Dear Members,

Women are particularly vulnerable to climate change because they are more prone to the adverse impacts from climate change. Further, changes in the climate usually affect sectors that are traditionally associated with women, such as paddy cultivation, cotton and tea plantations, and fishing. Their limited adaptive capacities arising from prevailing social inequalities and ascribed social and economic roles means increased hardship for women. Women thus bear a disproportionate burden of climate change consequences such as decreased food security, shortage and access to water resources and threatened existence given their dependence on natural resources for their livelihoods.

For instance, studies show that climate change has an adverse impact on fishing, as the sea level rises and saline water enters into freshwater systems, making fishing difficult thus impacting their livelihoods. Climate change in particular exacerbates existing shortages of water. Women are largely responsible for water collection in their communities and are therefore more affected when the quality of water and /or its accessibility changes.

In the above context, we request members to share information on the following:

- Experiences on developing and implementing gender sensitive adaptation strategies to the multi-dimensional effects of climate change
- Information about organizations that are engaged in developing capacities to reduce vulnerabilities and increase adaptation of women to reduced food security, increased water shortages and diminishing livelihoods
- Examples of case studies, documents, and project briefs on gender sensitive adaptation, reducing disaster risk of women dependent on water and other natural resources for livelihoods

At the national level, UNDP India commissioned a paper; "Mainstreaming Gender in Climate Change Policies" by Dr. Jyoti Parikh (refer link for an issue brief based on the draft paper

<http://www.solutionexchange-un.net.in/gender/cr/res06120701.pdf> (Size: 123 KB) and in further response, UNDP is planning to promote gender sensitive adaptation strategies to reduce disaster/climate risk to vulnerable communities dependent on natural resources in the new country program. Your experiences would thus be extremely beneficial in contributing to UNDP's programmatic efforts and will be acknowledged.

Responses were received, with thanks, from

1. [Chaman Pincha](#), Independent researcher, Chennai
2. [Shoib Akhter](#), MCS Samastipur, Bihar
3. [Hiren Patel](#), Tribal Development Department-Government of Gujarat, Ahmedabad
4. [D. Suryakumari](#), Centre for People's Forestry, Andhra Pradesh
5. [V. K. Jyothirmaj](#), Consultant for Andhra Pradesh Forest Department, Andhra Pradesh
6. [Ruchi Kukreti](#), Rural Litigation and Entitlement Kendra (RLEK), Uttarakhand
7. [Santosh Barot](#), PRAVAH, South Gujarat Region
8. [Eric Lemetais](#), Le Havre, France
9. [Arunabha Majumder](#), Jadavpur University, Kolkata
10. [Sandeep Mukherjee](#), Rankey Infra Consultancy Pvt. Ltd, Haryana
11. [Anita Paul](#), Pan Himalayan Grassroots Development Foundation, Uttarakhand
12. [Parvinder Singh](#), Toxics Link, New Delhi
13. [Ruchi Pant](#), Governance Unit, United Nations Development Programme (UNDP), New Delhi

Further contributions are welcome!

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Summary of Responses

Examining the various consequences of adverse impacts of climate change, members stressed the need for incorporating gender dimensions of vulnerability and resilience into adaptation strategies. They recognized the fact that women though more vulnerable than men to food insecurity, water shortages and diminishing livelihoods, are also repositories of knowledge on ensuring food security, managing water sources, and helping their families survive during shortages, and provided a range of experiences using gender sensitive adaptation strategies for addressing climate change.

Respondents reflected on the direct connection between climate change and diminishing resources, and recommended creating strategies through a participatory process for effectively coping with resulting scarcity of fresh water, ground water, and flora and fauna. Broadly explaining the linkages between biodiversity conservation and community-based participatory natural resource management, members emphasized the importance of involving women, since they predominantly manage household chores, and suffer the most due to climate change. They argued that merely constructing pipes to supply water or building toilets to benefit women was not enough, governments and donors need to introduce a participatory process involving men, women, panchayats, and community based organizations. Additionally, climate change may adversely affect people's health and women are the ones who generally care for the sick, thus climatic changes could eventually lead to increased demands on women, hampering their productive role in the work force. Thus, respondents stressed the importance of looking at adaptation strategies to climate change through a gender lens and ensuring this perspective is mainstreamed into all development interventions, not just those aimed at climate change.

Discussing various experiences **developing and implementing gender sensitive adaptation strategies** on climate change; members shared various interventions that have equipped men and women with skills to combat extreme situations and traditional gender roles. These interventions included reviving or adapting traditional practices, introducing innovative and/or new practices, and efforts to strengthen communities to better adapt to climate related changes.

For example, in the bio-rich eastern Himalayan region of [Sikkim](#) women have underscored the importance of using of traditional knowledge and indigenous wisdom in the area of cultivation and use of seeds, in adaptation to and mitigation of impacts of climate changes. Moreover, in [Uttarakhand](#) women from tribal communities have categorized forests in terms of use.

Other interventions involved initiating new technologies or training women in non-traditional skills, like in [Tamil Nadu](#) where women were orientated to be conservators of water and environment and in [Uttarakhand](#) where an NGO helped set up community kitchens in schools fuelled by LPG cylinders. Additionally, in [Uttarakhand and Himachal Pradesh](#) a foundation has been involved in setting up household level biogas units as an alternative domestic energy mechanism for cooking, which reduces the drudgery and health hazards women face as well as protecting forest resources. In [West Bengal](#), a disaster preparedness programme successfully enhanced the non-traditional skills of women to deal with extreme climatic situations. Another experience mentioned came from [Chennai](#), where a project provided semi-literate, landless rural women high impact technological skills and marketing skills that strengthened their decision-making ability, these skills also helped improve gender relations within their families and the community. In [Sikkim](#), farmers developed a new variety of cardamom seed, which is better suited to the altered climatic conditions and in [Karnataka](#), a solar basket fund proved a boon for the poor and improved lives of many rural tribal women, but using revolving funds to install solar lighting systems, providing women more time to weave baskets and an increased income. Finally, in [Kerala](#) Kudumbashree women's groups of women were organized to begin organic solid waste management

A third approach discussed by respondents, focused on enhancing community capacities using a range of strategies. These included community-managed water and sanitation projects in [Tamil Nadu](#), [Rajasthan](#) and [Gujarat](#), joint/community forest management projects in [Andhra Pradesh](#) and [West Bengal](#), and sustainable environment interventions implemented through strong stakeholder involvement in [Andhra Pradesh](#).

Responding to the request for **information on organizations** that have successfully developed the capacities and adaptability of women to reduce vulnerabilities to food insecurity, water shortages, and diminishing livelihood opportunities discussants shared information on several organizations. They mentioned the NGO network PRAVAH, the Area Networking and Development Initiative, Utthan, Rural

Litigation and Entitlement Kendra, the Pan Himalayan Grassroots Development Foundation, the Centre for Mountain Dynamics, and Don Bosco.

