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Making Risky Environments Safer

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Women building sustainable and disaster-resilient communities

We tend to discuss sustainable development and disaster reduction as two separate “components”. However, fundamentally, the aims of both are similar. Sustainable development is not reachable and complete unless disaster reduction is an essential element in it, and disaster reduction is not something which can be discussed, removed from development. Gender as an issue is in-built and cuts across both. Therefore, in reaching gender equality, the methods of analysis and tools of application can be the same. (Madhavi Ariyabandu, Programme Manager, Disaster Mitigation, Duryog Nivaran, Sri Lanka, 2001)¹

It is important to stress that gender equality in disaster reduction requires, above all, empowering women to have an increasing role in leadership, management and decision-making positions. (Sálvano Briceño, Director, International Strategy for Disaster Reduction, Geneva, 2001)²

Women's work and disaster risk management

Natural disasters—particularly erosion and other forms of soil degradation, pollution of freshwaters, shoreline erosion, flooding, loss of wetlands, drought and desertification—impact directly on women in their roles as providers of food, water and fuel. Climate change can also impact on women's productive roles since the physical impacts of global warming—rising sea levels, flooding in low-lying delta areas and increased saltwater intrusion—can jeopardize sustainable livelihood strategies. Food security and family well-being are threatened when the resource base on which women rely to carry out their critical roles and obtain supplementary incomes is under-mined. . . . Effective risk assessment and

management require the active involvement of local communities and civil society groups to ensure decreased occurrence of disasters and reduced losses and costs when they do occur. The knowledge, contributions and potentials of both women and men need to be identified and utilized.

Source: Carolyn Hannan, Director, United Nations Division for the Advancement of Women. Statement at a round table panel and discussion organized by the Division for the Advancement of Women and the NGO Committee on the Status of Women, United Nations Headquarters, 17 January 2002 (www.un.org/womenwatch/daw/documents/Natdisas).

Introduction

We trap water by making sections of clay pipe; we then arrange these in line with the beds. We place one on top of the others, which we will use to pour water through. We then plant our vegetables on top of them. We put grass on other beds so that the water does not dry up . . . We did not know how to conserve water but now we can conserve water. We did not know the crops which were suitable for our type of soil. Now we know them; therefore we can find ways to survive . . . Now we can go to other places and come back with different technology, and those other people will also learn something from us—we will be sharing like that. (Francisca Chiuswa, Chivi, Zimbabwe)³

Drought is a fact of life in Zimbabwe and neighbouring States. The women whose hard work produces food for families are often ignored in agricultural training programmes. In contrast, the approach adopted by the Intermediate Technology Group in Chivi helped Francisca and other women farmers conserve water and cope with drought conditions. Most importantly, this approach was built around the central role of women as resource conservers and community leaders in natural hazard mitigation and disaster reduction.

This story of women taking the lead to build disaster-resilient communities contrasts vividly with the more familiar images of women as passive and needy victims flashed around the world in the aftermath of every major disaster. Rarely do disaster stories and photos fail to showcase male heroism and female vulnerability. Who can forget the desperate scenes from Mozambique of childbirth in the treetops above floodwaters? Dominant views of disaster remain framed by gender-biased perspectives which ignore or distort the complex realities of both women's and men's experiences in natural disasters. Seeing disasters “through the eyes of women” challenges the notion of peo-

ple in hazardous environments as disaster victims and girls and women as “special populations” in special need of emergency relief. It balances analysis of women’s constraints and vulnerabilities in disaster contexts with a better understanding of their capacities and resources as environmental and social change agents.

Living in risky environments

Large-scale natural disasters captured the headlines in the first years of the twenty-first century: a massive earthquake in India, widespread flooding and an urban flash flood in Bolivia, another unexpected volcanic eruption, persistent drought in some of the world’s poorest lands, a major earthquake compounding misery in northern Afghanistan. Less visible in the public imagination were the recurring and localized landslides, floods and fierce storms that also take a huge toll over the long run. Called “small-scale” disasters by outsiders, these events carry social costs that are as high or higher than catastrophic events emphasized by the media.

