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Challenging Boundaries:
A gender perspective on early warning in disaster and environmental management

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Challenging Boundaries: A gender perspective on early warning in disaster and environmental management

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ABSTRACT

A gender perspective on early warning in disaster and environmental management requires that many boundaries be challenged. Amongst these (and this is not an exhaustive list) are boundaries set by gender relations themselves; by diverse (and sometimes competing) academic and institutional domains (hazards, disasters, development, resource management, North-South, etc.); by models of disaster management which incorporate apparently discreet stages; and by formal and informal structures and systems.

This paper refers to examples from developed and developing areas to address some of the challenges faced by taking an holistic and sustainable approach to environmental management. It argues that the relative scarcity of studies incorporating a gender analysis points to a real need in both research and practice.

INTRODUCTION

The stated objectives of this Expert Group Meeting are to assess the link between environmental management and natural¹ disasters from a gender perspective with a focus on the specific phases of natural disaster mitigation; these have been presented (in the DAW Aide-memoire given to Meeting contributors) as: prevention, response, and reconstruction/recovery. As prevention of natural disasters is frequently difficult or even impossible, this term will be extended to include mitigation – an often more realistic and achievable target. This paper examines in particular the prevention/mitigation phase for which the stated objective is to assess and analyse capacities of women and girls in natural disaster prevention/mitigation, including information networks and interactive information systems (early warning systems, disaster preparedness, community involvement); women's representation in the decision-making process at all levels; capacity and vulnerability assessment and capacity-building (logistics, infrastructure, early warning).

It should be said at the outset that this is a demanding task because of the relative lack of attention that these areas have received². While some work has been carried out on gender aspects of *environmental management*, comparatively little research has been completed on gender aspects of *natural disaster management* and even less on *warnings* and the specific the mitigation phase. Furthermore, the linking

¹ The pros and cons of a focus on *natural* disasters are discussed below.

² This paper does not provide an exhaustive review of the literature. There may be a number of case studies on this topic which are not mentioned here and which have yet to be amalgamated into a comprehensive bibliography.

together of the previously separate areas of environmental and disaster management represents a new expanded field of enquiry and action but one which fits well into an holistic sustainable development paradigm.

The Importance of a Preventative Approach

A stated emphasis on the importance of a preventative approach now has broad-based support. The Red Cross – most often associated in the public mind with disaster/emergency *response* – is also working towards a shift to preventative action and a capacity-building culture. In “Vulnerability and Capacity Assessment: an International Federation Guide” they quote UN Secretary-General Kofi Annan:

“We must, above all, shift from a culture of reaction to a culture of prevention. Prevention is not only more humane than cure; it is also much cheaper... Above all, let us not forget that disaster prevention is a moral imperative, no less than reducing the risks of war.” (IDNDR 1999a quoted in IFRC 1999).

Further support for the stated objectives of the Expert Group Meeting lies in the recognition by the Red Cross that the “challenge of reducing vulnerability and enhancing capacity requires an intimate knowledge and understanding of the local reality.” (IFRC 1999b: 12). Their “Strategy 2010” document suggests National Societies should:

“Work with the capacities, skills and resources of vulnerable people, empowering them to take charge of their own lives. Use and continue to develop the tools and abilities to understand vulnerability and to identify local capacities. Recognize that men and women will often play different roles in the home, the community and society, and develop sensitive programmes that acknowledge their specific vulnerability and capacity, set in the broader context of ethnicity, race and religion.” (IFRC 1999b: 12).

The practical application of these policies is seen, for example, in the construction of cyclone shelters in Orissa (see Box 1) where shelters were estimated to have saved around 40,000 lives in October 1999 when a super cyclone killed 10,000. Not only is this a part of a *preventative* programme but it is specifically designed to develop local people’s skills and management *capacities*, including those of *women* (Schmuck 2001).

BOUNDARIES

However, incorporating a gender perspective on early warning in disaster and environmental management will be demanding and requires that many boundaries be challenged, beginning with the boundary between the major categories of disaster management and environmental management. The increasing emphasis on sustainable development practices may be making the connections more obvious but significant divisions remain. Amongst these, the following will be discussed briefly below³: academic and institutional domains; gender relations; models of disaster management incorporating discreet stages; and formal and informal structures and systems. However, it must be emphasised that these representations are considerably oversimplified for the purpose of clarity.

