



Gender, Generations, Social Protection & Climate Change:

A thematic review



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Abbreviations

AIDS	Acquired immune deficiency syndrome
CCABA	Climate, Community and Biodiversity Alliance
CEH	Children's Environmental Health
CRC	The Convention on the Rights of the Child
DFID	Department for International Development
DRR	Disaster Risk Reduction
FAO	Food and Agriculture Organization of the United Nations
FUNDEPCO	Fundación por el Desarrollo Participativo Comunitario
GALS	Gender Action Learning System
GGCA	Global Gender and Climate Alliance
GHG	Green House Gas
HIV	Human immunodeficiency virus
IASC	Inter-Agency Standing Committee
IUCN	International Union for the Conservation of Nature
MDGs	Millennium Development Goals
NAPA	National Adaptation Programme of Action
NASFAM	National Association of Small Farmers of Malawi
NGO	Non-Governmental Organisation
ODI	Overseas Development Institute
PDNA	Post-Disaster Needs Assessment
PRSP	Poverty Reduction Strategy Paper
PSNP	Productive Safety Net Programme
REDD	Reduced Emissions from Deforestation and Forest Degradation
SP	Social Protection
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WEDO	Women's Environment and Development Organisation
WEN	The Women's Environmental Network
WOCAN	Women Organizing for Change in Agriculture and Natural Resources Management

Executive summary

This thematic review and annotated bibliography explores the gender and social difference dimensions of vulnerability and adaptive capacity in relation to climate change. Climate-related shocks and stresses are adding pressure to the already precarious livelihoods of marginalised peoples experiencing poverty and a range of other constraints in the global South - and will increasingly do so with progressive climate change. This study provides an introductory outline of key concepts in climate change vulnerability and resilience, but situates these firmly in a broader understanding of institutional and environmental vulnerability. A comprehensive review of the literature has been undertaken on four key topics: gender and climate change; children and climate change; older people and climate change; and finally social protection and climate change. This paper summarises the key insights from this literature to inform policy-makers, practitioners and researchers of the current thinking in this field.

Climate change poses challenges on a new scale for humanity, particularly for the populations of lower income countries. There has been relatively limited in-depth analysis of the gender dimensions of climate change to date, partly because of the uncertainties of climate change science and the lack of downscaled data which makes it hard to predict how the climate will change at a very local level, and because social change processes are difficult to predict. However, the literature indicates that women are disproportionately vulnerable to climate change, because they are more likely to be found in the poorest sections of society, have fewer resources to cope, and are more reliant on climate-sensitive resources because of the gender division of labour. They tend to have lesser access to livelihood resources and hence more limited capacity to participate in climate change adaptation processes – although they should be treated as active agents rather than victims. Although, all members of poorer communities will be affected, women and female headed households are likely to be most affected by increasing extreme weather events, greater climate variability and long-term shifts in climate averages. Children and the elderly have certain unique vulnerabilities and capabilities with respect to climate change, but these are also shaped by social determinants. So while all societies will be affected by climate change, the impacts will vary by location, exposure, and context specific social characteristics, identity, power relations and political economy.

Scientific studies are continuing to understand this phenomenon and to deliver more accurate and downscaled projections. Climate mitigation, low carbon pathways and latterly adaptation responses are being researched and piloted by the international community and national governments, as well as civil society and local communities, but these interventions and policy decisions also have gender and social difference dimensions in terms of their design processes and objectives, their implementation and their impacts.

More analysis is emerging in the academic, policy and practitioner literature on gender and climate change adaptation, although a fair amount of this literature is based on desk studies drawing on previous responses to climate variability. Section 4 reviews literature on gender and climate change, Section 5 covers children and climate change studies, and Section 6 focuses on older people and climate change materials. All three sections examine the specific impacts on more vulnerable groups, as well as the challenges of representation in international and national policy processes and in local decision-making. Generally speaking, there is a larger body of literature on *gender* issues in relation to climate change, compared to the material on the other two issues. These three bodies of work have developed separately, with very little inter-connection, despite the fact that there are in fact closely intertwined. There are also some clear gaps in research such as analysis of climate change and ethnicity or caste, and the intersection between different lines of social difference. The majority of the studies focus on rural settings, rather than urban contexts, and adaptation has also been more centre-stage than mitigation as a topic for analysis using a gender and social difference lens.

Common threads can be identified in the literature on gender and generations and climate change, such as: the importance of moving beyond notions of these groups as passive in the

face of challenges; and highlighting their ability to act as active agents of change, given adequate support, including their representation in international and national policy processes. Many of the studies attempt to tease out the types of impacts that these groups may face on a disproportionate scale and the social and biological reasons why. Understandably, there is relatively little in-depth field research from which to draw insights because of the nature of climate change science and because many climate policies and programmes are only just being implemented. Several studies provide detailed analysis of the international UNFCCC negotiations process and show how gender activists are seeking to engender the climate regime. Some authors have critiqued the focus of attention in climate change and gender debates on retrofitting climate finance market mechanisms to become more gender- or generation-friendly, rather than the alternative, which they argue would be the finding and envisioning of strategies and overall development pathways that are designed with women, children, older people and social relations in mind.

Section 7 reviews the literature on the role of social protection in responding to climate change. Social protection is an important component of supporting groups that are vulnerable to shocks and stresses, to enable them to survive and to cope with such difficulties without asset stripping. However, until recently the role of social protection in responding to climate change has been neglected. Emerging conceptual studies and some empirical findings propose that while there are differences between social protection, disaster risk reduction and climate change adaptation approaches, there are also clear overlaps and potential synergies. Greater convergence is important in theory and in practice.

Because of existing power inequalities and social norms, the impacts of climate change will not be felt evenly, but will be overlaid onto existing patterns of vulnerability within rural and urban populations and communities – and may make patterns of inequality more pronounced. There are already some types of social protection that have been shown to be effective, such as cash transfers. There are newer types of social protection, such as weather-index insurance, that are only beginning to be implemented. The gender and social difference dimensions need to be further analysed as these programmes are put into practice. There is also an argument that more transformative forms of social protection may be needed in certain locations, (such as promotion of minority rights, anti-discrimination campaigns, social funds), to change social relations and confront the root causes of discrimination and inequality. To achieve social protection that is 'adaptive' also requires integration of climate knowledge (scientific and local) into decision-making and policy/programme design. Ultimately, climate change responses can only be equitable if they place the empowerment of women and marginalized groups and the tackling of gender and social inequality *centre-stage*.

1 Introduction

This thematic review and annotated bibliography explores the environmental vulnerabilities faced by less affluent and powerful communities and groups, in particular the climate-related shocks and stresses adding pressure to already precarious livelihoods. The role of social protection measures in enabling particularly vulnerable groups to respond to these pressures is also explored. Because of existing power inequalities and social norms, the impacts of climate change will not be felt evenly, but will play into existing patterns of vulnerability within rural and urban populations and communities – and are likely to make patterns of inequality more pronounced.

Women and female-headed households are disproportionately represented in groups experiencing poverty, and are affected by all kinds of pressures (e.g. HIV/AIDs, regionalising and globalising markets, population increase and land fragmentation, localized environmental degradation etc.). Women and female-headed households tend to have fewer resources to cope with and adapt to stresses of all kinds, and rely on more climate sensitive resources and livelihoods. Moreover, climate disturbances are projected to increasingly pressurize poor rural and urban communities in many areas of the world. It is thus critical to understand how the impacts of climate change will be differentiated. It is also important to understand how climate policy-processes and decision-making are rarely gender neutral. There should be efforts to avoid negative impacts of climate change responses (e.g. mitigation and adaptation policies, programmes, and autonomous actions) and instead find opportunities to promote women's empowerment and that of other marginalised or disadvantaged groups. This thematic review explores the gender and generational dimensions of environmental vulnerability and resilience and considers some of the implications for social protection in particular. This thematic review is based on an accompanying annotated bibliography, which includes 121 studies on children and climate change in developing countries, climate change and social protection, gender and climate change and older people and climate change.

This paper gives a general oversight of the relevant literature and its strengths and weaknesses (section 2), before unpacking environmental and climatic vulnerability and resilience (section 3), and then identifying the specific gender dimensions of climate change (section 4), and age-related differences, covering children and climate change (section 5) and older people and climate change (section 6). The implications of gender-differentiated and generation-differentiated impacts of climate change are explored in relation to the opportunities presented by social and self-protection to improve disaster risk reduction and adaptation and the changes needed to achieve 'adaptive social protection'. The final section (section 8) synthesizes the key findings of this review.

2 The literature

Initially, the climate change field was dominated by the biophysical sciences, but in recent years the development community and social sciences have engaged more fully in identifying the myriad development implications of a changing climate. From a slow start, there is now increased analysis of the social, political, economic and cultural dimensions of climate change. However, it is not always easy to separate the climatic and non-climatic factors at work, and which are creating change in a particular place. The uncertainties of climate change projections, particularly below national level, combine with the inherent complexities of social, environmental, economic and technological change in any given place, which are in turn influenced and driven by processes across scales. This creates a complex picture. In many smallholder farming systems, for example, farmers are already coping with and adapting to on-going shocks and stresses, including, but not limited to, climate variability. Therefore teasing out how the climate and gender dynamics will interact in any particular place is not that easy and particularly over longer time horizons.

Climate change is expected to lead to increases in extreme events, increasing climate variability, and longer-term shifts in means (e.g. average temperature and precipitation). Only some climate change impacts (such as sea level rise and glacial melt) can be attributed directly to anthropogenic climate change. In many other areas climate change is currently experienced as an increase in extreme events and their intensity (although no one hurricane or flood can be attributed to climate change) and/or increasing climate variability. In some regions of the world, local communities are already experienced in coping with and adapting to climate variability, for example in drylands such as the semi-arid zones of Tanzania. According to many authors there is increasing evidence from local populations that levels of variability and unpredictability are increasing beyond what they are normally used to – and in parallel with localised processes of environmental change in many areas (see Maddison, 2006; Nelson and Stathers, 2009).

It is important though to note that climate variability should not be conflated with climate change. Although farmers are widely reported to be experiencing increasing variability and increased frequency of extreme events now, and despite the fact that these experiences of variability are real and important, it remains the case that their relationship to global processes of climate change remains problematic. Climate changes more clearly linked to increased greenhouse gas (GHG) emissions, and in particular changes in means (of temperature and precipitation), are only beginning to be apparent, and most projections of them look two or more decades into the future. It is thus easier to establish relationships between gender and climate variability, than it is between gender and climate changes which are only just beginning to become apparent. As a result many of the studies on gender and climate change are necessarily somewhat speculative.

Moreover, these challenges relating to long-term climate change combine with the maelstrom of change processes affecting many rural and urban societies in the global South and indeed around the world. In smallholder farming systems in dryland areas, for example, farmers have already developed adaptive livelihoods to cope with on-going uncertainty and climate variability, but are also faced with larger-scale trends (e.g. HIV/AIDS pandemic, regionalising and globalising markets, population growth in

urban centres, ageing rural populations etc). Many rural households are engaging in off-farm livelihood activities, including seasonal mobility and trade, to make a living and some are making a permanent move to urban areas. Given all of this, it is not surprising that there is limited theoretical work and empirical information on the *differentiated* impacts and processes related to climate change, exacerbated by the continuing lack of attention to gender issues in some quarters.

Research and publication on gender and climate change generally started earlier than that focusing on children and climate change, although both draw upon pre-existing knowledge and studies on gender, age (e.g. children in development, older people in development) and ethnographic work on caste, class, and ethnicity etc. There is not a great deal of linkage between the different sets of literature.

It is widely recognised that there are other forms of social differentiation intersecting with gender in each society, but the relative importance of these varies in different situations. There is very limited in-depth analysis of caste, ethnicity or class, as a differentiator of climate change impact within the broader gender and climate change literature or as stand-alone studies (a notable exception being Ahmed and Fajber, 2009). There is a substantial literature on indigenous peoples and climate change impacts (direct impacts and indirect impacts of adaptation and mitigation) (See for example, Roy and Venema, 2002; Salick and Byg, 2007; Macchi et al., 2008). These studies may shed light on how various forms of social discrimination and exclusion may intersect with gender to shape the outcomes of changes in the climate.

In contrast, the literature on gender and disasters is much larger, probably because the impacts of disasters are more easily visible and are observable now. This literature can inform gender and climate change debates, but it is important to remember that individual hazard events cannot actually be attributed to climate change.

Some work is beginning to emerge on gender and mitigation, in particular in relation to biofuels and the impacts of new investments of different sizes (local level, participatory projects; contract farming and outgrower schemes of different sizes; large-scale corporate investments). Identifying the potential climate change impacts and gender dynamics in smallholder agriculture has been explored conceptually (Nelson, forthcoming), but there is only limited analysis of climate variability and change and gender in empirical studies. Gender has been neglected in the analysis of urban and peri-urban climate change processes, although a recent UN-Habitat (2010) report begins to explore some of the key issues in the broader context of achieving gender equality in urban development.

There is limited exploration (conceptual and empirical) as yet on how gender dynamics shape climate change adaptation interventions, but because policies, programmes and projects are being devised and are beginning to be implemented there are lessons to be learned about improving gender equality and promoting women's empowerment.

Across the gender and climate change literature there are common arguments which appear in the majority of papers on this topic, and many of these threads run through the literature on children, older people and climate change, and indigenous groups as well. These common issues are as follows:

- there is insufficient exploration, information and evidence on the gender-differentiated nature of climate change impacts, particularly at the local level;
- the impacts of climate change on women have been relatively overlooked, partly because of the invisibility of gender issues and gender inequalities;

- there is a need for improved understanding of how different social groups are affected by climate change, and of how to build upon their capabilities;
- women and other marginalised groups have relevant knowledge and skills for adaptation, which is being ignored;
- each marginalised group (women, children, older people, etc) has *unique* vulnerabilities to climate change;
- individuals can be active agents of change – especially given external support to articulate their concerns to authorities beyond the community. They should not be seen as passive victims, because this is a partial view that risks reinforcing their powerlessness;
- facilitation of greater participation by these groups in climate policy spaces and decision-making is both urgent and important.

3 Unpacking climate vulnerability and resilience and broader environmental pressures

To provide some background context to the issue of gender and climate change, this section unpacks the key concepts with widespread currency relating to climate change vulnerability, but firmly situates this within a broader understanding of environmental vulnerability and resilience. This is to avoid the risk that climate change is conflated with or obscures other key pressures which may be of equal or greater importance to (differentiated) local communities. There is also a substantial body of work in existence that is focused on the broader vulnerabilities of poorer populations to environmental change and of vulnerability to climate change impacts more specifically – but much of this does not incorporate detailed analysis of social differentiation and gender dynamics.

A distinction is often drawn between the direct and indirect impacts of climate change on human societies. For example, in smallholder agriculture, climate change could directly affect biological processes at organism and farm level, environmental processes at the wider landscape level (e.g. affecting river flow) and human health (Morton, 2007 and e.g. see Homer et al., 2009 on climate change and threats to maternal health). The indirect impacts relate to how autonomous adaptation in other locales affects a particular place and secondly from the effects of emerging climate change policies and programmes (Anderson et al., 2009).

However, it is not only climate stressors that are affecting and will increasingly affect poor rural and urban communities, but other trends and pressures which limit the adaptive capacity of these communities. Examples include regionalizing and globalizing markets, poverty and population increase leading to land fragmentation, etc. (Morton, 2007). HIV/AIDS, poverty and unemployment are factors changing gender roles and affecting women and men differently in South Africa, for instance, alongside and in concert with climate change impacts (Babagura, 2010).

Localised environmental degradation processes are on-going in many parts of the world, and would occur whether or not climate change was occurring. Localised environmental degradation processes should not be seen as one and the same with climate shocks and stresses, (Redclift and Benton, 1994), although the two are likely to combine in their impacts and their feedbacks on local adaptive capacity and vulnerability. Climate change will intensify environmental processes at the landscape level such as changes in river flow or reducing biodiversity. Environmental degradation often increases local-level community vulnerability to all shocks and stresses, including climatic ones.

The interaction of direct and indirect climate change impacts and other stressors will create compound effects and potentially unexpected impacts (Morton, 2007). It is therefore important to tease out the different stresses affecting less affluent communities and groups, and individuals at the intra-household level, in particular locations. Future studies should seek to explore the social and ecological dynamics in specific situations to gain insights into how gender roles are being reshaped and

contested, what are the trajectories of gender relations, and the implications for women, men and other social groups.

The concept of vulnerability has long been used in disaster risk reduction and international development, in reference to social groups, communities and even nations that are considered particularly at risk from environmental or other phenomenon and may be in need of external support. In the context of climate change, this concept has gained even greater currency, but definitions tend to be loose and analysis of the *causes* of vulnerability would provide greater precision (Blaikie, 1994 cited by Cannon, 2008). The concept of vulnerability has been subject to critique because of its associated connotations of powerlessness – a discourse which can become a self-fulfilling prophecy. In climate change adaptation, technical fix approaches have predominated in the early days, (Denton, 2002; Boyd et al., 2009), partly because the debates were led by climate scientists and there was a lack of engagement by development practitioners and social scientists. However, participatory processes of learning and action in adaptation are increasingly being implemented, which focus on capabilities and localised learning processes.