Increasing risks and the rising toll of disasters

Despite the development of new information and communication systems, technological advances, increased technical expertise, and sophisticated emergency relief systems, most of the world’s people are still at great risk of harm due to natural disasters. But the risk of natural disaster such as poverty, pollution or epidemics is not equally distributed among people or regions.⁴ Consider, for example, that:

- During the 1990s, approximately 211 million persons were affected or killed by natural disasters, seven times as many as those hurt or killed in armed conflict;

- As many as 100,000 people die each year due to natural disasters;
- Though there has been some success in reducing the toll of major environmental disasters, natural disasters kill an average of 1,300 people every week;
- The vast majority of disaster deaths occur in developing countries;
- In most disasters, where sex-specific data are available, more women than men lose their lives;
- Quantifiable economic costs may exceed \$300 billion a year by 2050; and
- Extensive economic losses sustained in developed nations between 1985 and 1999 reached 2.5 per cent of GDP while the world’s poorest countries collectively lost 13.4 per cent of GDP.

Slow or sudden (drought versus cyclone), small-scale or catastrophic (small landslide versus major earthquake), disasters take a huge toll on people and places. Natural disasters can create new opportunities, and some groups may prosper economically, but disasters first and foremost damage and destroy lives, livelihoods, infrastructure and environments. Many survivors take disasters in stride, just as they do the challenges of poverty or widowhood, but they may also experience lingering effects on their health, security, psychological well-being, sense of place and cultural identity.

The vocabulary of risk and vulnerability

Familiar ecosystems may well have developed through repeated exposure to the very forest fires or floods that people may experience as disasters. Certainly, “not every natural disturbance is a disaster, and not every disaster is completely natural”.⁵ Disasters arise squarely within the human experience. Across the globe, it is human action that creates the conditions for transforming naturally occurring events

such as earthquakes or volcanic eruptions into human tragedies. Cultures and landscapes differ, so the “risk scape” of disaster is differently configured in every community.

To end the cycle of “disaster by design”,⁶ the complex impacts of global development on natural ecosystems and resources must be understood. This understanding must inform efforts to change the “normal” state of affairs through which extreme environmental conditions or events become human disasters in order to intervene in the disaster-development-disaster cycle.

The term disaster is understood very differently by those who use it. In some parts of the world, there is no one word for “disaster” but many words for what makes life “dangerous” or “risky”.⁷ Risk is always relative: it is a function of people’s relative exposure to physical or natural hazards (such as earthquakes) and people’s social vulnerability to the effects of the hazard (people with strong houses are less vulnerable to earthquake). Risk is also a function of people’s relative ability to reduce their own vulnerability to the hazard (for example, through public education in all community languages, using communication outlets appropriate for persons with disabilities, different ethnic and age groups, etc.), and to reduce the effects of hazards (for example, where hospitals are retrofitted or constructed to withstand seismic motion, people are at reduced risk).

By disaster, people may refer to genocide, epidemics, economic depressions, explosions and accidents, complex emergencies combining armed conflict and environmental stress—or simply the routine social conditions making everyday life a disaster. The following discussion focuses on environmental disasters.

Environmental or natural disasters can be meteorological, such as forest fires, windstorms, landslides, droughts or extreme temperature events. They can also be based on geophysical processes like earthquake and volcanic

eruption. While environmental or natural disasters are set into motion by naturally occurring environmental hazards, they are also social processes grounded in the social organization of people. The hazards people have always faced (meteorological or weather-related, or geophysical, involving earth movement) as well as new ones (for example, global warming, toxic contamination) are often accepted as inevitable aspects of everyday life.

Physical vulnerabilities may be structural in nature, such as housing built in flood plains or earthquake zones. Social vulnerabilities are based on differences and inequalities among people. These include physical differences (consider, for example, the mobility barriers of the very young and very old), but especially reflect differences in social power structures (for example, based on sex, race or ethnicity, social class or age). These inequalities put people in places, jobs, houses and situations, which either increase or reduce their ability to anticipate, prepare for, survive, cope with and recover from the effects of natural disasters.