³ Other boundaries exist which also deserve attention however the list has been limited to ensure this paper is of manageable proportions.

Diverse academic and institutional domains

Disaster management, environmental management, warning systems and gender analysis are all separate areas of academic interest, policy concern and institutional responsibility. Many researchers and practitioners work for the most part in one area only, having ministerial commitments, professional identity, particular methodologies, and even their own journals. A selection of the major distinctions is discussed below: hazards, disasters, development, resource management, North-South distinctions.

Hazards

The traditional emphasis in this field has been placed on ('hard') scientific, technical and engineering approaches to the identification and mapping of hazards and hazardous areas, and to the solution of problems. Flood hazards, for example, are examined in terms of hydrology and meteorology, and mitigation is dominated by engineering solutions. The major attention and resourcing for flood warning systems are at the forecasting end (rather than the dissemination end), focusing on the use of e.g. satellite technology to forecast approaching weather systems and technological hardware for the delivery of warning information to other parts of the (official) warning system⁴. The social context, including gender dimensions, for warnings has really only relatively recently appeared on the hazards agenda and many forecasting and warning professionals would see it as largely irrelevant and outside their sphere of influence or capability. Experts (mostly male) dominate this field and little attention is given to the role of NGOs and citizen groups in developing informal warning systems⁵. Cheryl Anderson (see Box 8) has noted, in the Pacific Islands/ENSO context, that:

Men predominantly conduct the climate-related sciences and modelling. There are no women who head the meteorological services in the Pacific Islands, and very few women who staff these offices. The heads of most other related governmental agencies---water, agriculture, fisheries, disaster management, planning, and health---are men. Distribution of the information goes first to the Met Services, who further distribute the information in-country, mostly to the heads of agencies. ... Women do not have as much access to the information, in general, as men. ... Without access to information, they cannot minimize risks associated with their regular activities. (Anderson 2001).

destructive practices and an increasing number of people living in harm's way (<http://www.worldwatch.org>).

Environmental justice issues fall within the remit of this latter group. It is surprising perhaps that the technological disasters and broad environmental management issues that are the focus of an environmental justice approach attract a different group of researchers, NGOs and citizen groups (in fact, the distinction is present in this Expert Group Meeting!). The divide is also unfortunate for the development of gendered disaster research and action because women have been far more prominent in the environmental justice movement and there is clearly much to be learned here.

Development

Development researchers and practitioners also work on disaster and environmental management issues but with a largely developing world focus. Gender was for long absent as an analytical variable in much development research although appearing earlier than in the mainstream disaster literature. Two early (1970) exceptions to this were Ester Boserup's "Woman's Role in Economic Development" which made women's work and economic role more visible, followed by Joan Rivers' early (1982) "Women and Children Last: An Essay on Sex Discrimination in Disasters", which identified the nutritional vulnerability of female children leading to higher incidences of malnutrition in girls in famines as a result of "sex discrimination intrinsic in most societies" (p. 265). Development studies and practice makes a major focus on disaster aid and relief provision, refugee management, health issues and poverty. In theory they bridge disaster and development issues but in practice the divide often remains. Disasters demand immediate relief and generate the need to return the affected area to 'normality' and the 'tyranny of the urgent' (BRIDGE 1996) can oust or demote gender and other fundamental social issues, overturning long-term development programmes. Equally, development programmes are sometimes planned and undertaken without ensuring they do not exacerbate hazardous conditions or make people more vulnerable to disasters (Fordham 2001b).

There has been some crossover between development and 'mainstream' disaster research and practice in the evolving vulnerability paradigm (see for example Hewitt 1997; Blaikie et al 1994; and the Radix⁹ website) in which the focus is on the underlying root causes of hazards and disasters and their differential impact on marginalized social groups – including women. While researchers and practitioners tend to align themselves primarily with either disaster or development, this is partly a reflection of a North-South focus (see beavagsc De; and the

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Gender relations

“There is a general lack of awareness among both women and men about how gender issues affect environmental issues. This has been a major obstacle to feminist environmental advocacy since UNCED. While many of the recommendations in Agenda 21 relate to the connections