Vulnerability specifically to climate change is commonly defined as being a function of exposure, sensitivity and adaptive capacity. In terms of **exposure**, some geophysical areas will be more affected by others – for example, low-lying coastal areas may be more affected by sea level rise and extreme weather events than inland areas for example. But quite often there are spatial dimensions to poverty and social exclusion, with the poorest being forced to live on the most marginal lands, fragile soils, steep slopes and flood prone areas – in both rural and urban areas – because they have lesser access to land than others (Eriksen et al, 2007). Vulnerability to shocks and stresses is not purely a physical attribute, therefore, but is in fact to a large extent *socially* determined (Wisner et al, 2004; Eakins and Luers, 2006). This is because social, institutional, political and economic factors shape the bundles of rights and claims to resources, which are critical in securing livelihoods and which determine adaptive capacity to respond to climate change (Blaikie, 1994; Eakins and Luers, 2006; Cannon, 2008). Those who already suffer ill health, have fewer resources to cope, are at a stage of life which makes them physically weaker or unable to secure their own livelihood, will be most negatively affected because they have less adaptive capacity (e.g. access to and control over key livelihood capital assets).

Sensitivity to meteorological changes is a second *component* of vulnerability, and women and poorer people tend to rely more on climate sensitive resources (such as water, and fuel wood), because of the roles they are ascribed in the household or because of the nature of the livelihood options open to them. Further work is needed to understand the gender roles ascribed to women and men in different societies and how this is changing in broader contexts of agrarian and urban transformation. Diversification away from climate sensitive activities may be needed, but achieving this is not always straightforward given the lack of resource entitlements that create poverty in the first place and without significant investment and support. As well as diversifying livelihoods to reduce farmer vulnerability, livelihood protection is likely to be needed to maintain minimum subsistence levels. Further, promotion of livelihood options is required (e.g. raising returns and building assets). All of these types of changes have to take into account projected climate change, as well as short-term needs.

Finally the third component of vulnerability to environmental and climate change is **adaptive capacity** – i.e. the livelihood resources and environmental entitlements which people have access to or make claims upon to secure their livelihoods and

respond to climate change. Adaptive capacity also refers to the ability of individuals, communities and organisations to innovate, self-organize, and respond to uncertainty. A key natural resource is land, for which poorer or disadvantaged groups, including women and female headed households, commonly have less well-defined rights and more insecure access. Existing patterns of poverty and inequality are thus overlaid by climate change (Denton, 2004; FAO, 2007; Davies, Oswald and Mitchell, 2009), leading, in all likelihood, to a worsening of these inequalities as climate change impacts begin to bite. Beyond resources, adaptive capacity is also about the ability of people and communities to actively engage in processes of learning and adaptation to new situations. Clearly, there is a gender dimension to adaptive capacity as gender discrimination presents barriers to women's equal participation in many decision-making processes and access to education and skills training.

Some authors argue that climate change adaptation (Davies, Oswald, and Mitchell, 2009) is focused on reducing risks for the poor and helping them respond to climate change, but in fact it should not be assumed that climate change adaptation is always necessarily 'pro-poor': some policies and programmes may exacerbate poverty and inequality. Instead adaptation *should become* 'pro-poor' (Tanner and Mitchell, 2007), and fairer and more socially just (Adger, et al, 2007). Other papers recognise that adaptation planning and activities may involve difficult sets of trade-offs between meeting short-term needs for poor communities facing clear, immediate risks, and longer-term environmental protection and investments for future generations (Nelson, Adger and Brown, 2007). There may be synergies, but there will be many difficult decisions. Achieving 'high adaptedness' now, (e.g. by building sea walls to keep back rising seas) may be costly and might foreclose on options that would lead to more secure and sustainable outcomes for future generations (e.g. helping relocate coastal communities in less vulnerable locations inland) (Nelson, Adger and Brown, 2007).

Whilst definitions of poverty vary they often refer to a measure of socio-economic status (rather than dynamic processes of accumulation and dispossession). In comparison *vulnerability* may be more predictive in nature, emphasising what *may* happen to a particular population, group or individual in relation to a specific risk, hazard (Cannon, 2008) or change in the climate (variability and changing means). Disasters become much more severe when a natural hazard hits a vulnerable population – i.e. groups of people without livelihood resources to prepare, cope and recover. Because vulnerability is socially determined, it is thus important for vulnerability assessments to be explicit about and to challenge existing entitlements where these are inequitable, and to find new mechanisms for tackling inequality, engaging with diverse perspectives and disciplines (Eakins and Luers, 2006). This would include challenging constrictive social and gender norms which create inequalities and suffering in the first place and that limit participation in climate change adaptation processes.

The term '**resilience**' is increasingly used in climate-related publications, as an inverse of 'vulnerability', because it has more positive overtones. As with vulnerability, it can be applied at different levels, but is commonly used in relation to individual, household or community capacity to cope with and recover from shocks and stresses. Key components of resilience to natural hazards include (Cannon, 2008): baseline well-being of household members (nutritional status, physical and mental health, morale); self-protection (the degree of protection afforded by capability and willingness to build safe homes, use safe sites); livelihood resilience (e.g. access to and control over assets); social protection (forms of hazard preparedness provided by society more generally, e.g. building codes, GHG mitigation measures, shelters, preparedness); and governance (i.e. power relations, social networks, and institutional environment).

Social insurance to protect against environmental adverse events could also be added to this list.

Resilience depends upon access to and control of livelihood resources, which at the wider scale relate to the predominant governance system that determines asset and income distribution. Good health is also critical, as are social norms which encourage self-protection, long-term thinking and freedom of action (Cannon, 2008). Self-protection is influenced by individual experience and knowledge, as well as cultural norms. (See Neefjes et al., 2009, where communities in coastal lowland Vietnam with previous experiences of natural hazards have greater confidence and skills in self-protection, compared to communities in upland areas facing the same risks for the first time. In both locations cultural norms and external interventions play a role in shaping who can act and how in response to natural hazards).

Social protection is strongly determined by governance dynamics, including the way civil society operates and the formal and informal institutional arrangements in existence, which may embed discrimination, and thus shape climate change outcomes. Intra-household, intra-community and inter-community inequalities mediate the outcomes for individuals and different social groups, as do the broader scale mediating policies and institutions (e.g. the types of social protection on offer, who can access them, how effectively they are administered).

Whilst wealth and membership of social groups and networks confer resilience for some, this may also undermine the resilience of others (Cannon, 2008) to shocks and stresses, including climate ones. The well-known risks of community-based approaches in development (elite capture of benefits, increased internal tensions, and risks of reprisals once development agencies disappear) must be explicitly recognized in climate change adaptation (Cannon, 2008). Lessons must be learned from development experience in the design of climate change programmes and financing mechanisms, to avoid inequitable outcomes.

There are also insights available from the field of socio-ecological resilience thinking, in which a complex adaptive systems approach is adopted for analysing change. The term resilience in this case is about the ability to recover from a shock or stress, with consideration of the internal functioning of a system (however the system is defined) and the external factors which create pressure to change (Folke, et al, 2002; Walker and Salt, 2006; Boyd, et al, 2009). This 'resilience thinking' attempts to explain the non-linear changes in socio-ecosystems, which may occur as external shocks and stresses disturb internal processes and dynamics (sometimes involving amplifying feedbacks), and lead to the crossing of thresholds and tipping points in systems that are already under pressure or degraded, and to transformation to a new system state. The concepts and language of resilience thinking are somewhat dense for the non-specialist, and there are risks of underplaying the agency of social groups. The concepts are also not easy to apply in practice because of the inherent characteristics of complex systems. Prediction of exact change in the near term is practically impossible, but measurement of longer-term trends and slow variables may provide pointers as to how near a system is to resilience and sustainability, and how near it is to critical tipping points and thresholds.

This kind of resilience thinking is also encouraging scenario-building to explore potential future development pathways, particularly in the light of climate change. There are more efforts to facilitate such exploration of scenarios with policy-makers and stakeholders, not least to explore where areas of 'lock-in' may occur – i.e. decisions taken now foreclosing on future options. It is clearly important that women

and gender issues are a central part of scenario-building, as with any other multi-stakeholder planning and learning process, if the outcomes are to be more gender-sensitive. As changes in a socio-ecological system are not necessarily linear, they can be sudden and sharp, this process may be painful for those with least resources and power, but at the same time turbulence may help to challenge constrictive social and gender norms leading to greater empowerment for women (Nelson and Stathers, 2009). An example, would be the changes in gender relations in the UK spurred by the Second World War, where women were given jobs in factories to contribute to the war effort in the absence of young men, changing ideas of what it was appropriate for women and men to do.

As complex, trade-offs become more inevitable with climate change, a key question becomes 'Resilience for whom?' Nelson, Adger and Brown (2008) ask 'What are desirable system states for different groups in society that we should be striving for, how can less powerful actors assert their agency in a context of increasingly difficult trade-offs in development decision-making?'. Climate change is not the only disturbance to socio-ecological systems, but it is set to increase, and in combination with other planetary trends (e.g. species extinction, nitrogen cycle, land use change, freshwater usage, ocean acidification etc) the consequences may be extremely serious (Rockstrom, 2010). However, understanding and acceptance of these planetary pressures and their equity implications amongst the general public and amongst policy-makers is still inadequate and in some places weakening. The international negotiations continue, but have yet to produce significant progress on reducing emissions.

4 Gender and Climate Change Issues

Gender relations and social discrimination cut across all facets of human endeavour – but the precise nature of the process varies. Similarly, climate change will affect all human societies in all their activities, albeit in different ways and to different degrees. It is therefore necessary to look in more detail at some of the many, varied ways in which gender and climate change issues intersect. This section begins with a précis of some of the common threads that can be observed in the gender and climate change literature to date, and then sets out how climate change impacts will be gendered. The lack of recognition of gender relations in climate policy-making and the efforts to rectify this situation are then discussed. The particular gender issues arising in disaster and long-term, slow onset climatic changes are explored, followed by a synthesis of current debates on gender and mitigation. Finally, this section of the thematic review considers how pathways of environmental change are gendered, and reflects on the debates relating to the potential limits to adaptation and the role of migration in women's and men's adaptation strategies.

Gendered dimensions of climate change

Attention to gender and equity has lagged behind in climate change research, programming, national policy-making and in the international negotiations (Masika, ed. 2002; Wamukonya and Skutsch, 2002; Nelson et al, 2002; Cannon, 2002; Skutsch, 2002; Dankelman, 2008; FAO, 2007; Lambrou and Grazia, 2007; Terry, 2009). Studies on climate change and gender have initially and by necessity been somewhat speculative in nature. The impacts of climate change are affecting and will affect disproportionately poorer rural and urban communities in developing countries, but few of the vulnerability and adaptation assessments adequately explore the gendered or socially differentiated nature of those impacts. This is starting to change with more evidence being gathered from the field of how increased climate variability and climate change is affecting developing countries' populations and with potential future scenarios being explored - but a great deal more of this kind of analysis and understanding is needed.

There is a great deal of convergence and similar threads of argument running through the gender and climate change literature. These commonalities across the literature are explained below.

It has only been recognised fairly recently that women will be disproportionately affected by climate change compared to men, because of widespread entrenched gender inequalities. Gender inequalities mean that women and men have differing roles, resources, rights, knowledge and time with which to cope with climate change (Cannon, 2002; Nelson et al, 2002; Denton, 2004; FAO, 2007; Babagura, 2010; Petrie, 2010 etc). Further, women are disproportionately represented in poor populations, and are relatively more reliant on climate-sensitive livelihoods (FAO, 2007).

There is a lack of representation of women and of gender issues in climate change policy and decision-making from the local to the international levels. At national levels vulnerability assessments and the National Adaptation Programmes of Action (NAPAs) for Least Development Countries have lacked adequate gender analysis (Dankelman, 2008; Dankelman et al, 2008; Nelson, 2009), although there are a few positive elements in a small number of cases (UNFPA and WEDO, 2009). At the international

level in the climate negotiations this absence has been noted for some time and gender activists are attempting to tackle it, with some progress on inclusion in the UNFCCC texts (Dankelman, 2008).

It is important to recognise that the discourse framing women as 'vulnerable, passive victims', risks reinforcing the exclusion of women as 'active agents' in responding to climate change, and ignores their capabilities, knowledge and relevant skills, which should be built upon in climate responses (e.g. FAO, 2007; CARE, 2009). With appropriate support, they can be successful protagonists in action on climate change at all levels. Many of the publications rightly emphasize women's capacity to act and the fact that gender norms and division of labour also creates gender-differentiated knowledge. Thus women may have specific skills, for example as seed managers, which can be built upon in climate change adaptation. Women's knowledge and capacity as managers of natural resources are discussed (e.g. see the 14 case studies in ISDR, 2008, which demonstrate grassroots women's leadership in disaster risk reduction, adaptation and development). But at the same time other papers note the importance of not conflating 'women' with 'nature' (Nelson et al., 2002) and of exploring how gender roles are constantly changing (Babagura, 2010).

Inequality based on gender is the most widespread form of oppression, and development and climate change can only be *equitable* if they place women's empowerment and the tackling of gender inequality centre-stage – it cannot be treated as an optional extra (Neefjes et al, 2009; Neefjes and Nelson, in Dankelmann, 2010).

Gender inequality intersects with other types of discrimination, such as ethnicity, caste, class and age, but analysis of these other forms of discrimination in the context of climate change is relatively undeveloped (see Enarson, Fothergill and Peek, 2006).

It is not enough just to 'add on' a concern for women's issues in climate responses – gender equality and women's empowerment is not an optional extra but a critical part of equitable development.

Gender and climate change impacts

Conceptual frameworks for understanding the gendered nature of climate change impacts are just beginning to emerge (see Neefjes, 2009; Nelson, forthcoming) and analyses tend to be necessarily fairly speculative and general in nature, although there is also likely to be practice on the ground which has not yet be written up and shared internationally.

Gender inequalities exist in all societies and shape the ways in which climate change impacts play out in society. Women have lesser access to participation in policy and decision-making (FAO, 2007) and fewer resources to cope with climate shocks and stresses, including income, other livelihood resources, information and decision-making authority (Lambrou and Grazia, 2006). Men and women have different access to resources, including physical resources like land, social resources such as networks, and financial resources like income-generating work and credit. In times of stress, they will have different options and 'safety nets' for coping with change (FAO, 2007). Based on their distinct roles, women and men have different sets of knowledge and skills, such as knowing which seeds to plant during a dry spell or knowing how to dig a well. Recognizing their contributions will result in a wider range of options for preparing for and coping with change (FAO, 2007).

Women tend to be more reliant on climate sensitive resources (FAO, 2007) and generally have lesser adaptive capacity because of the gendered nature of resource entitlements, such as access to land (Nelson and Stathers, 2009) – although whole communities in less affluent areas will be vulnerable to climate change.

There are also studies emerging which suggest that perceptions of risk, including climate risk, are gendered, and that this affects women's and men's responses to those risks (Davidson *et al.*, cited in Adger *et al.*, 2007, 457). This is because there is a gender-based division of labour and social norms which mean that men and women often have differing roles and responsibilities, knowledge, and skills and will therefore be exposed to different risks (FAO, 2007). Gender dynamics vary from place to place and are not fixed – changing rapidly in some parts of the world – and the outcomes for women's and men's wellbeing will vary. But frequently women are disadvantaged and discriminated against, facing tougher workloads and less resources and livelihood options. Women's perceptions of risk also tend to be given less attention than those of their male counterparts (Davidson *et al.* cited in Boko, *et al.*, 2007, 457).

As roles and responsibilities are socially and culturally constructed, so are interpretations of the weather and climate. People understand and interpret the weather and climate in culturally constructed ways (Nelson and Stathers, 2009). Discussion of weather and climate is a means of constructing a shared understanding of the past and the present and a common conception of social relations and moral conduct. The British discuss the weather to avoid tensions and embarrassments related to strong social class divisions (Harley, 2003 cited by Strauss and Orlove, 2003), and Tanzanian rainmaking rituals have gendered and symbolic meanings (Sanders, 2003 cited by Strauss and Orlove 2003). Social memory of climate is unreliable and whilst research is increasing on local observations of climate change, it is important to remember that cultural constructions of climate, particularly climate memories, are as much to do with working out proper moral conduct and societal relations as they are about economic goals and commemorating climate events.