It is important to note that vulnerability is not inherent in persons (for

example, the disabled, women, the elderly), but follows from systems and structures of inequality, which convert differences to inequalities (for example, lack of attention in disaster contexts to the capacities or needs of people with disabilities, or constraints due to old age). Nor are vulnerable people helpless people, though women in particular are often seen only as needing "special" assistance. In other words, vulnerability to hazards is not given but created. "Vulnerability is consequent not on hazard but on particular social, economic and political processes. Disaster is an extreme situation, which results from these processes."⁸

Mitigation of risky environmental conditions and events involves actions taken to reduce risk and make people more secure, for example, when deforested hillsides are terraced and rainwaters harvested in drought-prone areas. Some forms of structural mitigation, such as levees and dams, can reduce flooding but may have negative effects downstream or on people's cultural and economic survival. Building codes can be strengthened and land-use planning implemented to prevent

development in areas exposed to the effects of hazards such as flood plains or known seismic zones.

Early warnings, evacuation centres and effective emergency relief and rehabilitation systems are other forms of mitigation as are preparedness measures at the household and neighbourhood levels. People make their lives and livelihoods more secure through mitigation but also by preparing against the eventuality of small fires becoming firestorms and storms becoming hurricanes. Practising emergency evacuation plans in homes and institutions, preparing and storing reserves of food and water, and educating children about the need to be prepared are only the most obvious examples. Mitigation and preparedness are not ad hoc activities before and after disaster occurrences but ongoing activities of daily life in communities constructed around ecologically sound use of resources, sustainable economic growth, human development and social justice.

Mitigation and preparedness need to be complemented by vulnerability reduction. The risk of disaster can be reduced by identifying hazards, taking precautions and preventing evident harm, but disasters cannot be prevented without identifying and addressing the root causes of people's socially constructed vulnerability to natural hazards. Despite significant advances in emergency preparedness and response in many parts of the world, people continue to be at very great risk of harm from the effects of natural disasters. Global development patterns carry some of the root causes of the very hazardous living conditions that shape the lives and futures of increasing numbers of people. Megacities and over-development of coastal areas, for example, are phenomena that put millions of people in risky living conditions. Development priorities which do not provide for sustainable use of natural resources or promote social development and the enjoyment of human

What is a natural disaster?

A natural disaster is the result of the impact of a natural hazard on a socio-economic system with a given level of vulnerability, which prevents the affected society from coping adequately with this impact. Natural hazards themselves do not necessarily lead to disasters. It is only their interaction with people and their environment that generates impacts, which may reach disastrous proportions.

A disaster is usually defined as a serious disruption of the

functioning of society, causing widespread human, material or environmental losses which exceed the ability of the affected society to cope using only its own resources.

Source: International Strategy for Disaster Reduction, *Countering Disasters, Targeting Vulnerability* (Information Kit, 2001). The Centre for Research on the Epidemiology of Disasters also offers a glossary of core concepts (www.cred.be/emdat/glossary.htm).

While we cannot do away with natural hazards, we can eliminate those that we cause, minimize those we exacerbate and reduce our vulnerability to most. Doing this requires healthy and resilient communities and ecosystems. Viewed in this light, disaster mitigation is clearly part of a broader strategy of sustainable development—making communities and nations socially, economically and ecologically sustainable.

Source: Janet Abramovitz, "Averting unnatural disasters", *State of the World 2001* (New York, Worldwatch Institute, W. W. Norton, 2001), p. 137.

rights deprive millions of people of good health, income, secure housing, information, social networks and other resources vital to surviving a devastating cyclone or flood. The number of people in water-stressed countries, for example, is expected to rise from 1.7 billion to 5 billion by 2025. Growing reliance on highly integrated "lifeline" infrastructures of communication, power and transportation also increases vulnerability to the effects of disruption, whether from accidental failure, sabotage or an ice storm or earthquake.