Along with sharing experiences and organizations, respondents outlined **several suggestions** for the UNDP programme including:

- Facilitate continuous intermingling of knowledge and sharing of ideas for generation of best practices from the practitioners, scientists and policy makers, and guarantee this knowledge is not pirated and is given due intellectual property rights recognition
- Incorporate the knowledge and wisdom generated by field practitioners and local farmers, based on their observations and experimentations in the field, as part of the basis for further research and ensure all of their contributions are properly acknowledged, recognized and rewarded
- Form women environment groups (and women self-help groups) to protect forests and other natural resources and involve "Mahila Apda Prabhandan Samooh" to train a cadre of women and youth comprising of CBOs–SHGs, Mahila Mangal Dal and youth wings at the grassroots level
- Include a component to develop the capacities of men and women to reduce their vulnerabilities and increase adaptation skills to handle food insecurity, increased water shortages and diminishing livelihoods concerns
- Incorporate biodiversity conservation activities to reduce dependence wood as fuel and involve women in the process, along with harnessing solar energy is one of the good methods in energy preservation and protecting the environment
- Engage in education, training and public awareness generation on the issues of climate change and coping mechanisms
- Include developing moringa tree plantations for rural women and marketing initiatives for women of energy saving equipment, such as solar cooking, water heating and lighting

Finally, additional research on gender sensitive adaptation to climate change underscored that the vulnerability and adaptation are social issues that require more understanding on the effect of natural disasters on men and women; they also need examining in different contexts, through a participatory approach. It also showed that mitigation and adaptation policies require a gender analysis and the all members of affected communities must be part of the climate change planning and without completely involving women in planning and decision-making, the quality of adaptive measures would be limited.

Comparative Experiences

Sikkim

From [Ruchi Pant](#), Governance Unit, UNDP, New Delhi

Adaptation Mechanisms of Women Farmers, Darjeeling District

Farmers have noted various climate related changes, including temperature fluctuations, drying of water sources, erratic and uneven distribution of rainfall, and increase in the incidence of pests and diseases. In addition, changes in the pattern of bird migration have been observed which is attributed to loss of biodiversity and temperature changes. To help cope, women farmers are resorting to traditional practices of seed saving, exchanges and networks, especially for seeds of traditional rice varieties.

Protecting Traditional Rice Variations as a Coping Mechanism, Darjeeling District

The district is known for its rich diversity of traditional rice, many of still being grown by small/marginal farmers. Under the Centre for Mountain Dynamics initiative, facilitated by the IIED, UK and Ecoserve an attempt is being made to document the paddy varieties. Farmers from the district are being sensitized to the importance of traditional crop varieties, especially rice. They continue to practice saving seed from the previous crop for the next season, and also work to maintain seed purity in exchanges.

Seed Exchanges among Women Farmers as Adaptation Strategy, Kalimpong

Women farmers are resorting to the practice of exchanging seeds to procure seeds as an adaptation strategy to grow a different variety of rice growing at a lower altitude. With the temperatures rising across altitudes, rice varieties at 2,500 ft can now grow at 4,000 ft. The paddy farms in Kalimpong are terraced and spread over a large altitudinal range. Women farmers exchange seeds with other women farmers from the same village, but with a farm at a lower altitude. This strategy benefits both farmers.

Rotating Seed Variety to Address Water Shortage Problems, Pudung

In one village facing water problems for paddy rice cultivation, woman farmers decided to change the variety of seed planted each year. The farmer switched to a variety called *Adde* and alternates every 2-3 years with another variety *Dudhe*, which requires less water. The usual practice in the region is to grow a particular variety for 2-3 years and when the seeds' quality starts deteriorating, farmers exchange the seed with the seed of another variety most suited to their conditions to help them adapt to changes.

New Variety of Cardamom Helps Farmers Adopt to Climate Changes

Farmers from Hee-Bermiok village used a wild relative of food crop to breed a new variety for coping with changing climatic conditions. They picked the seed of a wild variety of cardamom to find solution to the losses being incurred in the region due to failure of cardamom crop in the past decade through a disease. Experimentation led to success and now this new variety of cardamom, being called Seremna is doing well and has got support from the state government for multiplication and sale to nearby regions.

Water Shortages Force Changes in Cultivation Practices, Kalimpong

Farmers have started to face water shortages. These farmers have been engaged in wet rice cultivation, which is becoming difficult. Farmers from the Lepcha community in Pudung village have marital relations with Lepchas in north Sikkim, who do traditional dry-land paddy cultivation using traditional seeds. Now Lepcha farmers need seeds for dry-paddy cultivation, and are trying to initiate a dialogue with farmers in the north to procure the native seeds they lost when they started wet rice cultivation.

Uttarakhand

From [Ruchi Kukreti](#), *Rural Litigation and Entitlement Kendra (RLEK), Uttarakhand*

Traditional Practices by Women Protect the Environment

RELK has been documenting the traditional innovative practices of tribal communities and forest dwellers (living in sensitive eco-zones) that protect the environment and preserve natural resources. Tribal hill women have enforced self-imposed rules to protect the natural reserves and communities have categorized forests as sacred, for grazing or for fuel gathering, and women tie Rakhis to the treetops as a process of sanctification. This practice has helped the state maintain a 64% forest cover. Read [more](#)

Community Kitchens Reduce Drudgery and Protect Forests

RLEK introduced the concept of "Women Community Kitchens" fuelled by LPG cylinders in the primary schools run by the organization in the distant un-reached villages in the districts of Uttarkashi, Tehri, Chakrata region, which are highly prone to disasters. The introduction of a modern technology mitigated the use of the traditional hearth and reduced the use of fossil fuels. Despite the difficulties, the endeavor has succeeded in initiating a process of change in these communities. Read [more](#)

Tamil Nadu

From [Arunabha Majumder](#), *Jadavpur University, Kolkata*

Empowering Women as Conservators of the Environment

Self-help groups have oriented women to protect the areas around hand pumps. The women canalize the wastewater and use it to water vegetable and fruit gardens and collect water users' fee from every

household for maintenance of the hand pumps. These women can also repair hand pumps, and have been trained in rainwater harvesting, and are now empowered to raise their voices with Panchayati members and officials from the forest conservation departments regarding environmental issues.

Village Level Management of Water Resources, Viluppuram District

The DANIDA funded Water and Sanitation project, sought to improve community-managed, sustainable water supply and sanitation systems in rural villages and strengthen the gender balance in management of resources. A major focus of the project was protecting women's health and hygiene. The project orientated men and women on having household toilets; it also worked to establish community level self-governance and management of drinking water supplies. Read [more](#)

Equipping Women to Make Collective Decisions, Chennai (from [Chaman Pincha](#), *Independent Researcher, Chennai*)

A Chennai-based organization implemented a project to impart semi-literate, landless rural women with high impact technological skills, including producing bio-fungicide, handling heavy handmade paper production machines, marketing techniques and how on collective ownership rights. A study examining the impact of the intervention revealed that equipping them with non-traditional skills and ownership rights enabled them to take collective decisions at the family and community level.

Andhra Pradesh

Mainstreaming Gender into Community Forestry Work (from [D. Suryakumari](#), *Centre for People's Forestry, Andhra Pradesh*)

Since 1999, the Centre for People's Forestry has successfully worked towards "mainstreaming gender" in Joint/Community Forest Management, looking at strategic and practical gender needs. They developed trainers' training module/manual for gender mainstreaming in community forestry (first in Telugu and then English), which is being widely used by the AP Forest Department Forest Academy. Based on their years of experience, they developed tools for mainstreaming gender in community forestry. Read [more](#)

Regeneration of Unproductive Lands, Mahaboob Nagar District (from [Hiren Patel](#), *Tribal Development Department-Government of Gujarat, Ahmedabad*)

In the village of Raghavendra Nagar, soil is degraded and depleted of moisture, making much of the land unproductive. Youth For Action (YFA) began working in the village, and identified soil erosion as the major factor for decreasing productivity. The village women formed *sangams* to take up water harvesting technique with the help of YFA. The village also took up regeneration of fallow lands and social forestry. As a result, increased cultivation and yields provided food security to the village. Read [more](#)

From [Chaman Pincha](#), *Independent Researcher, Chennai*

Green City Project Involves Women, Hyderabad

In 2002, the Green Hyderabad Environment Programme was launched aimed at sustainable development of the environment with stakeholder participation, focusing on gender and poverty alleviation. The programme is working to clean up the city's most polluted lakes, and maintain them through community involvement, particularly using women, Residents' Welfare Associations and local schools. When done the Hyderabad Urban Development Authority's green area limits will increase from 16% to 26%. Read [more](#)