Seasonal forecasting is one area of increasing focus in climate-change research, but scientific information cannot be pre-packaged and delivered to users without attention to how that information will be perceived, understood and used. As scientific information is delivered it is inserted into on-going power dynamics, potentially catalysing further change – in some cases reinforcement of inequalities. For example, ethnic, gender, and seniority hierarchies were found to shape the processing of climate information amongst groups of Ugandan farmers who were discussing climate information (Orlove and Kabungo, 2003, cited by Roncoli 2003, 87). Local farmers will interpret the information they receive depending on their own worldview, concerns, culture, and accumulated experience of climate events (Roncoli *et al.* 2003, 197). Farmers in Burkina Faso were retaining only part of or completely different messages from those intended by scientific forecasters. Their interpretations depended largely on how they view rainfall, what they are interested in knowing about rainfall, and the risks they perceive – all of which may be gendered. Understanding this cultural construction of climate, and in fact the broader relationships between nature and society as conceived by different people and groups, is important as it will shape the framing of any particular problem relating to a changing climate and the potential solutions proffered by externally facilitated adaptation processes or autonomous responses.

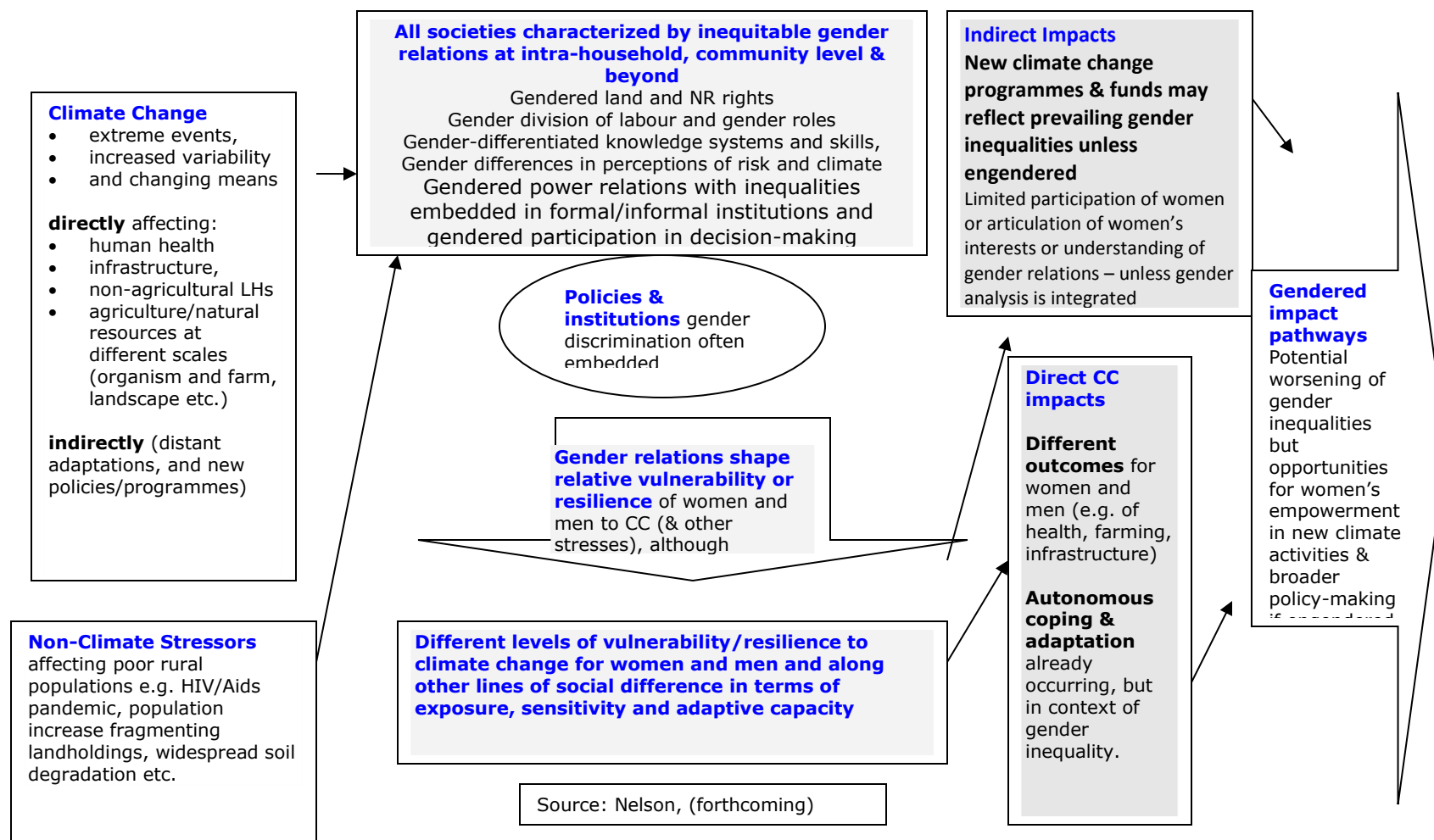
A visualisation of how climate change and gender inequalities may contribute to gendered outcomes and reinforcement of patterns of discrimination and disadvantage is outlined in Figure 1 on the next page.

More field research is urgently needed, however, to explore development pathways in the light of climate change and more specifically what the gender pathways might be: how are gender relations changing over time and where are they headed, with what outcomes for women and men? How will these pathways be affected by a changing climate, as well as part of wider processes of economic and social transformation? Many rural areas of Sub-Saharan Africa are experiencing mainly male outmigration, which has implications for adaptive capacity in rural and urban areas, whereas in the Philippines female outmigration is more common (N. Jones, *pers.comm*). How will these processes of change be affected by a changing climate and how might gender relations shift as part of this process?

Gender analysis is about *changing* relations between women and men, and different groups of women and men. Because livelihood activities can be gendered there are also instances in which men will be more affected than women by climate change. The gender division of labour in Cameroon may mean, for example, that male fisherfolk are likely to be increasingly exposed to river blindness (the epidemiology of which will be changed by climate change) and more so than women in the household that do not fish (Hans Dobson, NRI, *pers comm*). In the Arctic, where climate change impacts are already having a significant human cost, whole communities are being negatively affected, but male hunters are particularly hit by the increased difficulties and dangers they face from a shorter hunting season (Parbring, 2010). Further, the inability of male hunters to support the household – a traditional masculine role – is creating social problems and tensions (Parbring, 2010). It is therefore critical that men need to be involved in gender equality work, including in adaptation to climate change.

Anderson (2009) explores how gender relations are changing in the Pacific. Gender differences are embedded in the complex Pacific island social systems she studies: diverse systems, including matrilineal and patrilineal property rights and inheritance are changing over time. For example, colonial processes dispossessed women of their land rights in Polynesian islands, and shifts are now occurring as patrilineal land rights and inheritance systems come further to the fore at the expense of matrilineal systems. Divisions of labour follow gender lines but also family heritage, with some skills such as traditional healing methods and canoe building skills being passed by lineage in some communities. In some communities, men take care of building and maintenance, whilst women clean and take care of the children, but these stereotypes do not exist uniformly (Anderson, 2009). In some islands, women may not be involved in community fishing activities and may be more involved in land-based activities such as gardening. As livelihoods shift from subsistence to cash economies and from rural to urbanized settings, these roles have changed. In some cases women are involved in near-shore fishing, whilst men fish in deeper waters, but climate change is thought to be having a greater impact on the former, thus affecting women disproportionately (Anderson, 2009). A sophisticated understanding of gendered forms of vulnerability and resilience is therefore important to identify how climatic (and other) changes will interact with gender differences in forming new rural and urban realities for poorer populations. A stronger commitment of resources (financial, technical, and human) to tackling inequalities is important for equitable and effective adaptation (Ahmed and Fajber, 2009; Neefjes et al, 2009).

Figure 1: Gender and Climate Change



The authors of a recent study of climate adaptation and DRR in southern Africa (Ziervogel, et al, 2008) conclude that whilst national vulnerability assessments may help in identifying particular areas and communities requiring assistance and in prioritizing and designing adaptation programmes, a more nuanced understanding of changing intra-community and intra-household vulnerabilities and marginality is also needed. Their study found that women's workload in particular was increased in times of hardship. As has been found in other studies, women's workloads were found to increase in times of low rainfall/drought because of the extra work involved in collecting water and firewood, and because of the need to undertake casual work to buy food and make ends meet (Ziervogel, et al, 2008). Both women and men engage in brick moulding and piece work on other people's farms in rural areas, but men spend more time selling charcoal in distant locations reducing labour availability and leading to increased work for women in the fields. Whilst two adult households can earn more income, in a female headed household, there it is sometimes easier for women to find work off-farm, because they do not have to obtain a husband's permission. Low yields and income insecurity leads to increases in crime and prostitution, particularly in the critical period (from December to January) when some women turn to prostitution to obtain food for their children and male members are absent, exacerbating the spread of HIV.

A recent study by the Women's Environmental Network (WEN, 2010), also concludes that women are more likely to live in poverty, and because of gendered social roles, they are more likely to be negatively affected by climate change. For example, they women in poor communities are more likely to:

- die in climate change-related disasters, experience increasing work, income losses and negative health impacts, and suffer from violence and harassment following disaster events;
- be displaced, or encounter problems when other (usually male) family members migrate for economic reasons;
- experience increased burdens of water and fuel collection, and resulting health problems, due to increased incidence of drought or other changes in climate;
- feel the effects of rising food prices most acutely, and be the first to suffer during food shortages;
- suffer exacerbated health inequalities due to biological differences but also gender roles;
- suffer from violence, including sexual violence, in resource conflicts;
- be expected to, and need to, adapt to the effects of climate change, increasing their workload; although roles, responsibilities and workloads of women and men vary throughout the world and are differentiated by wealth and other social characteristics, it is widely the case that women have higher workloads than men due to their domestic responsibilities, reproductive responsibilities as well as possible roles in agriculture, petty trading, marketing etc. As we have explained earlier, disadvantaged men may also be vulnerable to climate change, but the subordination of women is widespread.
- suffer as a result of unintended consequences of responses to climate change, such as forestry projects and biofuel production (WEN, 2010)¹.

¹ Women and men have differential resource entitlements, roles within the household, and types of livelihood responsibilities. This means that they are not always affected by natural resource related projects and programmes in the same way. Similarly, they are less likely to have the voice to influence decision-making. In biofuel developments, particularly the large-scale corporate investment models, but also in contract farming and potentially in small-scale programmes on community lands, women and men have differential power and resource entitlements with which to participate, influence decisions and respond. New REDD programmes and large-scale biofuel investments both raise equity concerns – can these deliver equitable outcomes, and avoid making inequalities worse?

As an example of some of these points, young girls' lives can be negatively impacted by the extra time spent collecting water in drought affected areas, contributing to the barriers to their education and potentially with health impacts. Additional to the gender-related causes, (e.g. ascription of different livelihood roles and responsibilities along gender lines), there are sex-related factors stemming from biological differences which increase women's vulnerability. For example, reproductive health issues, the need for sanitation during menstruation and after giving birth, constrained mobility during pregnancy, and higher nutritional needs during lactation are all examples. The cumulative impact of these factors will result in a larger number of women being severely affected by the impacts of climate change and fewer options for women to cope with climate variability (Alber, 2009).

Gender and climate policy

Policy literature and toolkits on gender and climate change have increased in the last few years (see for example, the 'Training Manual on Gender and Climate Change', Aguilar, 2009) alongside increased lobbying and advocacy by activists in the international negotiations. These activities have sought to challenge the undifferentiated focus and technocratic orientation of previous climate change debates (Dankelman, 2008; Neefjes et al, 2009; Minu and Rohr, 2009; Terry, 2009), encouraging greater attention to the climate justice imperatives of equitable climate change mitigation and adaptation. Until lately, the international policy discourse, including the UN Framework Convention on Climate Change and its Kyoto Protocol has hardly included consideration of gender issues (e.g. Lambrou and Lamb, 2002; Skutsch, 2002; Rodenberg, 2009). Any international post-2012 Kyoto Protocol agreement will have enormous implications for gender equality (Skutsch, 2002; Dankelman, 2008; Terry, 2009). Gender activists and development agencies have been supporting participation of women from developing countries and consideration of gender issues in the negotiations processes (FAO, 2007). The parties to the UNFCCC are involved in negotiating a post-2012 agreement to follow up the Kyoto Protocol that expires in 2012. The post-2012 framework will cover not just mitigation, but also adaptation, technology transfer, capacity-building and finance (Dankelman, 2010). Gender advocates achieved a status for women's civil society groups as a Provisional Constituency in the UNFCCC process, i.e. a formal recognition which is likely to become fully established soon. Civil society engagement has been fairly weak in the UNFCCC process but women's and development NGOs have worked hard to ensure that women are now one of the groups that are part of the formal fora for civil society engagement in the UNFCCC process, enabling them to make official interventions from the floor on behalf of women and gender equality (Dankelman, 2010).

The invisibility or lack of attention to gender issues in the international negotiations and in national policy making (Nelson et al, 2002) has several causes. Much of the early focus on climate change was on global processes rather than the household or community. Gender inequalities are invisible to many that see gender roles as 'fixed givens', rather than being social constructions which mutate and change. The lack of attention to gender issues reflects the wider struggle to mainstream gender sensitivity in development processes. Further, scientific perspectives have dominated the climate regime until recently with adaptation imperatives being overshadowed by technical-administrative approaches (Boyd et al, 2009; Rodenberg, 2009). Market-based approaches have dominated the newly established climate institutions (e.g. the Clean Development Mechanism, an emission trading system adopted in the Kyoto Protocol) but women and local groups are less likely to benefit from the large-scale industrial projects that have emerged from these mechanisms (Boyd, 2002 in Terry, 2009; Rodenberg, 2009). None of the myriad and diverse new climate financing initiatives are gender sensitive, having failed to incorporate gender guidelines and criteria in operating

procedures and project outlines, and a range of gender mainstreaming tools could be taken up, e.g. gender analysis of project and programme design; gender-inclusive consultation, implementation, monitoring and evaluation; possible gender finance quotas or set-asides via gender responsive budgeting processes applied to project funding; mandatory gender audits of funds spent etc. (Schalatek, 2009). However, political commitment at all levels to take gender seriously in combating climate change would make the most difference in achieving fair and gender-equitable finance mechanisms (Schalatek, 2009).

To build women's participation in national climate change adaptation planning, participatory processes are required that enable diverse groups of disadvantaged women's as well as men's voices to be heard by policy-makers. There is no straightforward way of successfully challenging dominant narratives and inequitable power relations. Moreover, participatory processes can risk exacerbating divisions, especially if not well facilitated. However, deliberation and awareness-raising is required in climate change and efforts to ensure that policy-making is more gender sensitive. Participatory video is a tool currently being to promote women's engagement in adaptation planning in Nepal (Khamis, Plush and Zelaya, 2009). The sharing and discussion of meteorological data and scenario building with local communities to explore climate futures is part of many adaptation programmes – but space and support is needed if more disadvantaged groups are to have a voice.

Gender and climate-related disasters

Much can be learned about gender and disaster risk reduction in climate change contexts, from previous work on gender and disasters². Socially constructed roles and responsibilities mean that women are more vulnerable to climate-related natural hazards than men. Further, because women tend to be in a poorer and economically more vulnerable position than their male counterparts, especially in the developing world, they have fewer resources to cope with and recover from disasters (Islam, 2009). Women and children are more vulnerable to the impacts of natural disasters (they may be less able to escape from catastrophic events due to their smaller average size and physical strength) (Cannon, 2008). Pregnant and nursing women and those with small children are particularly vulnerable. Women may also be subject to cultural restrictions on their mobility, including dress codes and seclusion practices. Women and children account for more than 75 per cent of displaced people following natural disasters and are vulnerable to sexual violence in transit and in refugee camps. Longer-term livelihood consequences may also impact disproportionately on women and girls (e.g. a rise in the number of girls forced off the land to become sex-workers in Dhaka, Bangladesh in 1998 following extreme floods) (Cannon, 2008).

In male-dominated societies, women and children tend to be excluded from risk mitigation, disaster preparedness, planning and reconstruction strategies, unless specific efforts are made to include them. Efforts are underway by gender activists to change this. For example, recently a Post-Disaster Needs Assessment (PDNA) has been developed by the Haitian government and various stakeholder representatives to guide Haiti's reconstruction, but only one of eight themes includes any coverage of gender and only in a peripheral manner. To promote integration of a gender perspective in reconstruction activities a gender 'shadow report' is currently being developed by a broad coalition of women working on the ground in Haiti, in grassroots communities and from the international community (see <http://www.madre.org/index.php?s=4&news=341>).

² See, for example, Aguilar, 2004; chapter 8 on 'Gender and Disaster: Foundations and Directions' in the 'Handbook of Disaster Research' by Enarson, Fothergill and Peek, 2006; WEDO, 2007; IDSR, 2008).