Grounded both in mitigation and in vulnerability reduction, disaster resilience (the "bounce back" factor) exists at the individual, household, organizational and institutional levels. Risk-reducing approaches to disasters enhance people's disaster resilience, but no clear separation of resilience from vulnerability exists. People and places can be highly vulnerable in some respects (a wealthy family in a seaside mansion, for example) and highly resilient in other respects (the family

will have savings, income and insurance to rebuild or relocate). Disaster-resilient communities are areas where people have identified local risks, taking into account all relevant hazards as well as social vulnerabilities to them, assessed local resources and capacities and organized steps to reduce these risks. Such efforts cannot be undertaken successfully without appreciating the differential impacts of disasters on girls and women, as compared to boys and men, or without the full use of the skills, knowledge and commitment of both women and men in building disaster-resilient societies.

Girls and women are affected directly and indirectly by disaster-causing trends and patterns, in ways that can be similar to those on men and boys, but also in substantially different ways. Too often, girls' and women's vulnerability is misunderstood as derivative (for example, women are disproportionately poor, hence disproportionately vulnerable to disaster) or subsumed under other categories (for example, illiteracy increases vulnerability, and women are disproportionately illiterate). In these

instances, the critical aspect of gender relations and the persistent subordination of and discrimination against women, and the relevance of such inequalities for disaster prevention and mitigation, remain unexamined.

Development of capacities and resources—skills, knowledge and abilities, including sound environmental practices, strong community ties and proactive community organizations—which are needed in the face of hazards and disasters requires a gender-specific approach that explicitly addresses women's needs, priorities and constraints as well as those of men to achieve optimum results. Women's groups and networks often play a critical role in developing such capacities.

New approaches to hazards and disasters

Disasters are still more likely to be seen as isolated occurrences rather than complex social processes. Taking this narrow view fosters an ad hoc, event-focused approach based on "managing"

What is the risk management approach to disasters?

Emergency management approach:

- Focus on the emergency itself and actions carried out before and after;
- Objectives are to reduce losses, damage and disruption when disasters occur and to enable rapid recovery.

Source: S. Jeggilos, "Fundamentals of risk management", *Risk, Sustainable Development & Disasters: Southern Perspectives*, Ailsa Holloway, ed., (Cape Town, University of Cape Town, Periperi Publications, 1999), p. 9.

Disaster risk management approach:

- Focus is on the underlying conditions of risk, which lead to disaster occurrence;
- Objective is to increase capacity to manage and reduce risks, and thus the occurrence and magnitude of disasters.

catastrophic events, generally through male-dominated “command and control” emergency management systems based on technological expertise and the easy assumption that outside help is needed for disaster “victims”.

With growing recognition of the limited effectiveness of this approach, new avenues are being explored in developing and developed nations alike. In this new framework, disasters are viewed as a social process that unfolds in a particular political, economic, historical, social and cultural context. From this perspective, reducing the risk of disasters, rather than managing disastrous events, is the top priority. This begins with understanding risk factors in particular places and times.

Local knowledge is the first element for effective disaster reduction. Communities that are knowledgeable about mitigating local hazards and reducing their own social vulnerabilities and have an appreciation of indigenous and historical coping strategies as well as outside emergency preparedness and response resources are better able to prevent extreme environmental events from becoming human disasters. When the next flood occurs, as it surely will, people will rebuild in ways that reduce, not reinforce or recreate, their exposure to hazards—for example, by relocating homes or planting trees to restore denuded hills causing landslides.

Where disaster management approaches perpetuate a view that women have “special” needs that create additional difficulties for relief workers, women’s subordination is reinforced. The alternative approach now emerging invites attention to gender relations, the priorities and needs of women as well as men, and the division of labour in households, communities and in the public sphere. This approach highlights women’s critical roles as resource users and managers, and takes advantage of their role in social change and of their contribution throughout the disaster process or cycle. Recognizing that neither sus-

tainable development nor disaster reduction can be realized without the empowerment of women, women and men are treated as full and equal partners in the hard work of building disaster-resilient communities.