West Bengal

Community Participation Helps Address Deforestation Problems, Arabari, Midnapore District (from [Arunabha Majumder](#), *Jadavpur University, Kolkata*)

In 1972, to address deforestation the state government introduced a joint forestry management efforts have benefited local communities in a number of ways- energy savings through solar cooking, water heating/lighting, popularizing and marketing the equipment used for solar cooking, etc. The plan involved

villagers (as part of “forest protection committees”) in protecting Sal trees and associated NTFP. It was so successful the approach was expanded it to the south-west of the state. Read [more](#)

Community Disaster Preparedness Efforts Provide Women Skill Development Opportunities

(from [Chaman Pincha](#), Independent Researcher, Chennai)

After the September 2000 floods, which affected over 21 million people, the Community-Based Disaster Preparedness (CBDP) program was started. Using Participatory Learning and Action tools, communities prepared an action plan. In over 1,500 villages, CBDP action plans were prepared and approved, and women acquired skills in swimming, rowing boats, making emergency boats, and temporary shelters. During the high flood season, communities completed preparations outlined in the plans. Read [more](#)

Gujarat

Educating Communities on Water Needs with Gendered Focus *(from [Santosh Barot](#), PRAVAH, Southern Gujarat)*

PRAVAH, a state level advocacy network of more than 150 organizations is implementing interventions on related to drinking water and sanitation with gender focus. In their interventions, they educated the local communities, including women by organizing capacity-building workshops with member organizations and local community-based organizations, with an emphasis on promoting gender equality.

Rajasthan

Protecting Groundwater Utilization, Jaipur *(from [Sandeep Mukherjee](#), Rankey Infra Consultancy Pvt. Ltd, Haryana)*

The city has large number of hotels to cater to tourist population and they use ground water extensively, besides domestic and other commercial uses. The transportation of water from nearby Bisalpur is costlier than the ground water. To help lower extensive use of groundwater and protect the ground water in Jaipur, the Bisalpur project educated people to understand the cost of saving the environment- protecting the ground water in the Jaipur region.

Uttarakhand and Himachal Pradesh

Community Kitchens using Biogas Units *(from [Anita Paul](#), Pan Himalayan Grassroots Development Foundation, Uttarakhand)*

Pan Himalayan Grassroots Development Foundation has helped install household biogas units as an alternate domestic energy mechanism for cooking in almost 2,000 homes. Biogas is methane and burning it off leads to significant reduction in one of the four obnoxious gases responsible for global warming. Additionally, this initiative has reduced dependency on scarce forest resources and strengthened the community through women inclusive approach. Read [more](#)

Related Resources

Recommended Documentation

From [Chaman Pincha](#), Independent Researcher, Chennai

CM Launches Eco Project

Article; Times of India; April 9, 2002

Available at <http://timesofindia.indiatimes.com/articleshow/6307733.cms>

Outlines the City government's plans introduce an environmental program to improve the green coverage in the city, with an emphasis on working with communities and women in the process

Note on Green Hyderabad Environment Programme (2002-2006)

Note; Hyderabad Urban Development Authority

Available at <http://www.hudahyd.org/inside/document/ghep.doc> (Doc Size: 52 KB)

Intervention involving the community particularly women, Residents' Welfare Associations and schools in cleaning up the most polluted lakes, and maintaining them

India- Community-Based Disaster Preparedness: A Life Saving Strategy

Extracts from Budget Speech of Hon'ble Minister of State-in-charge Home (Civil Defence) Department, GOWB; March 2005

Available at

[http://www.unicef.org/evaluation/files/fa5_india_communitybased_disaster_preparedness\(1\).doc](http://www.unicef.org/evaluation/files/fa5_india_communitybased_disaster_preparedness(1).doc) (Doc Size: 36 KB)

Details West Bengal's CBDP program which has integrated women's strategic gender interests in the project areas; acquiring skills of swimming, making emergency boats

Sustaining Livelihoods through Watershed Initiatives: A Success Story from Hyderabad (from [Hiren Patel](#), Tribal Development Department-Government of Gujarat, Ahmedabad)

Success Stories; SDNP Node on Environmentally Sound Appropriate Technologies and Sustainable Livelihoods; Catalyst; October 2004

Available at <http://www.dainet.org/sdnp/success.htm>

Discusses how village women formed into women sangams decided to take up water harvesting techniques with the help of Youth For Action (YFA)

Gender, Water and Sanitation: A Policy Brief (from [Santosh Barot](#), PRAVAH, South Gujarat Region)

Policy Brief; Inter-agency Task Force on Gender and Water (GWTF); June 2006

Available at <http://www.unwater.org/downloads/unwpolbrief230606.pdf> (PDF Size: 801 KB)

Illustrates the interlinkages between gender equality and women's empowerment and access to water and sanitation emphasising the role of women in watsan management

Women's Manifesto on Climate Change (from [Parvinder Singh](#), Toxics Link, New Delhi)

Manifest; Women's Environmental Network and National Federation of Women's Institutes; 15 May 2007

Available at http://www.wen.org.uk/general_pages/reports/manifesto.pdf (PDF Size: 102 KB)

Women in UK emphasise the key role they play in tackling climate change as consumers, educators and 'change agents' in homes

Joint Forest Management in West Bengal (from [Arunabha Majumder](#), Jadavpur University, Kolkata)

Article; by B. K. Bardhan Roy; The People's Commission on Environment and Development India

Available at http://www.pcedindia.com/peoplescomm/forest_4a.htm

Article on the West Bengal government's successful plan, which used "village forest protection committees" to address major deforestation problems in the south-west region of the state

DANIDA WS Project: Water and Sanitation Tamil Nadu, Assisted by Danida (from [Arunabha Majumder](#), Jadavpur University, Kolkata)

Note; District Collectorate, Viluppuram District, Tamil Nadu

Available at <http://www.viluppuram.tn.nic.in/danida.htm>

Description of Water and Sanitation project focusing on rural drinking water and household and school latrines through improved village level management, with emphasis on gender inclusion

From [Laura Hildebrandt](#), Facilitator, UNDP Gender Network

Gender and Energy for Sustainable Development: A Toolkit and Resource Guide

Publication; UNDP; 2004

Available at <http://www.undp.org/energy/gendereng.htm>

Provides tools to help development practitioners bring about better development and energy outcomes that are gender specific and that particularly address needs of women

Mainstreaming Gender in Water Management

Resource Guide; UNDP; February 2003

Available at http://www.undp.org/water/docs/resource_guide.pdf (PDF 962 KB)

Acts as a guide capturing tools, materials, case studies, best practices to bring a gender perspective to water sector capacity building and mainstreaming gender in project cycle

From [Sarika Dhawan](#), Research Associate

Gender Aspects of Climate Change

Paper; ENERGIA International Network on Gender and Sustainable Energy, LIFE/Women in Europe for a Common Future (LIFE/WEFCF), IUCN-The World Conservation Union, and the Women's Environment and Development Organization (WEDO)

Available at http://www.iucn.org/en/news/archive/2007/03/7_gender_climate_change.pdf (PDF, Size: 105 KB)

Paper discusses various gender aspects related to climate change and shares lessons learnt on gender sensitive methods in climate change context.

People Centered Climate Change Adaptation: Integrating Gender Issues

Brief; by Sibyl Nelson and Yianna Lambrou; Food and Agriculture Organization of United Nations, Gender, Equity and Rural Employment Division, Economic and Social Development Department, Rome, Italy

Available at

<http://www.fao.org/clim/docs/CDROM/docs/Gender%20and%20Health/Climate%20Change%20Adaptation%20and%20Gender%20brief.pdf> (PDF, Size: 232 KB)

Brief gives recommendations on integrating gender into climate change, adaptation and resilience into policies and activities.