In Bangladesh, gender inequalities exist in all spheres (e.g. security of human rights, political and economic status, land ownership, housing conditions and exposure to violence, education and health, in particular reproductive and sexual health) and these inequalities make women more vulnerable at all phases of climate disasters – before, during and after (Islam, 2009). Key concerns in relation to gender, disasters and climate change in Bangladesh are summarized by Islam (2009): often higher post-disaster mortality, injury and illness rates for girls and women compared to men; economic losses disproportionately affecting economically insecure women, including women farmer agricultural losses, loss of home-based businesses of women, and lesser access to post-disaster economic aid; increases in workloads in the domestic sphere, paid workplace and community in the disaster cycle for women; increased sexual and domestic violence against women and girls in disaster contexts. Moreover, the most severe impacts are typically experienced by destitute, low income and economically insecure women who lose their work during and after disasters; women in subordinated racial/ethnic/cultural groups are also likely to be placed in especially vulnerable situations and are often less able to respond.

In coastal villages of South Gujarat, India, (Ahmed and Fajber, 2009), where women are generally more vulnerable to climate hazards than men, the experience of gender inequality is mediated by other aspects of social identity, especially caste. Caste systems shape exposure and adaptive capacity to climate change – in Sartanpar village, poor tribal groups have no option but to live in the low-lying, flood-prone areas on the outskirts of the village, making it difficult for them to access relief, or get information on impending disasters. The village temple provides the only safe sanctuary for people during floods and cyclones, but space is limited, and it is possible, though difficult to prove, that lower-caste groups are denied access because of social practices and beliefs about ritual pollution that discriminate against them.

A whole range of practical steps are outlined to tackle the gendered nature of climate risks (Islam, 2009), including challenging legal and structural barriers preventing women gaining equitable land and resource access – inequitable entitlements restrict productivity, conservation management and the ability to generate income for landless women. Other steps include (Islam, 2009): generating gender-disaggregated data for community vulnerability and capacity assessments; engaging women from vulnerable social groups as equal partners in community-based disaster planning; and developing gender and disaster materials; increasing awareness of gender bias in disaster responses, including mechanisms for professional accountability of gender issues; and gender audits to identify gender bias in organizational cultures etc.

Gender and slower onset climate changes

A larger proportion of the material relevant to gender and climate change focuses on intensifying climate hazards, but climate responses have to take into account the multifaceted impacts of climate change, not only vulnerability to natural hazards (Leduc, 2008). Disadvantaged smallholders, urban dwellers and agricultural workers in agri-business in the global South will all be affected by climate change.

Smallholder farmers and less affluent rural populations which are fully or partially reliant on agricultural livelihoods will be affected by shifts in climate means (e.g. precipitation and temperature), changes in climate variability as well as by increased extreme weather events. The inherent complexity of smallholder agriculture (Morton, 2007) means that teasing out longer-term and slower onset climate change impacts is not easy, and the gender-differentiated impacts are even less clearly understood (Nelson, forthcoming). There is also a large body of work on gender and agrarian development which can inform this debate. But

new empirical data and action research is sorely needed given that climate change, especially in the longer term, will present challenges on a different, unprecedented scale, potentially requiring different strategies and adaptations as well as scaling up of existing efforts, including strategic interests as well as practical ones (e.g. strengthening women's land and resource rights and participation in decision-making, as well as access to technologies etc). A limited number of recent publications explore the gendered nature of climate change in smallholder agriculture (see for example, Nelson and Stathers, 2009; Nelson, forthcoming; FAO, 2010).

In exploring the gender dimensions of pastoralism and drought hazards in dryland regions of Africa, Mwangi (2009) notes that although pastoralist women are adapting and diversifying their livelihoods, they are constrained in this because they cannot own land and livestock or access employment, loans or other entitlements in patriarchal pastoralist societies. Women-headed households are very vulnerable to prolonged droughts and they are affected by drought-induced migration of men.

There is very little detailed information on the impacts of climate change on men in rural agriculture or pastoralism (Nelson, forthcoming), despite the fact that gender analyses are about changes in gender roles and relations, on men as well as women. A very small number note some potential impacts on men. For example, there are potential impacts for men who care for (large) ruminants from (partly climate change driven) liquid biofuel developments that reduce access to fodder, FAO, 2007. Men in female-headed households may have lesser resource entitlements and thus adaptive capacity compared to those in male headed households (FAO, 2007). Further, men are negatively affected psychologically more than physically in South Africa by climate variability with the loss of employment and few other options except for negative, often illegal, livelihood pathways. Women are disproportionately affected both mentally and physically because of their existing household roles and workloads (Babagura, 2010). Male hunters in Arctic communities are affected by the thinning of the ice and shortening of the hunting season (Parbring, 2009).

There is also more literature on gender and climate change in relation to rural populations, compare to work on urban and peri-urban populations and climate change, although this is also beginning to change. For urban dwellers in developing countries, their food security will be affected by the ability of rural producers to produce adequate quantities of food in the face of climate challenges. In Malawi and Tanzania there are areas where maize production is thought likely to be negatively affected by climate change. For both rural and urban dwellers there are implications if maize production is affected and support for livelihood diversification strategies may be needed for both groups. Poorer communities in cities tend to be forced onto fragile slopes or areas prone to flooding and so there will be increasingly serious risks for slum populations as extreme weather events increase.

The potential impacts of climate change on workers in agricultural value chains have not been fully explored, partly because it is difficult to explore the impact on wage-workers without working out how the enterprises themselves might be affected by climate change and how different types of businesses may respond. For example, in the longer-term climate change will affect the crops that are grown – but more modelling work is needed as to how the crops will respond in different locations to changes in temperature and precipitation. Productivity may be affected and technical adaptations would then be required, and/or diversification into other crops and/or other innovations (e.g. climate index insurance). These adaptations will affect workers, but how they will be affected largely depends upon the strategies employed by the management and owners, the types of businesses involved, and their approach to corporate social responsibility. There are already new pressures on producers to respond to the mitigation agenda, for example, by reducing their greenhouse gas emissions and seeking voluntary carbon labelling, as well as the broader sustainability agenda relating to land, water and energy use. This could incur costs for producers, with potential implications for the

workforce if jobs are lost as a result, or greater security for workers in companies that are ahead of the curve, and operating as thought leaders and gain market advantage as a result.

Technological adaptations cut across all sectors and are multifarious: e.g. the introduction of new crops and crop varieties into farming systems, the uptake of new soil and water conservation measures, drip irrigation, changes to infrastructure such as food storage structures or roads to climate-proof them, use of new technologies and equipment (e.g. mobile phones in transmitting meteorological information to farmers), new response farming practices etc. However, technological agricultural adaptations will take place within existing processes of social, political, economic and environmental change, and in situations characterized by lesser or greater gender inequality – and so could exacerbate these inequalities without gender sensitive approaches.

Beyond technical farm-level adaptations, there are a number of institutional organizational and policy changes (Howden et al, 2007) which may be required – and which will have gender and social difference implications. Adaptations may involve, for example, changes in land use, resource entitlements, economic strategy, innovation in financing, experiential learning, information sharing and establishment of early warning systems. Changes in land policies to tackle structural inequalities in resource entitlements and strengthening of land tenure security for disadvantaged groups may be needed before specific interventions (e.g. those funded through the new climate mitigation and adaptation financing) can be effective and equitable. Greater decentralization is likely to be required in agricultural adaptation because localized solutions and flexible, adaptive agricultural advisory services will be required to respond to the uncertainties associated with climate change (Christoplos, 2010). In sum, both autonomous adaptations and externally driven adaptations, (whether technical, institutional or policy-oriented) will have diverse equity implications for rural and urban societies and for women and men of different statuses, wealth, caste, etc.

The gender dimensions of climate change mitigation

There is limited empirical evidence of the differentiated impacts of climate change mitigation interventions, mainly because some schemes and investments have only recently being implemented. However, as mitigation schemes are implemented, more understanding of the gender dynamics are likely to emerge. Analyses are emerging particularly in two areas: i) the gender issues in Reduced Emissions from Deforestation and Forest Degradation (REDD) schemes; ii) the gender dimensions of liquid biofuels for transportation schemes, investment in which is driven by developed country policies and mandates, which have been formulated partly in response to climate change mitigation imperatives. These two areas of mitigation are discussed below in terms of gender issues.

A workshop was convened by various development agencies³ in Washington, 2009 to discuss how to 'engender REDD', with REDD case studies from Bolivia, Argentina, the Congo Basin and Cambodia, as well as the programmes and policies of the UN REDD, IUCN, GGCA and the Climate, Community and Biodiversity Alliance. In the workshop report, it is concluded that although REDD has the potential to deliver positive benefits for livelihoods, forest conservation and forest restoration, at the same time there are risks for forest-dependent communities, particularly for women who rely on forest resources. International REDD policy and practice discussions pay little attention to gender and the impact on rural women. REDD policies, mechanisms and processes should consider the 'differentiated rights, roles and responsibilities of men and women, promote gender equality and equity...and reward women who protect and manage forest resources' (IUCN, GGCA, WOCAN, p2009). See Box 1 for a summary of the twelve principles for engendering REDD.

³ the International Union for the Conservation of Nature (IUCN), the Global Gender and Climate Alliance, (GGCA) and Women Organizing for Change in Agriculture and Natural Resources Management (WOCAN)

Box 1: 12 Point Principles for ‘Engendering REDD’ (GCCA, IUCN, WOCAN, 2009)

The systematic **incorporation of a gender perspective** will ensure that the implementation of REDD is more effective, efficient, permanent, and sustainable, and reduces risks. Gender-sensitive REDD projects will enhance the achievement of sustainable development and poverty eradication goals.

A gender perspective should be included in existing international **standards and guidelines** on REDD to ensure that women have equal access to and control of all REDD benefits.

The current “readiness” stage and future REDD stages should incorporate **gender mainstreaming** tools, including *gender analysis* to identify the roles, responsibilities, and knowledge of women and men; *gender-differentiated data* in relation to the agents of deforestation and degradation; and *gender sensitive participatory tools* to include women’s perspectives.

International and national **planning processes** on REDD, such as the UN-REDD project documents and the World Bank Readiness Plans, should include gender responsive indicators and targets as part of performance-based funding.

In the implementation of REDD schemes, special attention should be given to the gender implications of **benefit sharing and payment structuring** frameworks based on the existing relationships of stakeholders to resource flows and the possibility of lowering the risk of REDD financial transactions by including women.

Recognizing that the importance of land and resources to women are frequently not recognized under statutory and customary laws, REDD projects should comply with **international agreements** related to women’s equal access to land ownership and resource rights addressed by the Beijing Platform, CEDAW, Millennium Development Goals, Convention on Biodiversity, Convention on Desertification, Johannesburg Plan of Implementation (WSSD), and Agenda 21.

Women and women’s networks that are involved in, or are leaders in, natural resource management should be recognized as important stakeholders and empowered to participate in REDD consultations, the national REDD working groups, and the design, implementation, monitoring, and evaluation of REDD projects. REDD should abide by **good governance** practices that incorporate inclusive participatory processes to address gender equality concerns.

All stakeholders, particularly women, should have equal and timely access to **information** regarding REDD planning and implementation to enable full and effective participation.

Capacity-building opportunities should be made available for women in order for them to participate effectively in REDD processes, as well as for decision-makers and REDD specialists in order to ensure that REDD schemes are gender responsive.

REDD schemes and research should value women’s **traditional and scientific knowledge and entrepreneurial potential** in relation to natural resources.

In the REDD+ arena, **sustainable forest management** should be favoured over conservation due to the fact that the former provides more security to the livelihoods of women and communities.

The connections between REDD and gender should be noted in the UNFCCC **Copenhagen agreement** and related AWG-LCA and SBSTA agreements. Participants also produced a list of proposed activities that can be supported and implemented by various partners within the GGCA, IUCN and WOCAN networks.

Source: GCCA, IUCN, WOCAN (2009, p2-3)

Criticisms of market mechanisms because of inherent power and gender inequalities are also being made, however. For example, in 2002, Boyd observed that a climate mitigation project in Bolivia had resulted in different outcomes for women and men and suggested that the climate change international response is overly technocratic, simplistic and *patriarchal*. Gender scholars and feminists engaged in climate change are beginning to ask why they

should focus their efforts on retrofitting climate mechanisms to achieve damage control, rather than trying to identify more appropriate, responsive and equitable responses from the outset – i.e. designing projects, programmes or policies with both women and men in mind.

A great deal has been written about the socio-economic risks and impacts of new developments for liquid biofuels for transportation – developments driven by the developed country policy responses to oil price volatility, fuel security and climate change imperatives. Very little of this debate has illuminated the gender dimensions.⁴ A recent analysis from FAO identifies a number of the potential gendered risks of liquid biofuels for transportation (Rossi and Lambrou, 2008). For example, resource dispossession may result from the larger-scale plantation developments disproportionately affecting poorer, rural women. Their socially ascribed domestic subsistence roles mean women tend to be responsible for collecting fuel wood and water, medicinal and edible plants from common lands all of which are sometimes termed 'marginal' by governments and decision-makers considering biofuel investment proposals.

A small but a small but growing number of studies present *field-based* evidence on the gender dimensions of biofuel developments. Karlsson and Banda, (2009) present a number of short field studies, for example, of larger-scale developments, and contract farming biofuel developments. These studies focus on the gender and women's empowerment issues that arise in each case. For example, female smallholders face barriers in participating equally in contract farming schemes (Karlsson and Banda, 2009) and risk losing land if land tenure security is weak and wealthier groups seek to cash in on success.

Gendered pathways of environmental change

It is often noted that many rural communities are *already* coping with and adapting to climate variability as well as localized environmental change, such as deforestation and soil degradation. But this ability to cope based on existing knowledge may be surpassed over time by the scale of climatic change. Further, other social and environmental factors can be equally if not more important in rural transformations. Part of building adaptive capacity is supporting marginalized groups to participate in explorations of possible scenarios and rural development pathways, and challenging the dominant narratives which frame the boundaries for action and which often focus overly on risk-stabilization, control oriented approaches (Leach, Scoones, and Stirling, 2010). Methodologies such as the Oxfam Novib Gender Action Learning System (GALS) (Mayoux, 2010) ⁵ could be usefully integrated with climate change scenario building, because both encourage looking towards the future, developing their visions for change, and committing to action. Similar participatory learning and action with communities

⁴ Biofuel systems are varied, involving different feedstocks, land ownership arrangements, scales, processing technologies and end uses of the energy (Dubois, 2008). Four biofuel value chains can be distinguished: a) large-scale commercial plantation and processing facilities; b) contract farming and outgrower schemes; c) smallholder involvement in value chains beyond production; and d) decentralized, village-based schemes. Combinations of the above are also possible, for example, with large-scale commercial plantations and processing facilities being linked to contract farming and outgrower schemes, and with value chain upgrading being linked to contract farming schemes. Each of these brings with it a range of risks and opportunities, for local communities and for different groups within those communities.

⁵ GALS is a 'community-led empowerment methodology aiming at constructive economic, social and political transformation on gender justice'. It is a part of the Oxfam Novib 'Women's Empowerment and Mainstreaming and Networking (WEMAN) programme for gender justice in economic development interventions, including market and value chain development, financial services and economic policy and decision-making. GALS works with 'women and men to develop their visions for change, to appreciate their strengths and achievements and to analyse and address gender inequalities within the family and community as challenges which prevent them from achieving their vision. It empowers women and men, as individuals and collectively, to collect, analyse and use information to improve and gain more control over their lives at the micro- and macro levels.

on climate change that also explore the future in this way, could also consider gender inequalities and opportunities by adopting and adapting the GALS approach.

Gender, Power, Culture and Climate

Adaptation requires a range of actors *beyond* the local, but at the local level community based adaptation initiatives need to be grounded in a highly developed appreciation of local social dynamics to transcend overly simplistic analyses of power relations (Ensor and Berger, 2009). At the same time gender studies reveal that local culture is oppressive to some and finding ways to build adaptive capacity will require the development of a dialogue on climate change that encompasses engagement with politics, policy and power at multiple levels (Ensor and Berger, 2009).

It is usually overlooked in the policy literature that local interpretations of the causes of climatic events are frequently religious and spiritual (Strauss and Orlove, 2003). Better understanding of how culture shapes interpretations of the climate, of the 'cultural construction of climate' (Nelson and Stathers, 2009) is needed, otherwise adaptation efforts will not be rooted in local culture and social forms, and nor will opportunities be identified for challenging myths and constrictive social norms.

Adaptation options are not unlimited because not every adaptation option will resonate with social forms. Culture is not fixed and the process of engagement is thus critical and must be based on participatory processes for identifying local problems and appropriate solutions (Ensor and Berger, 2009). In the remote islands of Yap, in the Pacific, women's knowledge of island hydrology enabled them to find potable water and build new shallow wells during an ENSO-related drought. However, it is also clear that local and indigenous community responses may not be sufficient to cope with rapid environmental changes – so it is important to understand the capacities of women, men, girls and boys in addressing their risks in each specific location (Anderson, 2009) and to adopt a long-term perspective in adaptive planning.