Models of disaster incorporating discreet stages

Disaster managers and researchers alike have divided up disasters according to a series of stages. Typically, four phases are used in characterizing the disaster process: preparation (sometimes also called ‘planning’), response recovery and mitigation. However, there are many variations on this basic model. Ketteridge and Fordham (1998) defined 6 stages as useful when dealing with flood evacuation in the UK: pre-flood preparedness, the flood emergency stage, evacuation, emergency accommodation, the return, and the longer term to recovery (p. 121). Fothergill (1996) used 9 stages in a typology constructed to explore gender and disaster: exposure to risk, risk perception, preparedness behaviour, warning communication and response, physical impacts, psychological impacts, emergency response, recovery, and reconstruction (p. 34). While Neal (1997) has argued that current uses of disaster periods lack conceptual clarity. He specifically points to the fact that disaster phases are mutually inclusive and multidimensional, and that they should incorporate multiple perceptions of the event (disaster managers, emergency responders, victims, etc.).

This paper, although focusing on the prevention/mitigation/warning phase, supports this conclusion and underlines the difficulty of separating out discrete stages in the disaster process – warning issues are inextricably linked to response issues.

Formal and informal structures and systems

There is a considerable body of research and practice on warning system design and operation¹⁴ much of which has been directed at the understanding and improvement of formal or official warning systems. These tend to operate in a top-down fashion and some notable failures have arisen through lack of knowledge of the social dynamics of the receiving groups (e.g. transmission of warning information in a language not understood by local ethnic minority groups; transmission through only selected radio stations which are not accessed by minority ethnic/cultural groups; transmission by written word which excludes the illiterate, and those for whom the dominant language is not their first language.). There has been (and in many ways still is) an emphasis on technological solutions with much of the system resourcing located at the hi-tech forecasting end rather than the (social) dissemination end (assuming the typical linear system). This resource imbalance has had the effect of improving forecasting and monitoring capability without necessarily improving overall system effectiveness because the weak link is in reaching the at-risk communities and enabling an effective response. However, a more bottom-up process would start with the diverse needs of a socially disaggregated hazard-prone location, working with local people themselves to design a flexible system that is context-specific, providing what users want rather than what expert system managers might prefer.

Some research has also identified the role of informal or unofficial warning practices but much is anecdotal. Alice Fothergill’s review of the hazards literature related to gender issues reports that some research findings show women to be more likely to receive warnings – because of their existing informal social networks – and more likely to act upon them – linked to their assumed heightened risk perception. However, some caution must be exercised before assumptions are made concerning the completeness or general validity of these findings. The majority of the studies she reviewed came from mainstream hazards research; carried out by mostly North American scholars on western/developed world locations; in which quantitative surveys dominate; and in which gender – as an explicit analytical variable – was largely (although not totally) absent.

¹⁴ This paper cannot provide a comprehensive review of standard warning literature.

Several of the illustrative Boxes give examples of warning/prevention/mitigation successes and failures, many of which are discussed in the next section. However, we still know too little of women's role in either formal or informal warning systems in either the developed or developing world.

CAPACITIES OF WOMEN AND GIRLS IN NATURAL DISASTER PREVENTION/MITIGATION

This paper examines in particular the prevention/mitigation phase for which the stated objective is “to assess and analyse capacities of women and girls in natural disaster prevention/mitigation, including: information network and interactive information system (early warning systems, disaster preparedness, community involvement); women's representation in the decision-making process at all levels; capacity and vulnerability assessment and capacity-building (logistics, infrastructure, early warning)” (DAW Aide-memoire).

The research we have so far provides us with mixed and sometimes conflicting evidence. While some research (largely from and on the North) shows women to be more likely to be in receipt of, and act upon, warnings, thus making them less vulnerable, and more likely to be active in emergent community disaster; other research (largely from and on the South) shows women to be disadvantaged in terms of access to warning/prevention information and decision making power. However, in terms of capacities, there are examples of the positive contributions already made by women (in the South and the North) to disaster mitigation/prevention and environmental management, and the strategies for increasing their future involvement and removing the barriers to this. Several of the Illustrative Boxes in the Appendix give positive examples.

Information networks and interactive information systems

Women can be ‘out of the loop’ as far as official or formal information networks are concerned. Kristina Peterson's work shows how women in poverty do not have access to formal organizations or officials except through the welfare or court systems. “These women network with others at places like the laundromat, welfare offices, senior centers, or the bus stop” (Peterson 1997). She points out that successful disaster response outcomes occur when organizations and agencies meet women in their own environment. Research in the UK (Fordham 1999; Fordham and Ketteridge 1998) supports this and shows how some poor women in Scotland do not go through accepted emergency management channels but contact social services for information and help, rather than the police, when disasters strike.