Gender and Climate Change

Article; Genanet, Life E V, WECF; February 2006

Available at http://www.wecf.de/cms/download/2006/g+cc_article3.9.pdf (PDF, Size: 165 KB)

Document highlights issues, conclusions and suggested actions for addressing gender aspects of sustainable development within context of Kyoto Protocol

From [Ramya Gopalan](#), Research Associate

Is Climate Change a Gender Issue?

Story; by Janice Duddy; The Association for Women's Rights in Development (AWID); 2005

Available at <http://www.awid.org/go.php?stid=862>

Looks at the gendered impact of climate change, citing the experiences of Inuit people, living in North Canada in facing the first hand impact of climate change first hand

Gender Equality and Climate Change: Why Consider Gender Equality when taking Action on Climate Change?

Paper; Canadian International Development Agency (CIDA); Quebec

Available at [http://www.acdi-cida.gc.ca/INET/IMAGES.NSF/vLUImages/Climate%20change3/\\$file/Gender-2.pdf](http://www.acdi-cida.gc.ca/INET/IMAGES.NSF/vLUImages/Climate%20change3/$file/Gender-2.pdf) (PDF Size: 190 KB)

Identifies gender-specific vulnerabilities and responses to climate change and provides gender equality opportunities in climate change policy and programming

Gender, Development and Climate Change

Book; by Rachel Masika; Oxfam; 2002; Permission Required: Yes. Paid publication; abstract, reviews and ordering details

Available at

http://books.google.com/books?id=unWB89s0QMAC&dq=climate+change+gender&source=gbs_summary_s&cad=0

Considers the gendered dimensions of climate change by examining potential impacts of environmental degradation and change on vulnerable groups at all levels

Gender and Climate Change - Inputs from Women to Governments

Paper; genanet, LIFE e.V. and WECF; February 2006

Available at http://www.genanet.de/fileadmin/downloads/themen/g_cc_article3.9.pdf (PDF Size: 124 KB)

Contains submissions for Article 3.9; consideration of subsequent commitments for Annex I Parties of Kyoto Protocol with examples of gender aspects of climate change

Women Bear the Brunt of Climate Change

Article; Sify News; 8 December 2007

Available at <http://sify.com/news/fullstory.php?id=14572970>

Discusses the lack of gender perspectives in the current climate process which not only violates women's human rights but also leads to inefficiency of climate instruments

Mainstreaming Gender into the Climate Change Regime

Paper; COP10; Buenos Aires; 14 December 2004

Available at <http://www.gencc.interconnection.org/Gender&CCCOP10.pdf> (PDF Size: 112 KB)

Summarises the issues as discussed at two gender focused side events during COP10, one focusing specifically on gendered adaptation and one on UNFCCC process in general

Gender and Climate Change in the North: Issues, Entry Points and Strategies for the Post-2012 Process

Paper; by Minu Hemmati; Genanet; Germany; May 2005

Available at

http://www.genderandenvironment.org/admin/admin_biblioteca/documentos/Genderkyotopost.pdf (PDF Size: 141 KB)

Focuses on gender aspects of climate change for industrialized countries in the North, looks at global policy-making processes/bodies to identify entry and collaboration points

Gender Mainstreaming in Environment and Energy: Training Manual - Part 1

Training Materials; UNDP; UNDP BDP Environment and Energy Group; 2007

Available at

<http://www.energyandenvironment.undp.org/undp/index.cfm?module=Library&page=Document&DocumentID=6514>

Intended to build greater understanding among UNDP staff and partners concerning the essential gender dimensions involved in ensuring environmental and energy sustainability

Gender Equality and Adaptation

Study; by Ariana Araujo, *et al.*; Women's Environment and Development Organization (WEDO) and IUCN

Available at

http://www.genderandenvironment.org/admin/admin_biblioteca/documentos/Factsheet%20Adaptation.pdf (PDF Size: 968 KB)

Provides evidence that gender differences in deaths from natural disasters and climate change vulnerabilities are directly linked to women's economic and social rights

Gender and Climate Change - A Forgotten Issue?

Article; by Ulrike Röhr; Tiempo Climate Newswatch

Available at <http://www.cru.uea.ac.uk/tiempo/newswatch/comment050711.htm>

Discusses the historical lapse in assimilating gender issues in the climate change debate and the urgent need to undertake research and analysis on this issue

Climate Change: Focussing on How the Vulnerable Can Cope

Article; FAO Newsroom; Rome; March 2007

Available at <http://www.fao.org/newsroom/en/news/2007/1000724/index.html>

Examines gender and equity aspects of climate change, exploring how men and women farmers in developing countries are differently affected and impacted by climate change

Recommended Organizations and Programmes

Utthan, Gujarat (from [Hiren Patel](#), Tribal Development Department-Government of Gujarat, Ahmedabad)

36, Chitrakut Twins, Nehru Park, Vastrapur, Ahmedabad 380015 Gujarat; Tel: +91-79-26751023/26732926; utthan@icenet.net; <http://www.utthangujarat.org/>

Focuses on interventions in gender empowerment and contributes to gender mainstreaming in water

Centre for People's Forestry, Andhra Pradesh (from [D.Suryakumari](#))

12-13-483/39, First Floor, Street No. 14, Lane 6, Nagarjunanagar, Tarnaka, Secunderabad 500017 Andhra Pradesh; Tel./Fax: +91 40 2715 4484/94; info@cpf.in; <http://www.cpf.in/>

Works towards "Mainstreaming Gender in Joint/Community Forest Management" in Andhra Pradesh addressing both strategic and practical gender needs since 1999.

Panchayati Rule and Gender Awareness Training Institute (PRAGATI), Uttarakhand (from [Ruchi Kukreti](#), Rural Litigation and Entitlement Kendra (RLEK), Uttarakhand)

68/1, Suryalok Colony, Rajpur Road, Dehradun 248001; Tel: +91-135-2745539/2746071; Fax: +91-135-2741931/2656881; pragati_theprocess@rediffmail.com; <http://www.rlek.org/pragati/index.html>

Utilises Rights Based Approach to environment protection issues, through community mobilization especially marginalized women and children and mitigation strategies

Pan Himalayan Grassroots Development Foundation, Uttarakhand (from [Anita Paul](#))

Post Bag # 3, Ranikhet 263 645, Almora District, Kumaon, Uttarakhand; Tel: +91-5966-222298/221654; Fax: +91-5966-221516; kpaul@grassrootsindia.com;

<http://www.grassrootsindia.com/main.asp?top=toprenew&left=leftpanel&right=rightrenewenergy&body=renewableenergy>; Contact Anita Paul; Community Coordinator; apaul@grassrootsindia.com

Installed household biogas units as an alternate domestic energy mechanism for cooking, thus reducing drudgery for women and children in fetching firewood from distant sources

From [Arunabha Majumder](#), Jadavpur University, Kolkata

Kudumbashree, Kerala

State Poverty Eradication Mission, II Floor, TRIDA Rehabilitation Bldg., Chalakuzhi Rd, Medical College PO., Thiruvananthapuram 695511 Kerala; Tel: +91-471-2554714/2554715/2554716; Fax: +91-471-2554717; kudumbashree@gmail.com; <http://www.kudumbashree.org/>

Involves "Kudumbashree" groups of women participating in solid waste management and converting organic wastes into composting in urban areas in Kerala

DANIDA WS Project, Tamil Nadu

Office of the District Task Force, 2nd Floor, District Collectorate, Tiruchy Trunk Road, Villupuram 605602 Tamil Nadu; Tel: +91-4146-224703/251194; Fax: +91-4146-223357;