Climate change, migration and gender

Where such limits are reached permanent migration may be the only option left open for those with the resources and health to move. However, the poorest may not have the resources required to move. In Viet Nam and Tanzania, mainly male seasonal outmigration is increasing, adding pressure on female headed households and women farmers, but the poorest individuals have fewer options to migrate, having lesser access to information, social networks and financial resources (Nelson and Stathers, 2009; Neefjes et al, 2009). Mobility is increasing in many parts of the world – generated by economic aspiration and in some places new livelihood opportunities i.e. movement is not always about the push factors and about collapsing livelihoods. However, over the long-term as progressive climate change begins to bite there may be more movement of populations due in part to climatic factors – and social resources will be key, with some of the most vulnerable the least able to participate.

More analysis is needed of how migration patterns will affect women and men differently in of the light of climate change in both host and home destinations. There is significant debate about how far environmental and climatic factors will create international migration, but in-country displacement is thought likely to significantly increase in some countries. But clearly the decision to migrate may have multiple causes and are rarely only environmental in nature. Although there may be opportunities for women's escape from constrictive social norms through migration (UNFPA, 2009; Nelson and Stathers, 2009), there are also risks of sexual

exploitation, labour discrimination, isolation due to cultural dependence on men etc (UNFPA, 2009).

Women and female headed households may suffer from increased workloads and lack of access to resources where male household members out-migrate. Unpredictable rainfall, declining soil fertility and increased incidence of pest and disease problems are contributing to crop failures and increased yield variability in a study of villages in parts of semi-arid Tanzania contributing to increasing voluntary seasonal migration – the latter is straining household relations, increasing women’s workloads, and contributing to the spread of HVI/AIDS (Nelson and Stathers, 2009). In disaster contexts, male outmigration can mean women’s burden in all phases of disasters increases, as women have to take on traditional male roles in disaster risk reduction (Neefjes et al, 2009). Local, regional and national level migration patterns are likely to show a need for policies to promote rural development, to facilitate movement, to engage in proactive urban planning and to address the needs of both locals and migrants (UNFPA, 2009) – but these policies must be gender sensitive and promote women’s empowerment. Many resettlement programmes currently ignore the needs and interests of women and girls, who often suffer increased violence (Quan, with Dyer, 2008). Families may be broken up and social networks disrupted by natural disasters, as well as having health, and educational impacts, and forced migration often results from disasters.

5 Children and Climate Change

Age as a factor shaping climate change impacts

Children have been a focus of attention in only a limited section of the climate change adaptation literature. However, because of their relative vulnerability and resilience to shocks and stresses, and because of the unique viewpoints they can bring to adaptation (Back and Cameron, 2008; Mitchell et al, 2008; Bartlett, 2009; Tanner, 2009; Seballos and Tanner, 2009; Plush, 2009) more study is required.

Most generic work on climate change adaptation and mitigation does not specifically consider the impacts on children or is imprecise on the causal connections. For example, the climate change and children literature is often brief or vague on the complex child health and climate change impact pathways – according to the authors of a comprehensive review on the pathways and impacts UNICEF, 2008 (Akachi et al, 2009). Yet one of the largest groups to be affected by climate change will be children under the age of five (Baker, 2009).

Much of the recent literature that does focus on children and climate change aims to tease out the *likely* climate change impacts which will disproportionately affect children – extrapolating from pre-existing studies on disasters, risk management, and development work. One study notes that many countries are already off target for achieving the child mortality millennium development goal and this situation will only be undermined by climate change, unless substantial action is taken to pre-empt the increased risks, especially of waterborne and vector-borne disease and pressures on child nutrition (Back and Cameron, 2008). New empirical and action-oriented work specifically exploring these dimensions is urgently required.

As with the gender and climate change literature, there are regularly occurring contentions in the children and climate change literature. These include the unique vulnerabilities of this particular group to climate change, the multiple climate change threats they face, the fact that they are adapting already and the importance of involving children in developing solutions.

One common contention is that children have *unique vulnerabilities* with respect to climate change, because of demographic factors, the stage of physical development, and perceptions of risk:

- *Demographic trends:* Population demographics and the balance between numbers of children requiring care compared to numbers of caregivers and breadwinners vary between different populations. Where children become ill, malnourished, injured or psychologically affected by disasters, famines, displacement or deepening poverty this exacerbates the challenges faced by their families and communities. Children constitute an extremely large percentage of those who are most vulnerable to climate change and other risks, comprising between a third and a half of the population in the most affected areas. In Sub-Saharan Africa, over 40 % of the population is under 15, with the largest sector of the population under 5 and the poorest communities in those countries tend to have the highest proportion of children (Bartlett, 2009 in Guzman et al, 2009). Child populations will grow more slowly in the next decades in many countries or may even decline, but where the proportions of children are already highest, the absolute number of children will most likely grow (Bartlett, 2009 in Guzman et al, 2009). Because of processes of urbanization more of these children will live in urban areas, most often in informal settlements and hazard prone parts of

the cities where land is more available but which is more at risk from climate hazards (Bartlett, 2009 in Guzman et al, 2009). Few generalizations can be made about how urban age structures are changed by migration (Bartlett, 2009 in Guzman et al, 2009)⁶.

- *Stage of physical development:* The impacts of climate change on the youngest children can be long-term because young children have rapid metabolisms, immature organs and nervous systems, developing cognition, limited experience and behavioural characteristics. Climate change impacts, outlined above, could thus affect children's mental capacity, learning and growth (Bartlett, in Guzman et al, 2009).
- *Perceptions of risk:* Gender and age shape perceptions of risk, which also reflect personal experiences of weather events (Nelson and Stathers, 2009). In the Philippines, women and children named social hazards (gambling, drugs, community conflict) as key risks in their capacity as witnesses of male actions, as well as health and disease risks. All adults named food and financial crises, but more men noted agricultural hazards as pests and drought etc. Children often understand risks in relation to the hazards they have experienced (localised landslides, polluted water courses or dangerous roads) (Tanner, 2009). Mitchell et al (2008) present two case studies (El Salvador and New Orleans) to challenge prevailing approaches to DRR which ignore children's views and roles in communicating risks or preventing and responding to disasters. Children and youth have potential roles as informants within formal and informal risk communication networks, but these have been underestimated to date, and do also bring risks.

Children face multiple threats from climate change. Baker (2009) suggests that children face double exposure to climate change: a) immediate, *direct* impacts of increasingly frequent and intense natural disasters, (injury, declining nutrition, more water borne diseases and lack of sanitation, and impacts on food security spreading disease, hunger, malnutrition etc); plus *indirect* impacts of climate change (e.g. the threats to health and social systems, access to water and sanitation, migration and population displacement, increased urbanization, increasingly fragile livelihoods and additional burdens on women).

Many of the studies reviewed note that children and their families are *already* adapting to intensifying natural hazards and increasing climate variability, but they face severe constraints (Gautam and Oswald, 2008; Neefjes et al, 2009; Save the Children, 2006). Participatory video action research with poor children across three geographically diverse areas of Nepal (plains, hills and urban areas) indicate that disadvantaged children and their families are already being negatively affected by increasing floods, droughts, landslides, increasingly erratic and unpredictable weather patterns. The impacts are being felt on their livelihoods, health, education, emotional well-being and access to water (Gautam and Oswald, 2008).

Poverty exacerbates the vulnerability of children to extreme climate events (Back and Cameron, 2008) and natural hazards in general (Cannon, 2008). In the poorest countries in Africa, Asia and Latin America, children are the most vulnerable group to climate change impacts (UNICEF, 2007; Back and Cameron, 2008). The poorest people tend to live in marginal or fragile areas, with least coverage of protective infrastructure and services. In urban areas poor people frequently occupy the most risk-prone areas, where children, especially very young children are especially at risk (Bartlett, in Guzman et al, 2009).

⁶ High levels of in-migration often increase the proportion of young adults and thus can lead to increased birth rates initially (although fertility rates for rural migrants tend to decline once in urban areas). Out-migration by older groups returning to 'home' villages or towns can also affect urban age structures.

The importance of engaging children in climate change issues and responses is a common thread in the literature. Instrumentalist arguments posit engagement of children in climate change because children's awareness of climate change is critical in influencing wider household and community actions and policy responses. But there are also more fundamental arguments about rights-based approaches in all international and national responses: it is a moral imperative that children are supported to understand and respond to climate change and to participate in climate negotiations and policy-making, because they are the ones who will inherit the associated challenges (UNICEF-IRC, 2008; Seballos, 2009; Tanner, et al, 2009)⁷. The Convention on the Rights of the Child (CRC) provides a moral framework for articulating and measuring child rights in relation to climate change adaptation, and intergenerational justice positions extends these rights to cover the children of the future. A child rights approach to climate change could radically transform the policies and commitments of those in power but awareness-raising is needed (Seballos, 2009; Stone and Lofts, 2009). Reporting against climate change and child rights could be included under existing CRC commitments (Stone and Lofts, 2009), so that all governmental but also private development interventions safeguard child rights (including new mitigation initiatives) (Polack, 2009).

Children have a 'right to be heard' on the ways in which climate change is affecting them, in finding solutions, and in relevant climate debates (Gautam and Oswald, 2008). They also have a 'right to adaptation' (life, safety, participation and development are basic children's rights, so working with children on adaptation is not optional). They also they have a 'right to education', with greater support needed if climate change is undermining livelihoods and the ability of poorer households to send their children to school. Finally, children should be heard in adaptation planning – processes which should articulate and recognise their needs (e.g. in NAPAs) (Gautam and Oswald, 2008):

Very little of the literature focuses specifically on how climate change will impact upon children in *urban* areas. A notable exception is a detailed paper by Sheridan Bartlett (2008) which explores the possible impacts of climate change on children of different ages in urban centres in Africa, Asia and Latin America. There are increasing climate risks from storms, flooding, landslides, heat waves, drought and water supply constraints and it is critical that preparedness and adaptation responses take into account the particular vulnerabilities and capacities of children in urban locations.

Child health, survival and climate change

One of the most highlighted areas in the field of children and climate change is that of child health and survival. The disproportionate health burden for children of challenging environmental conditions is well documented and can only be exacerbated by climate change (Akachi, et al, 2009; Bartlett, 2009 in Guzman et al, 2009). Multiple impacts on children's health are envisaged, including impacts upon child morbidity in extreme events, water and sanitation-related illnesses, malnutrition, malaria and other tropical diseases, heat stress, injury, and quality of care (Bartlett, 2009 in Guzman et al, 2009). Water borne diseases, which already claim millions of children's lives annually, will be exacerbated by climate change (Back and Cameron, 2008; Baker, 2009). The diseases likely to be potentiated by climate change are already the primary causes of child morbidity and mortality, including vector-

⁷ Frameworks and protocols should mainstream the recognition, protection and empowerment of children in the light of climate change impacts (UNICEF-IRC, 2008; Seballos, 2009; Stone and Lofts, 2009). Key protections are provided through the UN Convention on the Rights of the Child (CRC), the World Fit for Children (WFFC) Declaration of 2002, and the Millennium Development Goals.

borne diseases, water-borne diseases and air-borne diseases (Akachi et al, 2009). Malaria, diarrhoea and under-nutrition are highly sensitive to climatic conditions (UNICEF-IRC, 2008).

The impacts of climate change on children's survival and health are numerous and complex. Back and Cameron, (2008) explore these multiple impacts in some depth:

- Disproportionate impacts are likely on young girls because of the increased demands on their labour in drought affected areas in collecting water;
- Increased pressure on farming leading to poorer nutrition and thus child health: malnutrition is a prime cause of infant and child mortality, and can permanently damage child development (e.g. growth) affecting skills attainment, education levels achieved etc;
- Changing patterns of communicable diseases threatening infants and children and likely to be further exacerbated by land use shifts – also a climate change impact; increases in vector-borne diseases as changes in environmental factors facilitate malaria transmission in expanded areas;
- More serious epidemics particularly affecting less-affected communities with limited awareness, immunity and health worker capacity. New diseases may emerge because of changing environments and forced animal or human migration. Children may be particularly affected because of the lack of vaccines and treatments, population immunity etc (Baker, 2009).
- In places where water availability may decline and recent gains in water access rates are affected, child health may be affected;
- Sanitation problems may rise with increased rainfall, flooding and waterborne diseases especially in urban areas, with urbanization itself increasing for the same reason: changes in environmental conditions may increase non-communicable diseases

As well as the physical impacts upon children's health, there is also evidence of negative impacts on mental health, such as increasing anxiety, depression and stress. Post-traumatic stress disorder and other mental health problems have been observed in natural-hazard displaced communities (Baker, 2009) and can cause lasting damage. There are high costs for children following the losses, hardships and uncertainties surrounding stressful events, especially following an event when slow recovery processes can be the most debilitating (Bartlett, 2009, in Guzman et al, 2009). Trauma circumstances may undermine a family's ability to protect children from abuse and exploitation. However, Bartlett also notes that the focus on vulnerability to trauma can be seen as a western construct, with levels of psychological vulnerability and resilience depending on various factors, including children's health and internal strengths, household dynamics and levels of social support, as well as the ways experiences are perceived and interpreted (Bartlett, 2009, in Guzman et al, 2009).

Violence against women and children is clearly exacerbated by disasters. Save the Children has documented increases in the exploitation of children – including sexual abuse, trafficking or early marriage – in West Africa, East Asia and Eastern Europe. This is particularly the case when families are under severe economic pressure (Save the Children UK, 2007).

Many of the studies on children and climate change refer to climate proofing or intensification of existing efforts. Some of the practical steps on child health and climate that have been outlined in the literature are as follows:

- *Intensifying current strategies*: pre-empting the risks to children's health by intensifying current strategies, (e.g. rollout of immunization programmes, water and

sanitation programmes, expansion of public health messaging and environmental education) (Back and Cameron 2008).

- *Improvement of health systems - a key part of adaptation:* to increase children's chances of survival. Donors and national governments should strengthen and 'climate proof' health, water and sanitation systems in developing countries with high levels of child mortality. Staff training for health emergencies, is needed as well as effective, multi-hazard early warning systems to detect epidemics and changing disease patterns and activate responses. Capacity building of health ministries is needed to build emergency response capacity. Simple solutions can be highly effective such as mosquito nets, access to oral rehydration therapy and vaccinations, but millions of children already lack access (Baker, 2009).
- *Integrate malnutrition indicators into environmental health monitoring:* malnutrition should be included as a core Children's Environmental Health (CEH) indicator, (not as a CEH indicator under peri-natal diseases), and integrated into national health information systems covering the whole population, because malnutrition is a key driver of morbidity and mortality amongst the under-fives, and children's nutritional status is likely to be sensitive to climate change (Akachi et al, 2009).
- *Government screening of new investments for impacts on children:* screening should be conducted with specific assessment criteria developed. Aid modalities, direct budget support and support to fragile states should all be reviewed with a lens of climate change impacts and children. It is also worthwhile promoting understanding in national mitigation and adaptation plans of these issues and ensuring that plans to meet the MDGs include actions and sufficient resources to address climate change impacts upon children.

Children, education and climate change

Climate change is thought likely to have specific impacts on access to education and to achieving gender equality MDGs due to the general and negative impacts on livelihoods and household food security (Back and Cameron, 2008). Children's learning may be deleteriously affected by climate change through an erosion of mental capacity and opportunities for learning and growth. For example, supportive social and physical environments in which children can master and build new skills may be undermined as climate change effects occur (Bartlett, 2009 in Guzman et al, 2009). Girls are more likely to be removed from school before boys in hard times to supplement household income and to support domestic reproduction and subsistence tasks (Save the Children UK, 2007; Back and Cameron, 2008; Neefjes et al, 2009). Natural resource availability will decline in many areas further challenging livelihoods and girls' access to school as a result, and climate change impacts on health and nutrition may undermine school attendance and educational attainment (Back and Cameron, 2008).

Government budgets, especially social sector spending, may be strained by increased droughts and disasters. As educated mothers have healthier, better nourished children and the children are more likely to benefit from an education, reductions in education spending can undermine health outcomes possibly reducing children's access to education (Back and Cameron, 2008). Environmental education, including livelihood adaptation to climate change, hygiene and health protection strategies, in schools is likely to become increasingly important, but few schools have sufficient capacity (Back and Cameron, 2008).

Education and training are important tools to help children adapt to, cope with and even mitigate climate change in the future (International Save the Children Alliance, 2008).

Instead of being seen purely as victims of natural disasters and climate change, the potential role of children as communicators of good practice and active agents of change should be recognized (International Save the Children Alliance, 2008). However, to participate in DRR and climate change mitigation and adaptation children do need support. Adults in the community and in relevant development organizations should foster environments in which children can formulate, start and lead climate change actions, leading to integrated responses involving children and adults (Tanner, 2009).

Children, disasters and climate change

Much of the material on children and climate change focuses on natural hazards and disasters, perhaps because the impacts of extreme events, which are most immediate and visible. Child-led disaster risk reduction can be thought of as comprising a continuum from expanding knowledge, to enhancing voice to taking action (further delineated as 'to protect', 'to influence' and 'to transform') (Back et al, 2009). In a review of 16 short case studies, Back et al, (2009) conclude that most work falls in the earlier part of the spectrum (on 'expanding knowledge and voice'), with only a limited amount in the 'taking action to protect' category. The balance should now shift to supporting children engaged in action to influence and to transform (Back et al, 2009).