Bangladeshi examples (see Box 4) illustrate the dangers of gendered warning systems which transmit information from men and to men without an understanding of the social context of gender relations and that do not link early warning to appropriate and suitable response behaviour (D'Cunha 1997;

To this end, a number of analytical frameworks have been developed (see March et al 1999) to aid gender-sensitive planning or project design. There is no space to discuss these in detail here but of particular relevance for our purposes are Capacities and Vulnerabilities Analysis (CVA) (Anderson and Woodrow 1998), which acknowledges people's strengths and abilities and not just their susceptibility and exposure to hazard and disaster; and Social and Gender Analysis (SAGA) or Socio-Economic and Gender Analysis (SEGA) approaches which attempt to re-insert women and other exploited and oppressed social groups into development processes "as 'agents' of transformative change, rather than as 'beneficiaries' of it." (Connell 1999: 85-6). These reflect a shift from welfare-based strategies to more transformative approaches, grounded in the need to examine not just women's position but gender *relations* and social relations more broadly.

"We need a clear idea of who fits into the primary social, economic, political and cultural categories and how these categories interact (or not) when it comes to making community decisions. For example, are members of a particular social group – village women, an ethnic minority, a sub-clan, a caste, landless tenant farmers, farm labourers – present but not truly engaged? Are the opinions which they publicly voice truly their own? Do they say the same things when their husbands or wives or village elders or employers or other authority figures are not present?" (Connell 1999: 83).

These analytical frameworks provide tools for examining a more complex reality. However, the targeting of women specifically (rather than men or women and men) in disaster or development programmes has now come into question. Some positive examples have emerged of women's empowerment (see Box 13) but also, as we have seen in the section above, sometimes improvements in women's situation have received hostile responses from men. The prevailing attitude in development thinking and practice – with which disaster and environmental management thinking has yet to catch up – is shifting to a more masculine-friendly position. Andrea Cornwell (1997; 2000) has argued for a rethinking of gender and participatory development, to more directly address issues of power and powerlessness in the broadest context – which must necessarily include men. She argues that focusing simply on women's activities can obscure important dimensions of their livelihood strategies such as "vital relations of interdependence between women and men" (*ibid* p. 10). The question then becomes perhaps not *whether* to include men and masculinity in the analysis but the *degree of centrality* they should assume (Fordham 2001a)

Box 12 is indicative of a guarded approach to improvement in women's life chances. Here the German Red Cross have sought to protect Bangladeshi women's lives in cyclone situations without making fundamental changes to social relations: "Our intention is not to change the social structure of the community but to help the people protect their lives." This they do by always addressing the men first. Clearly there are complex social dynamics in operation which need to be planned for and thought through before projects and plans are implemented but unequal and gendered social relations that reduce women's life chances and livelihood prospects are recognized as key contributors to the underlying root causes of disaster and environmental vulnerability. The FAO (1999) assert that poverty is a leading cause of environmental degradation and disaster vulnerability. They refer to the situation of women farmers in the developing world, trying to eke out an existence on marginal lands, with little education and no access to agricultural resources, who are often driven to adopting crops and practices that may harm the environment (leading to soil erosion, polluted water and declining yields). They further note that, as women rarely own the land they cultivate there is little incentive for them to make environmentally sound decisions, while their lack of access to credit hampers them from buying technologies and inputs that might be less damaging to natural resources. These negative factors set up

a cycle of declining productivity, increasing environmental degradation and food insecurity for the future (FAO 1999).