<http://www.viluppuram.tn.nic.in/danida.htm> Contact A. Devaraj; District Coordinator/DANIDA Sr. Advisor

Oriented men and women of having household toilets, adopting a gender sensitive intervention and expenditure for protecting women's health and hygiene as a major focus

Rural Litigation and Entitlement Kendra (RLEK), Uttarakhand (from [Ruchi Kukreti](#))

68/1, Surya Lok Colony, Rajpur Road, Dehradun 248001 Uttarakhand; Tel: +91-135-2746071/5539; rlek@sancharnet.in; <http://www.rlek.org/comkitchen.html>

Works in five states on conservation and environmental sustainability, implementing a community kitchen project to help communities cope with climate related issues

Sustainable Community Development Programme (Nepal Capacity 21), Nepal (from [Shoib Akhter](#), MCS Samastipur, Bihar)

Singha Durbar, Kathmandu, Nepal; Tel: +977-1-4241188; hbg@wlink.com.np; <http://www.scdp.org.np/>

Works with National Planning Commission (NPC), developing sustainable community development approaches and strategies in six of the program districts and nationally

Recommended Communities and Networks

Gendercc - Women for Climate Justice (from [Ramya Gopalan](#), Research Associate)

<http://www.gendercc.net/metanavigation/home.html>

Global network of women and gender activists, and gender scholars from all world regions working for gender and climate justice

Recommended Portals and Information Bases

From [Ramya Gopalan](#), Research Associate

Gender and Climate Change

<http://www.gencc.interconnection.org/>

Provides a discussion list, publications, links and other useful information with the aim to provide a platform for people interested and to make the issue more accessible

Gender and Climate Change Resources, Women's Environment and Development Organization (WEDO), New York

<http://www.wedo.org/campaigns.aspx?mode=plantendorsements>

Provides essential background information for the link between gender and climate change issues, including mitigation, adaptation, and critical research

Related Consolidated Replies

Climate Change Adaptation in Water, Agriculture and Coastal Areas, from Preeti Soni, Energy and Environment Division, UNDP, New Delhi (Experiences). Water Community and Food and Nutrition Security Community, Solution Exchange India. Issued 31 December 2007. Available at <http://www.solutionexchange-un.net.in/environment/cr-public/cr-se-wes-food-27110701-public.pdf> (PDF, Size: 148 KB)

Discusses the larger context of climate change, shares environmental impact findings and mentions experiences with climate resilient water, agriculture and coastal management practices

Climate Change and Food Security, from Arun Balamatti, Agriculture, Man and Ecology (AME) Foundation, Bangalore (Experiences). Food and Nutrition Security Community, Solution Exchange India. Issued 30 June 2007. Available at <http://www.solutionexchange-un.net.in/food/cr-public/cr-se-food-15060701-public.pdf> (PDF, Size: 161.1 KB)

Explains the phenomena of climate change, reasons for its occurrence, its implications on environment and agriculture productivity along with various adaptation and mitigation strategies

Tsunami Response: Restoring Sustainable Livelihoods, from Alvaro Rodriguez, BDP, UNDP, New York (Discussion). Gender, Energy and Environment, Crisis Prevention and Recovery, Poverty Reduction, Democratic Governance, and SEMFIN UNDP Networks

Issued 21 March 2005. Permission Required: Yes, only for members of the Networks. To request membership contact gender-net@groups.undp.org; Available at:

http://stone.undp.org/system2/comp_stage/util/message.cfm?messageid=JiNAKy8kTUcrCg==&src=204576

Discusses training and entrepreneurship skills in a post-disaster context particularly for vulnerable groups; UNDP's role in supporting MFIs; and the need for grants vs. loans

Tsunami Recovery: Integrated or Area Based Programmes, from Devanand Ramiah, UNDP Sri Lanka (Experiences). Crisis Prevention and Recovery, Poverty Reduction, Democratic Governance, Energy and Environment, and Gender UNDP Networks,

Issued 14 February 2005. Permission Required: Yes, only for members of the Networks. To request membership contact gender-net@groups.undp.org; Available at:

http://stone.undp.org/system2/comp_stage/util/message.cfm?messageid=JiNAKyQkTUcpCg==&src=204576

Provides examples/learning of integrated/area based programmes to provide inputs for formulating the same on economic recovery, governance and environment for UNDP, SL

Responses in Full

Chaman Pincha, Independent Researcher, Chennai

The query and the attached paper provide an occasion for critical reflections on the process of gender mainstreaming. Gender mainstreaming in any area including climate change needs to be both looking into the gendered vulnerabilities and the factors that would reduce them. This naturally involves working with both women and men. While practical gender needs of women, such as use of biomass and effective use of natural resources need to be encouraged, women's strategic gender interests should not be lost sight of.

In fact, conscious emphasis needs to be placed on equipping women with non-traditional skills, for example swimming; technological knowledge, enhanced access to and use of information, and building up their leadership qualities in any effort to mainstream gender (please refer to the introductory section of the attached brief). Wherever it has happened, women are much more confident and aware and sometimes collectively work towards bringing about transformation in the gender roles and relations. One example is West Bengal's CBDP program, which has integrated women's strategic gender interests: women in the project areas have acquired skills of swimming, rowing boats, making emergency boats, and temporary shelters.

As well, a very conscious effort needs to be taken up to intensively work on sensitizing men towards sharing the household chores with women. Yes, women are disproportionately burdened due to the socially constructed gender roles: should gender mainstreaming stop at easing their work burden by meeting their practical needs which does not challenge the status-quo or move a step further to bring about institutional changes by integrating in each program components sensitization of men to involve them in sharing the responsibility of household and care work?

Gender mainstreaming, in fact, happens when women's strategic interests are met and their practical needs too are met in such a way that they fulfill women's strategic interests. It's not impossible. In one of the project areas of an organization in Chennai, the interventions specifically imparts semi literate,

landless rural women high impact technological skills such as producing bio-fungicide, handling heavy machines for handmade paper production, skills in effective marketing, managing a weather station etc., and collective ownership of land and production units. The study which was taken up to track the transformation in women's lives due to the above mentioned interventions revealed that equipping them with non traditional skills and ownership rights had made them take collective decisions on pro-women change in the prevailing gender relations at both family and community level. This process needs to be strengthened in any agenda for mainstreaming gender.

However, conscious efforts have to be made in terms of making gender inclusive strategies to ensure that the development interventions do affect climate change positively. In this connection, a significant intervention has been made by the Green Hyderabad Environment Project in Hyderabad, Andhra Pradesh, with funding assistance from the Netherlands government, in cleaning up the most polluted lakes, and maintaining them with full community involvement, particularly women and Residents' Welfare Associations and schools in the vicinity.

The other significant example in Hyderabad is the example of plantation program; with the involvement of the forestry department with women self-help groups in growing plants and transplanting them in rainy season. This is a unique example of women's economic benefit linked to environmental protection. Interestingly, this is also an example of translating the Andhra Government's Vision 2020 document to reality.

Shoib Akhter, MCS Samastipur, Bihar

I am highlighting some of the points regarding this may be it would help.

The first phase of Sustainable Community Development Program (SCDP) supported sustainable poverty alleviation and environmental management through community mobilization. The second phase of SCDP will promote adaptation, on a national scale; of the effective approaches developed during phase one.

This will be done through: (a) expanding the program to a more national scope, and (b) developing national capacities for adapting the SCDP approach. Using criteria defined in phase one, district-level NGO/Service Organizations (SO) will be selected to implement the program under sub-contract in each "new district".

The NGOs/SO's will support the communities, ensuring communities' access to a wide range of expertise and technology. Adaptation of the SCDP approach by other communities and NGOs will also be promoted. The SCDP's partnership with a network of the country's NGOs -the Sustainable Development Network (SDN) - will be the first for a national capacity-building service to be developed in support of sustainable community development.