Appropriate roles for children in risk management in any particular context will depend upon local community and institutional dynamics, livelihood strategies, living standards, cultural factors, and the hazard burden facing communities. But a number of *potential* roles can be identified, with children potentially acting in a number of roles (Tanner et al, 2009a), namely:

- analysers of the risks associated with natural hazards, human-induced and societal risks;
- designers and implementers of projects;
- communicators of risks and risk management options;
- mobilisers of resources and people;
- constructors of social networks and capital.

An example from the Philippines reports that children have participated in building live barriers, improving waste disposal containers, trimming trees and mobilising around mining issues engaging in dialogue with key stakeholders, all with support from Plan International (Tanner et al, 2009). Children in El Salvador and the Philippines have been supported to work with the adult emergency committees with beneficial results. However, their voice in policy-making was found to be limited in a study by Tanner and Gaborit (2007).

Rather than perceiving children and youth only as *receivers* of information and informers, or of one-way risk communication through teachers or NGOs via children, (Mitchell et al. 2008). The specific needs of children are often ignored by communities, aid agencies and governments with top-down relief efforts (Mitchell et al, 2008). Tanner and Gaborit, (2007) suggest that there are opportunities for building communication links between children to adults in the home, and to the wider community and up to policy levels (Tanner and Gaborit, 2007). Back et al (2009) come to a similar conclusion: efforts at mobilizing at the community level, including support to children's groups, can help to institutionalize a positive cycle of feedback involving the wider community and to higher levels, (Back et al, 2009). In Salvador children and young people have shown to be active agents of change, when provided with appropriate support, and can be trusted two-way communicators especially in situations of distrust of political powers (Mitchell et al, 2008).

However, of course whilst children can take individual protective actions, adults have more systemic control over environmental contingencies: in homes and schools adults tend to be responsible for managing warning systems. So DRR should emphasize the actions that can be *independently* acted upon by children and the areas in which they may need more information from adults (Mitchell et al, 2008). Trust is a key part of effective risk communication and competing messages or superstitious beliefs undermine official messages: but trusted individuals can 'translate' or reduce the competing 'noise' of messages and bridge cultural and technical gaps (Mitchell et al, 2008). In Vietnam, children have also meaningfully participated in DRR activities: joining disaster preparedness clubs at schools and developed risk maps showing vulnerable areas and evacuation routes; identifying pre-positioning of emergency boats to take them to school and learning how to swim as two key interventions to cope with flooding (Baker, 2009).

Risk communication should cover the whole *range* of risks facing children and others (e.g. livelihood risks, health, political stability). To do this it is necessary to integrate risk management into broader social and community development (Mitchell, et al, 2008). A more sophisticated understanding is also needed of the complex ways in which risk is perceived and re-negotiated (Mitchell, et al, 2008).

There are differences amongst children and young people according to age, with infants and younger children facing different issues and capabilities (Bartlett, 2009 in Guzman et al, 2009). Different age-groups will have varying perceptions of risk. Perceptions may vary for other reasons such as whether a child attends school or not, or participates in an established group or not (Tanner, et al, 2009). Older youth are able to develop more sophisticated understandings of the causes and prevention of natural disasters (Mitchell, et al, 2008). In Bangladesh, Save the Children conducted over 1000 interviews with different groups of children (e.g. working children, students, unaccompanied children and children from ethnic minorities) to explore how different kinds of flooding (slow onset urban floods, rural flash floods and rural slow onset floods) affect them in different ways. Various issues emerged including flood shelters, separation, evacuation, abduction, relief distribution, health care, education, hazardous work, and psycho-social distress. Clearly, children face a wide range of threats when disasters strike, including the risk of abduction or sexual abuse, or the more familiar needs of food and shelter (Save the Children, 2006).

Child friendly policies are needed, and these should be translated into practical guidelines, backed up with sufficient financial and technical resourcing for local authorities, civil society organizations, schools and communities (Baker, 2009) from donors, governments, UN agencies and multilateral institutions (Save the Children, UK, 2007; Baker, 2009).

Many authors also indicate the need for increased investment to scale up action, as the challenges mount. Wherever possible, it will be crucial to help communities prepare for and respond to the increasingly frequent threat of disaster (Baker, 2009). Investment to reduce the risks for vulnerable populations and with greater coherence between relief, reconstruction and development activities is urgently required (The International Save the Children Alliance, (2008). The proliferation of natural disasters, including small-scale, climate-related events, will challenge the humanitarian system's ability to respond (Baker, 2009). To meet increased needs, aid must be swift and well-targeted, and donors must ensure that staff on the ground is in a position to scale up quickly. Donors and national governments should put multi-hazard early warning systems in place to alert officials to both slow- and rapid-onset disasters, as well as epidemics, before they reach full emergency levels (Baker, 2009). The scale and uncertainty of projected climate changes means that innovation and flexibility is needed from governments, humanitarian agencies and development donors to enable adaptive responses.

The scale of climate change may mean that more fundamental changes in responses are necessary. DRR efforts must seek to *transform*, not merely replicate existing patterns of inequality, because climate change will cause more frequent and intense disasters to occur, (Cannon, 2008). Some of the risks faced will be new or will make existing livelihood strategies less attractive or even untenable. Livelihood diversification away from climate sensitive resources and activities may be needed as well as increased migration, mobility and urbanization etc. It is necessary to improve understanding of how such upheavals will affect children's lives, in order to implement child-sensitive strategies.

Children and engagement in climate change policy-making

The empowerment of children in climate change policy spaces is a strong thread in the children and climate change literature. Lack of support for children's participation in policy processes and programming is widely criticized. More efforts are needed to support diverse groups of children to articulate their interests as active agents of change (UNICEF-IRC, 2008; Gautam, and Oswald, 2008; Bartlett, 2008; Save the Children Alliance, 2008; Tanner, 2009; Tanner et al, 2009; Seballos, 2009; Back et al, 2009; Polack, 2009; Baker, 2009; Seballos, 2009 etc). Issues of procedural justice are widely discussed in the literature, although there is less attention to the challenges of facilitating children's representation in such planning processes.

Child perspectives urgently need to be heard in National Adaptation Programmes of Action (NAPAs) according to several authors (e.g. Tanner, 2009). Children can have greater voice at all levels, making a contribution to climate change responses and improved understanding of children's engagement in DRR, climate change mitigation and adaptation is said to be critical, so that actions and policies are grounded in the perceptions, opinions and experiences of children themselves (Tanner, 2009). Opening up spaces for children's participation and consideration of their interests in international policy processes is feasible and important (e.g. in the deliberations of the UNFCCC and Global Platforms for DRR, with attention to financial flows and reporting (Tanner, 2009).

Caution is required, however, because children can be exploited by those with competing agendas, and contributing to their vulnerability (Mitchell et al, 2008; Walden et al, 2009). Risks of 'tokenism' and adult 'manipulation' of children participating in policy processes are noted by Walden et al, 2009), who argue that accepted public standards for children's participation in consultations must be followed without exception. Child-friendly dialogues on climate change should be run on a regular, long term basis by governments and civil society groups, but only if adequate information is given to children such that they retain control of the level and extent of their involvement (Walden et al, 2009). Further, the mechanisms in which a debate is occurring should be explained, with adequate communication of the outputs of such processes to the participants. Also critical are clear explanations of the terminology being used and attention to the language, education and social norms of the children in question (Walden et al, 2009).

Several authors note the potential psychological risks of raising children's awareness of climate change. There are ethical issues and risks in involving children in research on climate change, because children could be exposed to discussion of life-threatening issues creating feelings of helplessness, denial and disempowerment (Seballos and Tanner, 2009; Mitchell et al, 2008). Having to make decisions for the family at a young age could rob young people of their chance to be children (Mitchell et al, (2008). According to Back and Cameron (2009), some children already a high level of awareness and concern about disaster risks and climate change, which affects their visions of – and anxieties about – their own future and that of the world (Back and Cameron, 2009). The level of fear and anxiety felt by children and adolescents with regard to climate change should be acknowledged and reassurance provided

to children that climate change is a threat that can be addressed (Back and Cameron, 2009) or at least that there are practical steps that can be taken to adapt to new circumstances especially where support is available. As well as reassurance, Seballos and Tanner (2009) suggest that the development of a two-way relationship between researchers and children should be nurtured by practitioners at the local level, and that new knowledge, capacities and priorities generated within child groups, communities and in partner organizations should be acted upon.

Current national assessments and plans do not include adequate analyses of children and climate change issues and nor is sufficient funding available to tackle these issues (UNICEF-IRC, 2008; Baker, 2009). However, as many climate change policies are in the process of formulation this means that there is a specific opportunity to advocate for mainstreaming in NAPAs, in other policies such as poverty planning (PRSPs) and in the international negotiations (Back and Cameron, 2008; Baker, 2009). Countries with high rates of child mortality should especially ensure that government and donor adaptation plans focus on reducing child mortality (Back and Cameron, 2008; Baker, 2009). As well as using a child-rights framework, national adaptation framework development should be based upon collaboration between the key ministries and organisations (e.g. inter-ministerial committees on climate, children's ministries, civil society and international agencies) (Polack, 2009). Cross-sectoral coordination should include ministries of environment, water, sanitation, health, education, statistics, social policy, youth, and finance ministries (UNICEF-IRC, 2008; Akachi, et al, 2009). A fully coherent stakeholder partnership approach would involve governments, civil society, UN organizations, donors, the private sector and every individual (across generations and genders) to reduce risks (UNICEF-IRC, 2008).

National, regional and local level policy-making and implementation and fiscal decisions should recognise the need to invest in long-term solutions and in low-carbon pathways which secure the full rights of future generations (Stone and Lofts, 2009). This is because the concept of inter-generational equity, which if accepted, inescapably implies a moral obligation for current generations to protect the planet for future generations. There are trade-offs, however, in meeting short-term needs now and securing sustainable development for future generations (Save the Children, UK, 2007). Cost-benefit analysis should therefore be applied with appropriate valuation of the quality of life of future generations (Stone and Lofts, 2009).

Participatory methodologies

Participatory methodological tools are being developed in the literature (see Molina et al, 2009) such as: working in small groups; keeping the emphasis on fun; using iterative methods that can be shaped by the children participating; shaping methods according to age range and cultural norms of participants; differentiating between gender and age of participants; use of icebreakers to maintain energy and develop confidence; use of a 'me/we' map (a simplified method for analysing who children interact with in key spaces; risk and activity ranking; benefits races; identifying messages through visioning; building pyramids and validating communication pathways; ranking enabling and limiting factors; other tools for creative expression such as songs, poems and video.

Networking, exchanges, forums, and use of the internet are suggested methods for amplifying children's voices beyond their own communities in participatory climate-related advocacy processes and in building children's capacity to adapt (Tanner, 2009; Tanner et al, 2009; Seballos, 2009). The value of participatory and broadcast media as a mechanism for giving voice and opening up spaces for collective action are increasingly being recognized in development (Braden and Nelson, 1999) including in climate change contexts (Plush, 2009; Nelson and Stathers, 2009; Baker, et al, 2009). As momentum for a climate change

adaptation initiative gathers strength, local children and adults can take on greater leadership and policy engagement is rendered more feasible and sustainable (Baker, et al, 2009). Environmental education is an important element of preparing children for future challenges (Bartlett, 2008). Communication of *positive* examples of involving children and communities in climate change adaptation should be aired more widely to demonstrate what is possible (Back and Cameron, 2008).

Conclusions on children and climate change

Both instrumentalist and moral arguments are made in the literature for making climate change responses more child-sensitive. Instrumentalist arguments posit the increased effectiveness of engaging with children in policy processes and in the planning and implementation of adaptation efforts. Involving children more in disaster risk reduction, for example, can increase effectiveness, reduce costs and raise benefits (using a lifetime and inter-generational analysis) (see Back et al, 2009). Investing in disaster risk reduction strategies can be cost-effective, because of the larger costs of coping with the damage caused to less resilient societies and infrastructure by disasters where there is no preparedness. Moral arguments state that the rights of children should be protected under already established UN Conventions and extended by the concept of inter-generational equity: today's children will inherit the challenges of climate change and it is the responsibility of current generations to protect the planet because of the rights of future generations. Various authors propose that reporting against climate change and child rights should be integrated into existing UN Convention on the Rights of the Child (CRC) as well as into reporting by other development and climate interventions, including mitigation market mechanisms. Child sensitive approaches build on the strong synergies that exist between what children need and the adaptations required for responding to more general risks: cities which work well for children work better for everyone, and this is applicable to climate change (Bartlett, in Guzman et al, 2009). Adequate drainage, waste removal and good sanitation not only protect children's health but help in reducing risks from potential disasters (Bartlett, 2008). Increased action to meet the MDGs would reduce underlying vulnerabilities to climate change (UNICEF-IRC, 2008).

There are many pressing challenges facing developing country policy-makers, which are already being exacerbated by climate change (as well as generating some innovation opportunities). Some authors note that requiring policy-makers, planners and service providers to tackle children's needs in adapting to climate change may seem an unnecessary burden and is therefore too often thought of as a matter of secondary importance. However, this is to misunderstand the centrality of power relations within any development process and the necessity of reflecting upon the questions of: 'Whether interventions will necessarily lead to 'good outcomes', particularly when viewed over multiple timescales and for whom?' The majority of authors reviewed conclude that that policy processes must integrate an adequate and sufficiently nuanced understanding of social and power dynamics, including the gender and age-related dimensions of these dynamics. There should be representation of children and articulation of their interests. Otherwise it is quite possible that such interventions could worsen existing inequalities for some, even if others may benefit.

There appears to be a somewhat artificial division in the analysis of different aspects of social differentiation and climate change, given the intersection between gender, age, caste and class. Most of the studies reviewed here concentrate on one dimension only – either gender or age (with caste, class, and ethnicity lacking attention generally). This is understandable given that this is a new field of enquiry and because of the uncertainties inherent in climate change which means that some of the work is still necessarily speculative. However, mitigation and adaptation policies are currently being formulated and programmes are being

implemented: so it is important to improve understanding, deepen analysis and promote the uptake of findings in processes, policies and programmes right away. Greater cross-fertilization between gender and age-related specialists is desirable. More fundamental questions may also need to be asked about what different potential economic and development future pathways may mean for different social groups.

At the same time, the work on children and climate change makes a compelling case for the *unique nature* of some aspects of children's vulnerability to climate change, because of the biological features of child development, although child development cannot be separated from context, culture and power relations. The early stage of physical and emotional development of children compared to adults means that climate change impacts can have more lasting effects on their physical growth, mental capacity and learning. The youngest children in particular have rapid metabolisms, immature organs and nervous systems, developing cognition, limited experience and behavioural characteristics making them particularly vulnerable. The balance between numbers of children requiring care compared to numbers of caregivers and breadwinners varies between different populations and is also a factor in children's vulnerability to climate change. Finally, perceptions of risk are shaped by social factors relating to age and gender norms – yet children can play an important role as informants in informal and formal risk communication networks.

A number of future research priorities are identified in the literature. In disaster risk reduction (Mitchell et al, 2008) some examples of the research issues highlighted are as follows: how to support and build upon children in their role as trusted communicators; further exploration of the role of children in informal communication networks; understanding how culture shapes the way communities perceive the value of children as communicators; analysis of if and how children and youth can influence policy in risk management; how to achieve complementary national policies and legislation to protect children and youth in DRR; unpacking the positive and negative aspects of involving children in risk communication in different sectors e.g. HIV/AIDs etc.

More research is needed on the impacts for children of existing adaptation programmes and policies across the public, private and third sectors. Further research on how to build children's optimal health and nutrition in the light of new climate challenges is proposed (Bartlett, in Guzman et al, 2009). This should identify approaches that can strengthen the capacity of families to cope, restore and enrich their children's routines, networks and activities, respecting children's capacities, and supporting their active involvement in policy-making and adaptation activities (Bartlett, *ibid*). Analysis and evidence is lacking on climate change impacts and children in urban areas, and there is no real discussion of the ways in which changing migration/mobility patterns, climate change and children's wellbeing might intersect.

To achieve more child-friendly adaptation and mitigation strategies requires increased awareness and motivation to act on the part of planners, policy-makers and amongst the wider public. But more research capacity in this field is urgently required, including partnerships with practitioners to ensure good and rapid research impact on climate change thinking and policy. More attention is needed as to how far climate change and children is an issue that can be tackled without consideration of what different economic, trade and development pathways mean for societies as a whole, but also for differentiated groups of people.

6 Older people and climate change

The academic literature on climate change and older people in developing countries is extremely tiny, although there are a number of NGO reports on the topic. A small number of studies identify older people as a group particularly at risk from climate change. For example, field research in Vietnam indicates that older people and children are both groups particularly vulnerable to climate change (Neefjes, et al, 2009).