Leach et al (1995) suggest the following elements¹⁵ as usefully contributing to an analytical framework for gendered dimensions of environmental change: *Divisions of labour and responsibility*: i.e. the

and comes from the observations of individual researchers whilst engaged primarily in other research. There is a lack of disaggregated statistics or general reporting by sex (this makes it difficult to do retrospective gender analyses on secondary data as it was often not thought useful to disaggregate in this way). Thus we come back to the absence of a specific analysis of gender in current research and points to the need for situated, critical, reflexive and participatory research and ways of working that accept and use different forms of knowledge (Fordham 2001a) to empower women and enhance their

- Improve women's livelihood opportunities to reduce poverty and economic dependence
- Improve women's socio-cultural status to ensure respect and reduce gender-based discrimination
- Incorporate an approach based on women's human rights

Policies and plans (organizations):

- Identify gender-based problems and correct differential impacts of policies on women and men
- Indicate actions, measures and institutional policy measures to solve them
- Produce action plans to create the necessary institutional conditions to introduce a gender perspective
- Produce proposals for the incorporation of a gender approach into strategic guidelines
- Construct a training plan, including measurable targets
- Make preparations to avoid or deal with any male backlash

A gendered strategy at the institutional level:

- Introduce a gender dimension into existing social dynamics rather than creating parallel structures
- Improve institutional support for integrating women into management processes
- Sensitize, motivate and train in gender issues
- Develop/commission adequate methodologies for gender training and didactic material.
- Recruit more gender sensitive female managers and field staff
- Adopt/maintain a participatory approach (by implementing a process of dialogue, joint work and consultations with both women and men)
- Develop a cooperative relationship between various institutions and NGOs
- Strengthen grassroots women's groups and their interaction with the institutional system
- Ensure meeting hours are flexible and childcare facilities are available
- Recognize gendered positioning in households and its effect on women's ability to receive or act upon environmental and/or disaster warning information
- Recognize the gender dynamics in communities and not assume homogeneity of need or access to resources

Prevention, warning and environmental management

- Increase the amount of targeted research to examine the experiences, contributions and needs of women in environmental and disaster management
- Ensure warning dissemination methods serve diverse needs and situations
- Commission and deliver warning and environmental management information that the *users* actually want, rather than that which the *generators* of the information want or feel the users should have
- Target specific social groups for warning information to ensure women's needs and circumstances are recognized
- Provide the necessary support for women to act upon warnings
- More work needs to be done on ways of recognizing and measuring coping strategies, and on using qualitative information which is often accorded low credibility by information users and is, therefore, overlooked. P. 4

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APPENDIX X: ILLUSTRATIVE BOXES

Box 1: Community Based Disaster Preparedness in India: The "Orissa Disaster Mitigation Programme" (ODMP) by Hanna Schmuck, Disaster Preparedness Delegate for the German Red Cross in India and Bangladesh

Orissa has a 480 kilometres long coast stretching over the six districts Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri and Ganjam along the Bay of Bengal. On the average every five years a cyclone hits the coast accompanied by high winds, tidal waves and floods. The most devastating cyclone in living memory occurred in October 1999 with wind speeds around 300 km/h and a seven metres high tidal wave flooding up to 20 km inland. According to Government sources, the so-called super cyclone killed 10,000 people, devastated the lives of millions and uprooted 90 million trees. However, aid agencies working along the coast estimate a higher death-toll. The cyclone had also a disastrous impact on the infrastructure and thus on the overall economy of Orissa, which is the poorest state of India.

When the super cyclone hit Orissa, there were only 23 cyclone shelters of the Red Cross under the Orissa Disaster Mitigation Programme (ODMP) where people could seek rescue. While each is designed for about 1,500 people, they were occupied by about 2,000. Thus, according to the Orissa governments' new Relief Commissioner, the Red Cross shelters saved around 40,000 lives. Equipment of the shelters such as megaphones, red blinking lights, generators, First Aid kits, water containers etc. insured that at least none of the persons staying there died



(Photo: Hanna Schmuck)

The ODMP is funded by the German Red Cross (GRC) and the KfW (Kreditanstalt für Wiederaufbau/German Bank for Reconstruction) and started in 1994 with social mobilisation and training, followed by the construction of 23 multipurpose cyclone shelters between 1996 and 1999.

The concept of community mobilisation

A 12-member Disaster Preparedness Committee (DPC) has been formed for each cyclone shelter; this Committee is responsible for the proper use and maintenance of the shelter. In addition, the DPC has generated a fund at the community level for shelter maintenance and minor repairs and is recruiting about 25 people as a Task Force (TF). The TF members are trained on Disaster Preparedness and Management, First Aid and Search and Rescue at the shelter sites or at the Disaster Preparedness

Preparedness and Management. Among these are also women, to whom special attention is paid. They are encouraged to form Self-Help Groups (SHGs). At present, there are 73 SHG groups with 1,978 members in total.