Finally, the SCDP will continue working closely with the national executing agency, the National Planning Commission (NPC), developing clear sustainable community development approach and strategies in all six of the program districts, as well as at the national level.

Hiren Patel, Tribal Development Department-Government of Gujarat, Ahmedabad

As per my experience in Gujarat, I would like to share the name of the organization who will contribute to gender mainstreaming in water and Right to Food. Please go through the following two links for the information: <http://www.utthangujarat.org/>; <http://www.dainet.org/sdnp/success.htm>, Area Networking and Development Initiative (ANADI), Gujarat organization.

D. Suryakumari, Centre for People's Forestry, Andhra Pradesh

I would like to inform that our organization - Centre for People's Forestry work with considerable success towards "mainstreaming gender in Joint/Community Forest Management" in Andhra Pradesh. Both strategic and practical gender needs have been addressed during the period from 1999 to till date. We have been involved in developing trainers' training module and manual for gender mainstreaming in community forestry, which is being widely used by the Andhra Pradesh Forest Academy of AP Forest Department. It was first developed in the language Telugu and has now been translated in English. We have also developed the tools for mainstreaming gender in community forestry using the past eight years experience.

V. K. Jyothirmaj, Consultant for Andhra Pradesh Forest Department, Andhra Pradesh

I am working for the Andhra Pradesh Forest Department as a consultant -Research for Marketing of Non-Timber Forest Produce and training manager for technology dissemination center at Visakhapatnam circle office and have been a consultant previously for dryland developmental issues. I would like to know whether the project, which UNDP is planning to promote, will also target Andhra Pradesh interventions on drought issues. Do inform us about any conference or workshop/seminar/meetings in this context.

Ruchi Kukreti, Rural Litigation and Entitlement Kendra (RLEK), Uttarakhand

I wish to share the following information under the Query - "Gendered Adaptation to Water Shortages and Climate Change - Experiences"

Developing and implementing gender sensitive adaptation strategies to the multi dimensional effects of climate change. Women represent the majority of the world's poor, bear the brunt of natural disasters and are more than proportionally dependent on natural resources that are threatened. Hence, it becomes imperative to raise the awareness level of the women to stimulate motivation and develop a quick response mechanism to combat the adverse impacts of Climate Change; Rural Litigation and Entitlement Kendra (RLEK) has an All Women Organization called PRAGATI (Panchayati Rule and Gender Awareness Training Institute), which works for Gender Equity in Local Self Governance. PRAGATI has helped women renegotiate their existence on an equitable basis

Our experience and strategy has proved that a Rights Based Approach has to be adopted that shifts focus to environment protection issues, community mobilization especially the marginalized women and children and mitigation strategies. The strategic issues to be addressed that apart from educating the public about Climate Change and preparedness but also endeavour towards assisting communities to create a safer environment for the future; Elected Women Functionaries have a large role to play and are grassroots representatives, instrumental in redressal of Climate Change.

- Community Practitioners comprising of women, relate and respond with greater zeal to the community women;
- Formation of Women Environment Groups to protect forests is a big step on the road to curb Climate Change;
- Mobilizing and forming a "Mahila Apda Prabhandan Samooh" to train a cadre of women and youth comprising of CBOs-SHG, Mahila Mangal Dal and Youth wings at the Grassroots level, with a Gender Perspective, has created an essential support mechanism.
- Developing capacities to reduce vulnerabilities and increase adaptation of women to reduce food in-security, increased water shortages and diminishing livelihoods
- Adaptation of women is a necessary strategy to reduce vulnerability and complement any climate change mitigation effort. Women in most communities hold reliable knowledge about promoting food sovereignty, preserving threatened food supplies, managing and maintaining water sources, and ensuring their families' survival in the face of shortages. To harness the largely untapped

knowledge and expertise, the tools for adaptation must be practical, appropriate, feasible and easy to implement.

- Dependence on fuel wood has led to excessive deforestation
- Biodiversity conservation – reduced dependence on forest for fuel wood and increase in forest cover through Organic Farming and Nursery Development, with the help of women, will improve the condition of forests;
- Lack of provision for gasoline or kerosene as alternative cooking fuel
- Community Kitchen will enable pooling of resources and best use of cooking fuel and improving the quality of life by reducing the harmful effects of the smoke emitted by the fuel wood, improving the air that millions of poor women and children breathe;
- Harnessing Solar Energy is one of the good methods in energy preservation and protecting the environment;
- Participatory activities to develop Community-based forest and Natural Resource Management plans to reduce deforestation –This concept aims at conservation of the unique Himalayan ecological system
- A forestation will lead to water retention, prevention of landslides and erosion a common feature in the valley;
- Increasing the resilience and coping capacity of communities, especially women and the marginalized;
- Education, training and public awareness;
- Sustainable livelihoods practices;
- Cooperative efforts -Women Self Help Groups, when organized through a participatory process are very effective in coping with extreme events;

I present below some of the examples of case studies, documents, and project briefs on gender sensitive adaptation, reducing disaster risk of women dependent on water and other natural resources for livelihoods:

RELK over the years has been instrumental in voicing its concerns and had been documenting the Traditional Innovative Practices in protecting the environment and preserving natural resources. A publication “Traditional Wisdom in Natural Resource Management – the only way to Conserve” a well documented and researched work on the age old practices of Preservation and Conservation by the Tribals and Forest Dwellers of Uttarakhand residing in the most sensitive Eco Zone, which defies the belief that Fence and Protection Policies of the Government is the only and only way of Protecting Natural Resources.

The state with almost 70% of its populace partially or fully dependant on the forest today still has 64% forest cover. It has only been possible with the larger role played by the women in the hills where they draw sustenance from and yet sustaining the ecology, the book reflects on how tribal hill women communities have enforced self-imposed rules on protecting the natural reserves. The community has categorized forest as either sacred, grazing or fuel gathering, women tying of Rakhis to the treetop recognize process of sanctification, the Maiti Ritual.

RELK introduced the concept of Women Community Kitchens fuelled by LPG cylinders in the primary schools run by the organization in the far-flung un-reached villages in the districts of Uttarkashi, Tehri, Chakrata region in Uttarakhand which are highly prone to Disasters This mitigated the use of the traditional hearth, choosing modern technology, and reducing the use of fossil. Despite the difficulties, the endeavour has succeeded in initiating a process of change in these communities. All these are examples where women have and are taking a lead but need a strong support system with a Women Inclusive Approach to address Climate Change.

I would like to inform that our organization - PRAVAH. PRAVAH is a state level Advocacy network regarding issue of drinking water and sanitation. More than 150 organizations and individuals are our member. We are working in Gujarat (India). We had a gender focus intervention to resolving water needs aiming to reach out to women's practical and strategic needs from 1994 till this date. In educating the community as well as women, we had been organizing capacity building workshops for our member organizations and Community Based Organizations, with a focus on promoting gender equality. For more information, please click on the web link below: www.pravah-gujarat.org

However, coming to the point in the query is the gendered adaptations to water in climate change. While water is one of the issues, I will focus on water as we work in this area more intensely. In our experience, women need to be guided to manage water, one of the precious resources. I am enclosing the following links, which are valuable documents focusing on gendered approach to water management: <http://www.unwater.org/downloads/unwpolbrief230606.pdf> and http://www.freshwateraction.net/fan/web/w/www_56_en.aspx

[Eric LEMETAIS, Le Havre, France](#)

We have been very happy to read your message. We are planting moringa trees, as this tree offers a wide range of incredible properties. By planting moringa trees, you will benefit of the carbon fund. This tree is very resistant to drought. Its leaves are good for fighting malnutrition. The seeds can provide safe drinking water at rural household levels. We can produce an excellent honey that we can commercialize, and, a natural fertilizer.