A key reference on the elderly and climate change is Filiberto et al (undated). These authors identify myriad ways in which older sections of society might be particularly affected by climate change. Older people are more vulnerable to extreme weather (both hot and cold), which is projected to increase. Older people will be more affected than youth, because of their greater physical weakness and the associated decline in incomes that can be common in old age. Older people will be disproportionately affected by climate change, because they face higher mortality risks in extreme weather events, and are more vulnerable to the effects of temperature extremes. Reduced mobility, changes in physiology, and more limited access to resources all undermine the adaptive capacity of elderly people faced with climate risks (Filiberto, et al, undated), including greater susceptibility to vector-borne diseases that may increase in incidence and range. Health effects will result from climate change. Increased extreme weather events create greater exposure for older people to the threat, but elderly people will be more affected by the same events because of the increased physiological susceptibility that is associated with human ageing and from social factors (Filiberto, et al, *ibid*). As urbanization and agrarian transitions occur there could be far reaching implications for human health in the light of climate change.

Over-generalizations should be avoided though: there will be older people that do have sufficient resources to adapt, and there are differences between the vulnerability of the old and the very old. The oldest (aged 85 and over say) will suffer the most negative health impacts. But also chronological age is just an approximation of actual condition of risk, physical decline or frailty. Those with pre-existing chronic conditions and who are already dependent on medications are vulnerable to the impact of exposure to heat, pollutants and vector-borne diseases (Filiberto, et al, undated).

Outmigration by men (and sometimes women) of working age is increasing in many parts of the developing world, leading to local populations having disproportionate representation of older people, women and children (Nelson and Stathers, 2009). Outmigration is sometimes temporary and in these cases is better viewed as part of a seasonal pattern of mobility to secure livelihoods. Continuing pressures on rural populations and the pull factors of growing urban economies are having a demographic effect on the make-up of rural societies in Kyrgyzstan, often leaving older women to work the land (Day et al, 2007). In Kyrgyzstan many elderly people in ageing rural communities are already vulnerable during the cold months, because they have restricted access to heating, face variable fuel and food prices, have poor nutrition and suffer from ill health (Beales, 2009). They also have reduced ability to work the land and obtain an income, relying on small and insecure remittances or occasionally an inadequate pension. Many are in debt and are still acting as primary carers for grandchildren (Beales, 2009). An increase in grandparent headed households is expected with rising rates of HIV and AIDS infection globally (Day et al, 2009). In some instances there is an erosion of traditional family and community support mechanisms: Day et al (2009) note the increasing the destitution of older people which undermines their capacity to cope with the upheavals caused by disasters. Given these trends and a common dearth of statutory

welfare support in developing countries, older people increasingly need to earn an income: the design of food or cash for work schemes should take this into account (Day et al, 2009).

Despite the disproportionate impacts outlined above, older people are not being included adequately in adaptation planning (Beales, 2009). A report from the Inter-Agency Standing Committee (IASC) Working Group (Day et al, 2007) finds that older people can be an asset during disasters (e.g. providing child-care and leadership). Older people can play important roles in disaster contexts: a study from various countries in Asia and the Pacific finds that older people have specific health, nutrition, mobility and productive economic capacity needs, which are rarely considered in disaster response programmes (HelpAge International, 2007). They also have specific capabilities which are rarely used in preparedness, relief and rehabilitation programmes and can play important roles in disaster contexts. Capacity building of older people's associations and involving older men and women in planning and coordinating community responses to disasters strengthens community resilience (HelpAge International, 2007). The interests of older people should be better articulated in humanitarian responses (Day et al, 2007) but also in longer-term adaptation planning and social protection policies.

Inter-generational challenges may arise in relation to climate change. Trade-offs are likely between meeting the short-term needs of currently vulnerable populations and the longer-term needs of future generations (although win-win situations may also arise) and there may be trade-offs and disharmony between the generations co-existing today. Participants in a focus group discussion in Bangladesh noted that younger people had relatively more education, mobility and access to information and could thus more easily find ways to access information. While this is a positive development for the youth that are experiencing these positive developments, the older participants highlighted the neglect of their greater experience.

There is a vein of argument in the literature that the traditional knowledge of older generations is being lost, and that this knowledge is valuable, even vital, for adaptation. A project in lowland Bolivia, with support from Oxfam, Save the Children, HelpAge International and Fundacion por el Desarrollo Participativo Comunitario (FUNDEPCO) is seeking to build upon the traditional knowledge of the older people in the Chimani ethnic group – knowledge that includes bio-indicators (ISDR, 2008). In Kenya, traditional conservation practices are decreasing as pressures on the land and populations increase, but these practices may be important for adaptation (e.g. not cultivating river banks, knowledge of forecasting weather patterns, using the sun and moon and by observing trees) (Beales, 2009). However, the pace of climate change may outstrip traditional knowledge over time and there are already indications that older people are finding it increasingly hard to read climate patterns (Beales, 2009; Roncoli, et al, 2003). Further, social memories of climate can be unreliable and can be as much about individual experiences and socio-cultural narratives of history and social relations (Strauss and Orlove, 2003; Nelson and Stathers, 2009).

In terms of moving towards more 'age friendly' adaptation, Beales (2009) outlines a number of possible strategies, such as investment in age-friendly health systems, social protection and support for older farmers, support for older farmers in crop diversification, livestock, land retention and land use, research on traditional knowledge of drought resistant crops, and facilitation of older peoples' participation in international policy dialogues. The funding mechanisms linked to the NAPAs should clearly show how older people can access funding and be supported as a vulnerable group. All adaptation planning and vulnerability assessments should be age and gender differentiated (Beales, *ibid*). HelpAge International suggest including older people in the definition of 'vulnerable groups' by UN Member States in successor agreements to the Kyoto Protocol and in the guidelines for the Adaptation Fund,

and also recommend extending social protection programmes to reach older people and their dependents.

7 Social protection in the context of climate change

This section discusses the potential for social protection to improve adaptation and disaster risk reduction activities in response to climate change with the aim of protecting particularly vulnerable groups.

Responses to climate change are commonly differentiated into mitigation and adaptation responses. Mitigation activities focus on reducing the emissions of greenhouse gases to prevent further global warming. Climate change adaptation refers to planned and autonomous responses to climate change. Disaster risk reduction (DRR), social protection and longer-term development approaches have all evolved separately, with varying origins and actors. There is increasing recognition, however, that the gaps which exist between all of them need to be bridged at some level for holistic and equitable responses to be achieved (Davies, et al, 2009). There are differences between each of the three approaches: there are climate changes, such as sea level rise and changes in average means and cropping zones, which do not involve sudden onset disasters, for example, and not all hazards creating disasters for vulnerable groups are climate-related (e.g. earthquakes and tsunamis). Social protection may support groups that are vulnerable for reasons that are non-climate or disaster-related.

There are commonalities between the three fields, however, and opportunities for learning and improved co-ordination between practitioners, communities and researchers: all three approaches feature integrated, multi-sectoral approaches to risk reduction and involve responding to shocks and stresses for poor people at individual, community and societal levels (Davies, et al, 2008; Davis et al 2009). Social protection efforts respond to some climate-related disasters, but are not responsive to the *long-term* risks posed by climate change. Adaptation initiatives have to date overlooked the policy and programme options that social protection can provide. Adaptation cannot address the root causes of poverty without taking a differentiated view of poverty and vulnerability (Davies and Leavy, 2007).

Table 1: Key characteristics of social protection, adaptation and disaster risk reduction⁸

	Social protection	Adaptation	DRR
Core disciplinary grounding	Development and welfare economics	Social development and physical sciences	Physical sciences

⁸ Source: Davies et al, 2009, p206

Dominant focus	Implementation of measures to manage risks	Enabling processes of adaptation	Prevention of disaster events
Main shocks and stresses addressed	Multiple	Climate-related	All natural hazard-related, including climate
International coordination	Informal, OECD task group	UNFCCC – Nairobi Work Programme	UN-ISDR Hyogo Framework for Action
Main funding	Ad hoc multilateral and bilateral	Coordinated international funds: Global Environmental Facility, UNFCCC/Kyoto Protocol funds, Ad hoc bilateral	Coordinated international funding: ISDR, GFDRR Ad hoc civil sponsored and bilateral

Climate change will lead to more households falling below the poverty line or being hit by major disasters with significant risks to children's health, nutrition, protection and education (International Save the Children Alliance, 2008). The concept of 'adaptive social protection' has thus been proposed, whereby policy-makers take into account climate change and adjust plans accordingly, ensuring that social protection (and DRR) respond to current and potential future climate shocks, although the uncertainties of climate change science complicates this task (Davies, et al, 2008).

Key elements of adaptive social protection are (Davies, et al, 2008):

- reducing dependence on climate sensitive livelihood activities through adaptive strategies;
- targeting actions based on the structural root causes of poverty in a particular region or sector, covering multiple shocks and stresses and emphasizing rights-based, not instrumentalist rationale for action;
- an emphasis on rights-based advocacy (e.g. universal social minimum concepts) linked to climate change justice arguments. Where adaptive social protection provision is not universal, inputs must be effectively targeted, although climate change will make this increasingly complex. Means-testing may be needed to target the most vulnerable in broad-based measures (e.g. employment guarantee systems) or life cycle periods of vulnerability (e.g. social pensions).
- a longer-term perspective to social protection adopted, with adaptation to changing risks, by conducting risk assessment in conjunction with the design and implementation of social protection.

Increased and more innovative financing is urgently needed in disaster-prone regions, and there are positive examples which have reduced underlying short and longer-term risk (e.g. poverty, hunger and lack of income generating activities) in both emergency and development situations (International Save the Children Alliance, 2008). An example from Swaziland shows how cash can be directly disbursed to vulnerable households or delivered in exchange for work or fulfilment of certain conditions. Covering a critical period leading up to the harvest, when severe droughts struck in 2006 and 2007, approximately 45,000 children, women and men received a mixture of food aid and cash to support livelihoods in the crucial planting season. Children were found to have benefitted directly and indirectly from even very small cash transfers: families were helped to purchase food and other household items, to pay for school and medical fees and to buy school books, or make investments (e.g. buying chickens

and goats to provide them with an additional source of income) (International Save the Children Alliance, 2008).

Social protection measures can also include insurance, pensions, child grants and social welfare (International Save the Children Alliance, 2008). Social protection can work in both the short and long term to guard people's assets by providing them with reliable and predictable support during difficult seasons or a disaster. The security of reliable, regular cash transfers can also help families avoid the need to sell off assets to cope with disasters. Davies et al (2009) argue that there is plenty of good practice in social protection which can be built upon in improving adaptation: existing funding and criteria should integrate appropriate social protection measures. Civil society should support less affluent groups to demand access to social protection (Davies et al, 2008). These authors also suggest that more long-term social and natural science research on appropriate measures and targeting in response to geophysical and climate-related hazards are needed, and cost-benefit analyses of social protection options for climate change adaptation should be conducted (Davies, et al, 2009). Other social protection measures of relevance to adaptation are weather-indexed crop insurance, employment guarantee schemes (e.g. public works labour on environmental projects), asset transfers (e.g. direct livestock provision) and seed fairs.

Adaptive social protection should aim to *transform* productive livelihoods as well protecting, and adapting to changing climate conditions rather than simply reinforcing coping mechanisms (Cannon, 2008). Davies et al (2009) distinguish between different categories of social protection (SP) and their associated instruments and outcomes (adaptation and DRR benefits). Protective SP (e.g. social service provision, food or cash transfers, pensions) can protect the most vulnerable to climate risks. Preventative SP (e.g. social transfers, livelihood diversification, and weather-indexed crop insurance) can prevent poor households reliant on weather-dependent livelihoods from asset stripping. Promotive SP (e.g. access to credit, asset transfers, access to common property resources and public works programmes) can lead to livelihood diversification and security – which enhances resilience to shocks and promotes new climate-related opportunities. Transformative SP involves measures such as promotion of minority rights, anti-discrimination campaigns, social funds and proactively challenging discriminatory behaviour. It is likely that different combinations of SP will be needed in different situations.

Table 2: Promoting adaptation through social protection

Social Protection (SP) category	SP instruments	Adaptation and DRR benefits
Protective (coping strategies)	Social service provision Social transfers (food/cash), including safety nets Social pension schemes Public works programmes	Protection of those most vulnerable to climate risks, with low levels of adaptive capacity

Preventative (coping strategies)	Social transfers Livelihood diversification Weather-indexed crop insurance Social insurance	Prevents damaging coping strategies as a result of risks to weather-dependent livelihoods
Promotive (building adaptive capacity)	Social transfers Access to credit Asset transfers or protection Starter packs (drought/flood resistant) Access to common property resources Public works programmes	Promotes resilience through livelihood diversification and security to withstand climate related shocks Promotes opportunities arising from climate change
Transformative (building adaptive capacity)	Promotion of minority rights Anti-discrimination campaigns Social funds Proactively challenging discriminatory behaviour	Transforms social relations to combat discrimination underlying social and political vulnerability

Source: Davies et al, 2009

Index insurance – promotive SP under the typology above - has three potential benefits: helping to manage climate variability, supporting economic development in contexts of climate variability, and helping to manage disasters (Hellmuth et al, 2009). UNDP and the World Bank have been the most active in developing crop risk management models and have provided finance, technology and training⁹. Weather risks can be managed because pay-outs are determined by weather index such as rainfall, rather than the consequences of weather (e.g. crop failure). These schemes are also more easily extended to rural parts of developing countries where insurance companies cannot visit farmer fields to determine premiums or assess damage. A scheme in Malawi has shown that some communities have been able to buy small insurance contracts to cover the purchase price of seeds in drought situations. There are also experiences from India, Brazil, the Caribbean, and Ethiopia, but scaling up presents technical and operational challenges (Hellmuth et al, 2009). Index insurance can work as a) a risk transfer mechanism within a comprehensive strategy for managing climate risk; b) as a mechanism to help people access the resources needed to escape climate-related poverty; and c) as a mechanism to incentivize risk reduction. According to DFID, index insurance does not only reduce risk, but can be used to improve responses to climate change (e.g. building in safer locations, crop and livestock diversification, and constructing wind- and flood-proof housing)¹⁰. Index insurance has been formally considered as a climate change adaptation tool in the international climate negotiations (Hellmuth et al, 2009).

The uncertainties in climate change science may, however, undermine the affordability of premiums (Hellmuth et al, 2009). Experience from practice is limited and the poverty impact of index-insurance schemes is relatively unknown, especially in terms of how the different schemes and business models may have socially and gender-differentiated outcomes. More quantified evidence is needed (including gender disaggregated economic benefits and investment trade-offs) to identify the added value of index insurance, drawing on private sector as well as government and donor experiences (Hellmuth, et al, 2009). Questions remain about how index insurance should be targeted to have the greatest impact on poverty and how such interventions will a) play into existing social and gender dynamics, with what outcomes, including the implications for existing networks of social obligation and safety nets;

⁹ UNFCCC, http://unfccc.int/adaptation/adverse_effects_and_response_measures_art_48/items/4971.php

¹⁰DFID webpage on weather index insurance:

<http://www.dfid.gov.uk/Documents/publications/climatechange/8insurance.pdf>

b) how demand-led the schemes can be, and c) how far such schemes encourage more climate-resilient agriculture to reduce vulnerability etc.

Farmers in Malawi are participating in a crop insurance programme supported by the FAO and the World Bank¹¹. They are given the option of buying insurance based on weather events, rather than crop losses. The insurance is sold in standard units, e.g. US \$10 or US \$100, and insurers pay out in the event of extreme weather events (e.g. rainfall 20 to 30% below normal levels), with each recipient receiving the same amount. The Government of Malawi is reinsured in the global weather insurance market. The World Bank and National Association of Small Farmers of Malawi (NASFAM) developed an index-based crop insurance contract that is more efficient and cost effective than traditional crop insurance and can be easily distributed to individual smallholders. The UNFCCC website describes a Malawi scheme involving the government and World Bank that has been piloted with over 900 farmers in four different areas¹² enabling them to buy hybrid groundnut seeds and increasing productivity. There have been insurance scheme benefits, but there are also concerns, for example, about the underlying assumption in assessing crop yield production - that all farmers use the same farming techniques and have the same soil type. The lack of education and knowledge about index insurance amongst herders and farmers also remains a challenge (and the gender dimensions and differentiated needs and interests of clients of index insurance are insufficiently analysed and understood although work is on-going in this field).

A project in Ethiopia, the HARITA project, is attempting to provide a holistic response to smallholders in Tigray, the most northern district of the country, in relation to climate change and micro-insurance. (See Box 2 below). The HARITA project is building upon the national Productive Safety Net Programme, (PSNP), by providing a mechanism whereby additional labour by disadvantaged PSNP smallholders earns an insurance premium. Thus, whereas the PSNP is giving them 'predictable transfers for predictable needs', the additional premium gives 'predictable transfers for *unpredictable* needs' (Oxfam America, 2009, p.3).