A longer version of this paper can be found in Newsletter 6 of the Disaster and Social Crisis Research Network:

http://www.anglia.ac.uk/geography/d&scrn/newsletter/newsletter6/index_n16.html

Box 2:

Box 3: Warning system design

The tools of communication that are selected in warning systems and the support that is provided for acting on the warning both need to be designed with the access and scope of action of the final user. I.e. in some very poor countries, or localities, radios are still a luxury - communal radios and TVs in

Box 7: “Communities” must be treated as gendered units

Bina Agarwal’s (1997) study of the Joint Forest Management programme in India shows this celebrated participatory success story to be gender exclusionary and inequitable in its failure to ensure women’s participation. It was through committee membership rather than citizenship that access was gained to forest benefits, where membership comprised one person per household but with the gender-blind assumption of intra-household equity. A shift to a community focus simply meant that the policing role transferred from Forest Department staff to household men and thus women were silenced from voicing their concerns by cultural taboos. This underlines the point that increases in local power may not automatically translate into power for women (Lind cited in

Box 9: Male backlash in Uganda

The first extract below shows a seemingly exemplary participatory approach to community based planning, but the second identifies a serious backlash evident in a subsequent evaluation. This points to the need in project design and implementation to understand the sometimes-subtle distributional effects, to be gender inclusive, and to plan for potentially negative responses in some community members.

1. “Coping with conflict: the case of Redd Barna Uganda”*

BRIDGE Issue 9: Gender and Participation

(<http://www.ids.ac.uk/bridge/dgb9.html>)

Differences in status and associated power between women and men, old and young, richer and poorer, make grassroots planning difficult if the aim is to represent the diversity of perspectives and interests

Box 10: The development of women in riverine communities in Pakistan

Oxfam's PATTAN initiative, which grew out of the 1992 floods in Pakistan, aimed at using the disruptive nature of the disaster to develop institutional structures to increase the capacity of women and men to reduce their vulnerability to future disasters. One example of this was the introduction of the concept of joint ownership of houses in which, in the event of divorce or separation, whoever wants to retain ownership/occupation must pay the other half the value of the house. This had a considerable impact on the women and the community generally, increasing cohesiveness and security and generating pride and confidence in the women (p. 60).

Source: Farzana Bari in Fernando and Fernando 1997

they did allow the women of their families to join the training courses and planning workshops. Today, the women are no longer afraid to express their ideas and suggestions for improvements openly.

Each family contributes 5 taka monthly to the Village Disaster Preparedness Committee. This fund is to help survivors through the first days after a cyclone and to provide for minor repairs to the shelter building. Even without natural disasters many families have to fight for survival every day. In order to improve the women's opportunities, the Red Crescent also arranges their participation in training courses where they learn a craft or plant cultivation or first aid. Women have put these skills into practice and have grown mahogany saplings for sale in the market.

Adapted from: "Living with Cyclones: disaster preparedness in India and Bangladesh" 1999 Bonn: German Red Cross

Box 13: Disasters can be great liberators!!

While witnessing a very vocal meeting of rural women in village Srirampur, Orissa, about a year and a half after the cyclone of 1999, I was informed by the NGO there (Church's Auxiliary for Social Action) that before the cyclone, women would rarely come out and interact on social issues, let alone interact with outsiders. This changed after the cyclone, because relief packages of most NGOs, and even the government, were targeted at, or through, women. That phase really empowered them, made them amenable to interacting on social issues, and also increased their self-esteem and their status within their families and society!

Anshu Sharma, SEEDS, India

Posted 16 October 2001 to United Nations Division for the Advancement of Women online forum on

As the houses neared completion, I spoke with the families about the land titles. Women's names were going to appear on the titles, and they were going to be considered the owners of the houses. As I understood that many men did not stay year around, and knew that all of the women had worked on building the houses, it seemed good to give the houses to women. Yet, once the titles were handed over and signed, men started permanently disappearing (not sending money home) and two women showed signs of violence. I had not analyzed the potential impact on the community as a whole, even

crossing their traditional boundaries, some becoming role models for other women in the community-a possible first step towards more empowering gender equations.

Jean D' Cunha 1997 "Engendering Disaster Preparedness and Management" Asian Disaster Management News Vol. 3, No. 3 November (See <http://www.adpc.ait.ac.th/infores/newsletter/1997/theme-3.html>)