Moringa tree will offer an environment protection and a sustainable income for the rural women. This could be one of examples of Gendered Adaptation of fighting Climate Change in a sustainable manner. It is benefiting to the rural poor and particularly women. We are at your disposal for any expertise or technical assistance

[Arunabha Majumder, Jadavpur University, Kolkata](#)

Women in rural areas can play a pivotal role on adaptation to water shortage and climate change. They can be oriented to the following areas for sustainable development: Recycling and reuse of water. I would like to give an example of women in Tamil Nadu, where water is a very precious commodity. The women have been oriented through self-help groups in villages, under the DANIDA project to; (i) protect the areas around the hand pumps with vegetable or flower gardens; (ii) not allow washing etc. near the hand pumps so that the waste water can be only canalized to the garden areas and do not create waste water pools nearby, giving rise to mosquito breeding etc. The women collect water users' fee from every household and use the amount for maintenance of the hand pumps.

Women have also been trained under the project to repair the hand pumps; Rain water harvesting for domestic use (partial) and recharging; Influence Panchayati Raj Institution (PRI) for catchments area development, installation of rain water harvesting facilities with participation of women groups; Planning and building of harvesting structures; minimization of unaccounted for water (UFW) in agriculture etc. by training men and women farmers in efficient use of water, timely water application and managing the run off water; Development and conservation of forests, spreading more greeneries and plantations, with the help of youth groups and women in the villages.

Joint forestry management in Arabari, in West Bengal is an example, where, people have benefited through forest management efforts of the Government; Energy savings through solar cooking, water heating and lighting etc., by popularizing and marketing the equipment and training women to use them effectively; Converting organic solid waste to compost.

One of the examples of involvement of "Kudumbashree" groups of women participating in solid waste management and converting organic wastes in to composting in urban areas in Kerala; Bio-Farming and utilizing bio composting. This would be more popular if the marketing links are established for organic products like rice and vegetables; Organizing awareness and motivation camps; Promotion of use of toilets.

This can also be seen as one of the good examples of DANIDA funded Water and Sanitation project, where men and women have been given orientation of having toilets at home-a gender sensitive intervention and expenditure for protecting women's health and hygiene as a major focus of the project, in Tamil Nadu. The NGOs and the Panchayats need to be more active in taking up the campaign and ensuring women's participation and benefits.

Sandeep Mukherjee, Rankey Infra Consultancy Pvt. Ltd, Haryana

To [Dr. Majumdar's](#) excellent reply, would like to add a few points:

- Climate change means fewer resources at hand, highly variant weather pattern and more and more known processes at stake, like changing patterns of rainwater dependant agriculture;
- In order to cope up with the changing weather patterns & more frequent natural calamities, resources at hand like limited arable land, limited groundwater or fresh water to drink & irrigate, limited forest resources, need to be put on sustainable use and all kinds of exploitation need to be eliminated;
- Alternative policies like, rainwater harvesting and groundwater recharge though it is being made mandatory in many projects, there had been lapses in not adhering to environmental protection measures. While we should discuss the environmental Policy issues separately and delve deep into the strengths and weaknesses and recommend policy change as well as strict implementation measures, there are good examples of Noida & Chennai Metropolitan Development Authority (CMDA) as they have made it mandatory to use plots measuring more than 300 sq.m to go for Rain Water Harvesting and Ground water Recharge;
- The problem, however, lies in not being able to cover semi-urban areas, where people's awareness levels are low, with areas and even cities relying on groundwater. These areas need serious interventions involving a cost on the part of both the Government and the people as they must be able to understand that there is a cost to environmental protection and sustainable use of resources. The example of Bisalpur project, near Jaipur City in Rajasthan, to lower extensive use of ground water and protect the ground water in the city of Jaipur. The city has large number of hotels to cater to tourist population and they use ground water extensively, besides domestic and other commercial uses. The transportation of water from Bisalpur is costlier than the ground water and here the people must understand the cost of saving the environment, in this case, protecting the ground water in Jaipur region;
- Woman, as managers of the household daily activities, suffer in fetching water from a distance place, walking and spending time. The same is applicable to the sanitation as well. Where as piped water supply and creation of toilets in the houses and nearby areas can take off this burden. These are some gender sensitive decisions both on the part of the Governments, donors and the individual householders;
- Solar cookers & solar lights are good options and Ministry of Environment and Forests has made it mandatory for new construction projects, as part of the strategies to mobilize non-conventional energy use. There are gaps in Financing and implementation of solar energy projects, besides lack of marketing and maintenance support, which should be locally available. These linkages are crucial and need to be established to ensure, investments once made on such infrastructure, are sustainable and people friendly;
- More and more forestlands are converted to agricultural lands each year and these are getting converted to residential lands. Populations are under distress due to loss of pasture land and loss of livelihood. Loss of pasture and grazing land has resulted in adding the burden mostly on women to bring fodder for animals from a distance. This is in addition to their burden on bringing water from a

distance. Environmental protection at village level, in fact at micro level is required. All Panchayats should be able to demonstrate such community development projects with larger participation;

- Also women, need to be trained on alternative technologies, environmental protection measures and sustainable use of natural resources.
-

[Anita Paul](#), Pan Himalayan Grassroots Development Foundation, Uttarakhand

We have been involved with installation of household biogas units as an alternate domestic energy mechanism for cooking. So far, there are almost 2,000 homes in the states of Uttarakhand and Himachal Pradesh using this appropriate technology. Biogas units not only reduce the drudgery for women and children in terms of head loading firewood from distant sources but also reduce the biotic pressure on scarce forest resources.

We do not think LPG to be a good alternate source of energy as distribution of cylinders lead to consumption of significant amounts of fossil fuels. Besides, the subsidy on this technology is already Rs. 100 crores per day.

Solar energy devices do not work in favor of rural folks as basic food would be cooked only post noon and quite often, if not mostly, folks need to eat much earlier in the day.

Biogas is actually methane and burning it off leads to significant reduction in one of the four obnoxious gases responsible for global warming. It is a pity that in the land of Gandhi, millions of farmers burn cow dung cakes as domestic cooking energy!! Besides being a rather primitive and poor source of energy (and smoky) this leads to reduction and complete wastage of an essential natural resource which was traditionally used as bio-fertilizer, and makes the farmers compulsive consumers of harmful chemical fertilizers.

We would strongly recommend the scientific and professional development groups to view Biogas Units as an ideal alternate to LPG and Kerosene as domestic cooking energy for rural India. Of course, the spread of this sustainable appropriate technology would require the creation of an appropriate organizational framework, which could be responsible for its swift spread across the nation. Mostly, biogas technology has earned a bad reputation due to the fact that this technology is being kept within the folds of the agricultural departments and block development offices which do not have the capacity of promoting an appropriate technology.

We hope this information is useful to those concerned with global warming and the adverse effects of climate change on all of us, including women. However, women will be most benefited by this technology transfer and facilitation of efficient energy use, apart from contributions to reduction in spreading pollutants.

[Parvinder Singh](#), Toxics Link, New Delhi

A gendered perspective to environmental equity is of great importance, as any vision that forges environmental safety and security will fall short without addressing the question of how women are impacted by environmental degradation. Like in most cases involving societal and political power equations, related to access and use of resources, vulnerability to adverse environmental changes impacts most on those on the margin and without any say in policy processes.

While the issue of climate change and its most immediate impact on women in transitional nations and poor countries needs to be addressed by integrating it into developmental plans and discourses, in the developed nations women are seen critical in making household choices that can significantly impact the global climatic change.