Women at risk in disasters

Far from unmediated “natural” events arising from human settlement in an inherently uncertain environment, natural disasters are social processes precipitated by environmental events, but grounded in historical development patterns and social relations, of which gender relations are a core component. Though not uniformly or universally, women are often both uniquely vulnerable to the effects of degraded environments subject to natural hazards and uniquely positioned as “keys to disaster prevention”.

Gender roles put women in hazardous positions

Effective management of natural resources and effective policies to reduce risks or respond to natural disasters require a clear understanding of gender-based differences and inequalities. Lack of such understanding can lead to the perpetuation or reinforcement of such gender-based inequalities and other dimensions of social vulnerability in the provision of emergency relief and in long-term reconstruction processes.

Women tend to be over-represented in highly vulnerable social groups, whose ability to prepare for, survive and cope with disasters is severely limited. Such groups include rural populations that remain behind when men migrate to urban centres for work—the frail, elderly, refugees and displaced persons, single heads of poor households, and those living with chronic health

problems. Gender-based inequalities and disadvantages are often compounded by factors such as race, class, ethnicity or age, which lead to great differences in women’s experiences in disasters.

While gender roles vary culturally and historically, they often create risky living conditions for women both in “normal” and extreme periods. Women who are poor or economically insecure are less resilient to disasters. Earning an income and providing for their families puts women on the front lines of hazardous work on a daily basis. Other factors, such as elevated levels of malnutrition and chronic illness, low levels of schooling and literacy, lack of information and training, inadequate transportation, and cultural limitations on mobility, can also reduce women’s resilience to disaster. Caring for others takes many women’s lives when sudden choices must be made about self-preservation or rescue of children and others. Because their lives are so often confined to the home, girls and women are correspondingly more exposed than men to death and injury when buildings collapse. Lack of secure housing and land rights and relative lack of control over natural resources, risk of domestic and sexual violence, and barriers to full participation in decision-making affecting environmental management and public policy are other factors that can increase women’s vulnerability to natural disasters, and reduce their ability to prepare for, survive and recover from devastating mudslides or fires robbing them of livelihood, health, security and community.

Degraded environments and their gender-specific impact

Not universally, but often, it is women’s relationship to the natural world that most directly puts them at risk and motivates their efforts to make life safer and more secure.

Girls and women have significant opportunities as resource users and managers as well as environmental consumers, producers, educators and activists to impact on their natural environment. That impact may be no more benign than men's—and sometimes what women do makes natural disasters more likely. For instance, like landless men, women are less likely to adapt sustainable farming practices when they do not own their land. In many parts of the world, "women's food crops are relegated to rented, steeply sloped land with erosive soils. Because tenure is not secure, women have little incentive to invest in soil conservation"⁹ which might, in turn, minimize erosion and landslides. Driven into refugee camps by disasters or armed conflict, or forced onto fragile lands by destitution, women can also make matters worse by overutilizing local resources to sustain life.

Degraded forests, polluted waters, eroded soils and other symptoms of environmental stress impact on girls' and women's time, educational opportunities, economic status, health and human rights in a way that is frequently gender-specific and based on societal expectations about the roles of women and men. Denuded forests, to choose one example, force women or girls to walk long distances to gather just enough fuel wood for one spare meal a day, preventing them from engaging in income-generating or educational activities. Overburdened and poorly nourished girls and women are correspondingly less able to resist the hunger, illness and despair that a catastrophic flood will bring.

The environmental impacts of women's work, their roles as family educators and the significance of their decisions as consumers have made sustainability a key issue for women and women's movements around the world. With respect to resource-dependent employment, women are on the front lines of environmental conservation and stewardship as their

Effects of environmental degradation on women

... The deterioration of natural resources displaces communities, especially women, from income-generating activities, while greatly adding to unremunerated work. In both urban and rural areas, environmental degradation results in negative effects on the health, well-being and quality of life of the population at large, especially girls and women of all ages. Particular attention and recognition should be given to the role and special situation of women living in rural areas and those

working in the agricultural sector, ... Environmental risks in the home and workplace may have a disproportionate impact on women's health because of women's different susceptibilities to the toxic effects of various chemicals. These risks to women's health are particularly high in urban areas, as well as in low-income areas where there is a high concentration of polluting industrial facilities.