Since most transitional nations have multiple social and economic realities, with varying levels of empowerment and access, the issue of impact and the power of choice need to be highlighted. Further, the higher the income groups, the greater are the consumption of resources.

I would like to share an interesting document on the aspect of choices
http://www.wen.org.uk/general_pages/reports/manifesto.pdf.

Ruchi Pant, Governance Unit, United National Development Programme (UNDP), New Delhi

While speaking of climate change, vulnerability of women to the impacts thereof and their adaptation mechanisms, I would like to share a recent experience when I was attending a district level convention of small farmers hailing from the Darjeeling Gorkha Hill Council region. This three-day convention was organised under the aegis of the Himalayan Farmers Front facilitated by the Centre for Mountain Dynamics in Village Pudung in Kalimpong Sub-division of district Darjeeling. 250 farmers, which included 50% women farmers, along with nearly 50 district and block level officials, had gathered to discuss issues pertaining to various schemes and programmes of the government that benefit the farming community.

One session was devoted to discussing issues relating to climate change, adaptation and mitigation of strategies as well as seeking farmers' perceptions thereto (which) brought out some remarkable learning regarding farmers' knowledge and their wisdom to cope with such vagaries of nature. Firstly, their observation and understanding of the impacts of climate change is worth noting.

These farmers, from remote villages in the hills, unaware of other reasons of climate change, largely attribute the problem to the massive destruction of forest that commenced nearly a century ago when forests were cut down giving way to tea plantations, and more recently to population increase and commercial pressures in their area. Some farmers continue to observe strong spiritual beliefs that the knowledge relating to farming was inherited from their forefathers and the mountain gods. According to these farmers, diversification of crops and the shift from traditional crops to commercial crops is the major cause for attracting the wrath of supernatural powers leading to the recent destruction.

Farmers have been experiencing temperature fluctuations, drying of water sources, erratic and uneven distribution of rainfall, increase in the incidence of pests and diseases particularly in crops of ginger, cardamom and orange. Emergence of new pests and diseases is evident over the past few years. A change in the pattern of migration of birds is being observed which is attributed to two reasons: loss of biodiversity, their habitat and also the changes in temperatures. When I posed the question of adaptation mechanisms to the farmers, the responses were diverse. I was intrigued to hear that women who are largely involved in paddy cultivation, had found ways in their traditional practices for mitigation of the problem whereas men farmers who are responsible for the shift to commercial cropping, were relying heavily on the government machinery for resolving problems related to pest and disease infestation.

At the convention in Pudung, women farmers discussed their resorting to traditional practices of seed saving, seed exchanges and seed networks and especially for seeds of traditional rice varieties, to adapt to the impacts of climate change. It is interesting to note that on the same day, 6th January 2008, world renowned agricultural scientist, Dr. M.S. Swaminathan, was addressing his fellow scientists at the plenary of the 95th Indian Science Congress being held in Visakhapatnam, removed thousands of kilometres away from Pudung village. At this plenary session, Dr. Swaminathan called for special efforts to conserve the genetic variability of rice so that the food security of the country was not affected in any way due to the adverse effects of global climate change. He also said that rice should be the crop of choice among all food crops as it had the highest capacity for adaptation to different ecological conditions.

Parts of the state of Sikkim and district Darjeeling are known for the rich diversity of traditional rice, many of which are still in use and are being grown by the small and marginal farmers. Under an initiative of the Centre for Mountain Dynamics being supported by IDRC Canada and being facilitated by the IIED,

UK and Ecoserve, India, an attempt is being made to document the rich diversity of paddy varieties. Farmers from the entire district of Darjeeling are being sensitized to the importance of traditional crop varieties especially rice. Farmers, in this region, continue to follow their age-old practice of saving seed from the previous crop for sowing in the next cropping season. Seed purity is maintained by seed exchanges within the village and inter-village too.

The women farmers in Kalimpong are resorting to this practice of exchanging seeds in order to procure seeds as an adaptation strategy to grow a different variety of rice growing at a lower altitude. With the temperatures rising across altitudes, rice varieties at 2500 feet can now grow at 4000 feet. Sheela Rai aged 43, a participant from *Dungre Basti* village in Kalimpong sub-division says that she was earlier growing *masino*, a variety of rice in her paddy field at 4000 feet; (.). After experiencing the change in temperature and rainfall fluctuations over a year, she decided to go in for a rice variety such as *kalture*, which used to grow at an altitude of 2500 feet in the same village. The paddy farms in Kalimpong are terraced and are spread over a large altitudinal range. Sheela exchanged her seeds with Manmaya of the same village whose farm is at a lower altitude. Sheela got *kalture* variety for growing and gave Manmaya a little extra of *masino* in exchange for eating purposes. Both are aromatic varieties.

In another instance, it came to light that in some areas of Kalimpong, the farmers have started to face water shortage. These farmers have been engaged in wet rice cultivation, which is now becoming difficult. Farmers hailing from Lepcha community in Pudung village have marital relations with Lepchas in north Sikkim, who have been engaged in traditional dry-land paddy cultivation using traditional seeds. Lepcha farmers are now in need of seeds for doing dry-paddy cultivation and trying to initiate a dialogue with the farmer in North Sikkim to procure native seeds which they have lost as they had moved on to undertake wet rice cultivation.

In village Pudung, Kesari Subba, a young woman farmer, whose elder brothers have migrated to the plain regions for service, decides on the variety to be planted each year. The village has started facing water problems for paddy. She has switched to a variety (called) *Adde* and alternates every 2-3 years with another variety *Dudhe*, which requires less water. The usual practice in the region is to grow a particular variety for 2-3 years and when the seeds' quality starts deteriorating, they exchange the seed with the seed of another variety most suited to their conditions.

Another case of adaptation that came forward during the consultation with farmers at the Convention was that of a farmer, Madan Chamling from *Bijanbari* village, who has now started planting the bulb of ginger a little later than the usual timing to get over the problem of pest infestation and this practice has helped.

Another instance of farmers' innovation came forward from Hee-Bermiok village in West Sikkim, where a farmer used a wild relative of food crop to breed a new variety for coping with changing conditions. The farmer picked the seed of a wild variety of cardamom to find solution to the losses being incurred by him and his fellow farmers in the region due to failure of cardamom crop in the past decade through a disease. Experimentation led to success and now this new variety of cardamom being called Seremna is doing well and has got support from the state government for multiplication and sale to nearby regions.

These examples from the bio-rich eastern Himalayan region in India underscore the importance of use of traditional knowledge and indigenous wisdom, whether it is in the area of cultivation practices or use of seeds, in adaptation to and mitigation of impacts of climate changes.

While the scientists and policy makers are working to find solutions, the practitioners in the field have already generated a considerable understanding based on their observation and experimentation in the field. This knowledge, skill and needs of the local farmers should form the basis of any further research and their contribution should be duly acknowledged, recognised and rewarded by the appropriate

authority. The participation of local farmers in any policy making for the purpose and in further research should be formally included.

UNDP should through its programme facilitate continuous intermingling of knowledge and sharing of ideas for generation of best practices from the practitioners, scientists and policy makers. However, a word of caution that farmers' knowledge, practices and innovations should not be pirated and due IPR recognition should be accorded to these. This should also be recognised through the mechanisms of prior informed consent (PIC) and access and benefit sharing (ABS) being devised and promoted under the Convention on Biological Diversity.

Many thanks to all who contributed to this query!

If you have further information to share on this topic, please send it to the Solution Exchange for the Gender Community in India at se-gen@solutionexchange-un.net.in and/or Solution Exchange for the Water Community in India at se-wes@solutionexchange-un.net.in with the subject reading "RE: [se-gen][se-watr]QUERY: Gendered Adaptation to Water Shortages and Climate Change - Experiences. Additional Reply"

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