Source: Beijing Platform for Action, para. 247.

livelihoods and the health and well-being of their families and communities depend upon it.

As key environmental actors, women's priorities, values, abilities and activities increasingly shape the movement to prevent environmental disasters and toward environmental sustainability.

Natural disasters and their gender-specific impact

When women and men confront routine or catastrophic disasters, their responses tend to mirror their status, role and position in society. Accounts of disaster situations worldwide show that responsibilities follow traditional gender roles, with women's work carrying over from traditional tasks in the home and household, and men taking on leadership positions.

Gender-based inequalities can put women and girls at high risk and make them particularly vulnerable during natural disasters. There are many casual-

ties among women in disasters, for example, if they do not receive timely warnings or other information about hazards and risks or if their mobility is restricted or otherwise affected due to cultural or social constraints. Field accounts repeatedly demonstrate how unwritten or unexamined policies and practices disadvantage girls and women in emergencies, for example, marginalizing them in food distribution systems, limiting their access to paid relief work programmes and excluding them from decision-making positions in relief and reconstruction efforts. Emergency relief workers' lack of awareness of gender-based inequalities can further perpetuate gender bias and put women at an increased disadvantage in access to relief measures and other opportunities and benefits.

The direct and indirect impact of disasters on women's lives and livelihoods extend to their aftermath. Gender-based attitudes and stereotypes can complicate and extend women's recovery, for example, if women do not seek or receive timely care for physical and mental trauma

Impacts of drought and earthquake on rural women in Gujarat, India

Because rural women's work is so highly resource-dependent, they suffer immediate unemployment and indirect loss from the ripple effects of degraded natural resources. Water resources are a case in point. Already undependable water sources were rendered useless in some cases by the earthquake, while elsewhere the quality of water deteriorated. As women are responsible for water gathering, more limited water supplies translates into less time for income-generating work. Lack of water also obviously reduces women's opportunities to earn money through waged labour on local farms. When alterations in hydrologic systems salinized water, women whose income depends on water may lose a reliable, if limited, source of income. Women salt farmers, who are 50 per cent of the migratory labour force to the Little Rann, are at risk of long-lasting economic stress

under these conditions, which may force them out of villages and into informal work in cities. Women's local knowledge and historical perspective on natural resource-based employment is an essential asset to economic planners working at the community level. Their work as guardians, users and managers of scarce natural resources positions them as experts in the decisions to come about how to rebuild in ways that mitigate damage from future disasters. Across castes, classes and ages, women's "inside out" perspectives on environments, disasters and development must be brought to bear on the question of reconstructing Gujarat's economy.

Source: Elaine Enarson, "We want work", Rural Women in the Gujarat drought and Earthquake. Quick-Response Research Grant Report to the Natural Hazards Research and Information Center (www.colorado.edu/hazards/qrr/qr135/qr135.html).

Women reducing risk and responding to disasters

The critical link between gender equality, sustainable development and disaster reduction is not women's vulnerability or even what happens to girls and women in fierce storms or long droughts, but women's roles long before and even longer after such occurrences. Women's social position identifies them as "keys to prevention" of natural disasters, to borrow the language of the United Nations International Decade for Natural Disaster Reduction (IDNDR). Building on their strengths—women's knowledge of local people and ecosystems, their skills and abilities, social networks and community organizations—helps communities mitigate hazardous conditions and events, respond effectively to disasters when they do occur, and rebuild in ways that leave people more, not less, resilient to the effects of subsequent disasters.

The case studies below show women acting in ways that promote wise use of the environment and more egalitarian social relationships and institutions. In this sense, women and women's empowerment are indeed central to the development of an integrated global social movement toward sustainable development and natural disaster reduction. The case

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