In Kenya there is a programme that enables smallholder farmers to pay a small (5%) insurance premium on their purchase of seeds or fertilizer. The Kilimo salama Kenya Crop Insurance Programme involves the Syngenta Foundation for Sustainable Agriculture, Safaricom and UAP. In the event of insufficient or excess rains being recorded at a local weather station, pay-outs are made to farmers, and in September 2010 the first pay-outs were made to 135 farmers in Siakago, Embu District, with the largest figure being 2,500 Ksh¹³. The programme covers 11,000 farmers in Bungoma, Busia, Eldoret, Embu, Nanyuki, Oyugisa and Homa Bay. To cover the full 10% premium needed to fund the programme, participating agro-companies match the farmers' investment. Camera phones are used by the agro-dealers to scan a bar code when an input is bought by the smallholder and this registers the policy with UAP Insurance via Safaricom's mobile data network. A text message is then sent to the farmers' mobile phone confirming the insurance policy. When data from a particular weather station indicates rain shortage or other extreme conditions that will affect the harvest, the farmers receive the pay-out automatically and directly via Safaricom's M-Pesa mobile money transfer service. Some schemes are also being developed in Africa providing insurance for livestock. ILRI, for example, is currently conducting a livestock based insurance pilot¹⁴.

¹¹ <ftp://ftp.fao.org/docrep/fao/011/aj982e/aj982e02.pdf>

¹² UNFCCC, http://unfccc.int/adaptation/adverse_effects_and_response_measures_art_48/items/4971.php

¹³ In2East Africa, Sept, 22, 2010, <http://in2eastfrica.net/kenyan-farmers-get-crop-insurance-payouts-after-poor-rains/> (Accessed June 2011).

¹⁴ www.ilri.org/ibli/ for information on an livestock index-based insurance pilot

Box 2: Smallholder risk reduction, micro-insurance and credit in Ethiopia

85% of Ethiopian smallholders are already under significant climate stress, and affected by acute environmental degradation, but more extreme temperatures, extraordinary rainfall events, more intense and prolonged droughts and floods are projected. HARITA Project is working with subsistence farmers, NGOs, academics, government and private sector representatives on disaster risk reduction, micro-insurance and credit in Adi Ha and Tigray. Farmers are making compost and constructing small water harvesting structures, planting trees and grasses, and cleaning *teff* seeds before sowing to increase productivity. Ways of building on the Ethiopia Productive Safety Net Programme (PSNP) are being explored. This is a government programme, established in 2005, providing cash transfers to approx. 8 million chronically food insecure households, with assistance linked to beneficiaries' work in building community assets (e.g. water harvesting structures). HARITA farmers enrolled in the PSNP can work extra days on risk reduction activities to earn an insurance certificate protecting them against deficit rainfall – a premium-for-work arrangement. Wealthier farmers that are not part of the PSNP can buy their own insurance. Oxfam America is currently providing the funds for this scheme, but as it is scaled up donors, government and adaptation funds may step in.

A weather index insurance scheme has been developed for Adi Ha involving international private sector partners. This type of scheme avoids the moral hazard of the incentive for farmers to neglect their crops which exists in traditional insurance schemes which estimate the value of what has been lost. Index insurance cannot be influenced in this way by farmer behaviour, as it is based on a proxy for loss and an objectively verifiable indicator (it also therefore has lower administrative costs and pay-outs can be more swift which can be important for farmers seeking to cope with food production shortages). Insurance contracts are priced each year, so changing risks over time can be taken into account, using climate change trends and seasonal rainfall predictions – thus the market can signal to farmers what production strategies are likely to succeed in the current conditions. Finally, the scheme is also providing credit for livelihood diversification, technology adoption, more high value activities etc. Because insurance provides banks and microfinance institutions with a partial guarantee, this can reduce the interest rate on agricultural lending. Farmers can take small risks (e.g. on higher value crops) knowing they have insurance in the event of drought etc. Oxfam America cites a recent study in Ethiopia which found that access to credit also enables smallholders to engage in adaptation activities (e.g. soil conservation, changing planting dates) (Deressa et al, 2008). Unusually the insurance and credit components are offered to farmers separately, as well as bundled together, so that farmers do not lose access to insurance once they have repaid loans and farmers who do not want loans can still obtain insurance.

Smallholders often struggle to make sense of complex financial products. To make the products attractive and accessible to smallholders, HARITA has developed them with farmer participation, have used culturally appropriate participatory education methods, and to allow in-kind payments of labour rather than cash. Growing awareness amongst the participating farmers has led some of them to request diversified insurance services, e.g. for livestock and fruit. 20% of households in Adi Ha signed up for weather index insurance for the staple cereal crop, *teff*, in late May 2009, of which 38% were female-headed (recognized as the poorest of the poor) and 65% were participants of the Productive Safety Net Programme (PSNP), a government programme that supports 8 million chronically food insecure households. As farmers graduate from the PSNP, they can enter the commercial insurance market. The notion that agricultural risks for smallholders this poor are nearly uninsurable is being successfully challenged. Source: Oxfam America, 2009

Some of the potential limitations of index-based financial instruments should be noted: a) the degree of correlation between actual losses and the index underlying the instrument which means there is a potential 'basis risk' problem (e.g. smallholders experience a loss and do not receive a payment or they may receive a payment when they have not had a loss especially in heterogeneous regions with many micro-climates or with sparse meteorological stations for reliable data collection), which may make such schemes ineffective. Formal or informal risk pooling mechanisms may be better in such heterogeneous situations (Barrett, et al, 2007); b) there is a lack of experience about how an instrument fits into the larger institutional setting and the design of the instrument including contracts, although on-going pilots are generating new lessons (Barrett, et al, 2007).

Less attention has been paid to social protection measures beyond insurance, but cash transfers and safety nets have already been proved successful in tackling food insecurity and malnutrition – both of which will be exacerbated by climate change (Baker, 2009). Safety nets are commonly provided in emergency situations with cash or vouchers distributed by NGOs or UN agencies to improve access to food and preventing households having to sell livelihood assets to survive. Social cash transfers provide predictable, regular cash grants to individual or households and tend to be distributed on a permanent basis to tackle poverty and invest in human capital (Baker, 2009). Government interventions in Ethiopia, supported by Save the Children, have included provision of seasonal cash and food transfers to the most vulnerable households with positive outcomes (Baker, 2009). In Swaziland food and cash transfers were offered during the drought of 2007 to poor households, to increase their access to nutritious foods, to encourage more diverse foods to be consumed, and to encourage higher investment levels in alternative livelihood activities and healthcare. Where reliable and predictable sources of cash are provided, Save the Children has found that fewer households engage in coping strategies which have longer-term negative impacts (e.g. withdrawing children from school and sale of assets such as livestock). Cash transfers that actively target children under five, as well as pregnant and lactating mothers, have the potential to tackle malnutrition brought about by climate change (Baker, 2009).

To achieve policy ownership and coherence between DRR, social protection and adaptation, however, significant efforts may be required to overcome the weaknesses of the ministries which are usually responsible and support provided to link each of these areas to wider poverty reduction frameworks and growth strategies (Davies et al, 2008). The need to build policy coherence would also include making the links between climate mitigation and adaptation policies and seeking overall approaches to economic development which are climate compatible (i.e. support adaptation, low carbon pathways and social development) (Mitchell and Maxwell, 2010).

Beyond the social protection which may or may not be forthcoming from the state, self-protection is usually the first line of defence for poor households, and it represents a critical component of resilience to shocks and stresses (Cannon, 2008). People's capabilities to build homes in relatively safe areas and in ways that enable them to withstand common hazards is largely a function of income, but also willingness to act, and access to technical knowledge and skills – all of which may depend upon adequate livelihoods (Cannon, 2008). Cultural perceptions of risk, as well as economic imperatives, are also important in influencing whether some may forego protection measures in order to meet short-term needs. Collective action can provide some self-protection, but many constraints are *structural* (e.g. lack of access to suitable land for construction, need for regulation of land use and construction standards, need for investment in concrete cyclone shelters) requiring state (or other actor) responses of social protection (Cannon, 2008). The actions of some 'community' members may undermine the access to social protection for others (e.g. corrupt local officials allowing the construction of non-earthquake proof houses).

Social protection is socially and gender differentiated, because some groups do not have the means or livelihoods to provide their own protection. Children, the elderly and the sick, for example, are not likely to have their own livelihoods upon which to draw. Groups outside of government, across the agricultural innovation system, (such as NGOs, input producers and agro-traders, farmer organizations, mobile phone companies etc) may play a key role in innovation on social protection measures. To implement successful social protection programmes governments not only require adequate revenues, but political will at different levels (e.g. to enforce building codes, school protection) and access to technical knowledge and capacity and all of these are shaped by governance (e.g. levels of corruption, capacity of civil society groups in DRR etc) (Cannon, 2008).

8 Conclusions

To date, there is insufficient understanding of how the impacts of climate change will affect women and men, and different social groups, but it is clear that there will be differentiated impacts and that these are likely to intersect with and overlay existing patterns of inequality. Climate change pressures will only be one amongst many different stressors that may interact to worsen gender and other inequalities, including along the lines of caste, class and ethnicity, as well as spatial marginality. Women are disproportionately found in the poorest sections of society, have fewer resources to cope with climate change, and are more reliant on climate-sensitive resources such as water and fuel because of the gender division of labour. They tend to have lesser access to livelihood resources and hence more limited capacity to participate in climate change adaptation processes. Although, all members of poorer communities will be affected, women and female headed households are likely to be disproportionately affected by increasing extreme weather events, greater climate variability and long-term shifts in climate averages. Children and the elderly have certain unique vulnerabilities and capabilities with respect to climate change, but these are also shaped by social determinants. So whilst all societies will be affected by climate change, the impacts will vary by location and exposure, shaped by social characteristics, identity, power relations and political economy. Climate change responses can only be equitable if they place the empowerment of women and marginalised groups and the tackling of gender and social inequality *centre-stage*.

This systematic review of the literature on climate change and social difference finds three fairly separate bodies of literature (grey literature and journals), focusing respectively on the elderly and climate change, gender and climate change and children and climate change. Analysis of gender and climate change relationships is much more frequent than studies of climate change and the elderly or children. There are few studies covering the multiple forms of social difference and marginality that shape development outcomes for differentiated rural communities in the context of climate change and its direct and indirect impacts.

The uncertainties of climate change science and impact models and lack of downscaled data below national level means that it is difficult to predict climate change impacts in any particular locality. This is particularly the case when the inherent uncertainties of smallholder livelihoods are taken into account and the other myriad stresses and shocks which affect urban and rural livelihoods of the poor (and their interaction with climatic factors) are considered. Many accounts have emerged from around the world of observations of changes in climate variability and in the frequency of extreme events, and whilst these experiences are real, the ability to prove a link to global processes of climate change is still problematic. Understanding how gender and social difference, as expressed largely through inequalities and discrimination in policies, institutions and practices, will mediate the outcomes of climate change in the longer-term is therefore a real challenge. While national and sectoral assessments of vulnerability can identify some types of spatial marginality and vulnerability to climate change, more nuanced analyses are needed that unpack the cultural and social determinants of inequality and marginalization in a particular locality.

Some studies are beginning to appear on the differing aspects of gender and climate change (e.g. Dankelman et al, 2008; Nelson and Stathers, 2009; Neefjes et al, 2009; FAO, 2010;

Petrie, 2010; FAO, 2010; Dankelman, 2010), but even these tend to be studies limited to one or two communities, and are often undertaken over short periods of time. Further, they tend to focus necessarily on short-term horizons, on existing climate variability and incipient climate changes, rather than progressive climate change over decades, because of the difficulties of predicting social as well as climatic and broader environmental change. More in-depth qualitative and quantitative research may be required, however, to try and remedy this situation and to prepare for future climate change. This is especially the case as climate change responses (policies, programmes and actions) are put into action, which will also have secondary impacts upon differentiated rural communities.

More action-oriented research is required to support social learning on and preparation for adaptation responses - in a gender sensitive manner and combined with more emphasis on envisioning different gender pathways and targets. There appears to be an interesting opportunity, for example, to further develop gender learning and action methodologies that already support social groups to look to the future, envisioning the range of future gender pathways and scenarios, by integrating climate change thinking into these processes. Similarly, where processes of community and broader stakeholder participation are facilitated, aimed at informing and learning from participants on climate change and livelihoods, there is an opportunity to integrate gender action learning (envisioning different scenarios of gender relations, involving men and women in setting targets etc). In other words the range of possible futures in terms of gender, climate and broader development pathways should be considered and articulated in *linked* facilitated stakeholder learning processes. There is little point in envisioning future pathways that lead to climate resilience, without seeking gender and social equality: in fact it is surely impossible to achieve resilience without tackling the latter.

It will be important to tease out the different stresses and shocks affecting less affluent communities, groups and individuals with exploration at the intra-household level of social relations, as well as across scales (intra-community, district, sub-regional, national and international). Future studies should seek to explore the location-specific socio-ecological dynamics in diverse situations to gain insights into how gender and other social roles are being reshaped, resisted and contested - in the context of climate change and broader processes of rural and urban change.

The literature on adaptive management, in response to climate change in particular, is growing - and yet rarely is there explicit consideration of gender and marginality issues. Adaptive management is an approach to guiding intervention in the face of uncertainty - something that is increasing with climate change (Raadgever and others 2008; Olsson, Folke, and Berkes 2004 - in World Bank 2010ⁱ). Adaptive management actions are described as being informed by explicit learning from policy experiments for example (World Bank, 2010) and such learning should be gender sensitive. Adaptive management actions, according to the World Bank (2010) should use new scientific information and technical knowledge to improve understanding and inform future decisions, and there should be monitoring of the outcome of interventions as well as development of new practices. Again across all of these dimensions of adaptive management, gender awareness is critical. It is important that gender and socially differentiated *local* knowledge of climate, for example, is also shared and valued more in adaptation, mitigation, and development planning. The development of new practices, plus monitoring and impact assessment efforts should follow best practice and innovate in gender sensitive approaches. Where vulnerability/resilience is used as a proxy indicator in climate change impact evaluation, and locally specific indicators are formulated, this must of course be a gender sensitive process to ensure that both women and men's indicators are considered.

Further elements of adaptive management outlined by the World Bank (2010) are as follows: evaluation of alternative scenarios; consideration of structural and non-structural measures; understanding and challenging of assumptions; explicit consideration of uncertainties; adoption of long-term horizons for planning and capacity building; alignment with ecological processes at appropriate spatial scales; frameworks for cooperation between administrative levels, sectors and line departments; broad stakeholder participation (including research centres and NGOs) in problem-solving and decision-making; legislation being adaptable to support local action and respond to new information; support for sustainable learning mechanisms (e.g. learning alliances). Gender and social difference analysis should be mainstreamed in each mechanism – for example, gender analysis may help to challenge received wisdom which can be a barrier to adaptive management. The question needs to be asked: 'What does gender sensitive adaptive management looks like?

As well as the need for increased study of gender and climate change in rural areas, there is currently very limited analysis of these issues in urban contexts. Another gap exists in the lack of analysis of the connections between climate change and social determinants such as caste, ethnicity, and disability - including how they intersect with gender. Analysis of gender dynamics in disaster situations is more common than attention to slower onset climatic changes. Much of the focus until recently has been on adaptation, rather than on mitigation programmes and activities, yet the latter are already happening on the ground (including new REDD+ pilot programmes, on-going and proposed biofuel schemes, carbon offset schemes) and this also needs rectifying.

Beyond identifying the vulnerabilities of poor people and regions exposed to climate change, it is important to identify the structures, narratives and power relations which underpin inequality and constrain adaptive capacity, and similarly to identify and build upon the capabilities and agency of those groups. A common thread of the literature is the assertion that women, children and the elderly are not just passive victims of development and climate change processes, but are active agents whose adaptive capacity is constrained by existing power relations, structures and development pathways. While there are some biological characteristics which contribute to the vulnerability of women, children and the elderly (e.g. pregnancy can be a factor in constraining women's escape from flooding situations, for example), social characteristics are at least as important: as often stated, for example, women are less likely to be taught to swim in some cultures and have been overlooked in the past in disaster risk reduction efforts. Better integration of gender and social difference analysis and support for the empowerment of women and marginalised groups across all adaptation and mitigation policy-making, planning and programmes is needed.

None of the myriad climate financing initiatives is adequately gender-sensitive as yet, failing to incorporate gender criteria in their operating procedures and guidelines. To change this requires not only greater use of existing gender mainstreaming tools, but higher levels of political commitment and cross-scale alliances. The types of responses and economic development pathway chosen are also likely to have equity implications. Market-led mechanisms predominate in the new international climate mitigation agreements, yet women are thought by some scholars to be less likely to benefit from the large-scale industrial mitigation projects which have been funded to date.

Much of the literature notes the need for greater direct representation in climate change debates and international/national policy-making to improve and increase the articulation of their interests – by women, children and the elderly. Gender has not yet been mainstreamed in the UNFCCC climate change negotiations. But due to the collective efforts of committed gender advocates and women's groups a provisional status has been awarded to women's civil society groups giving them a greater chance to raise concerns in the official fora. The work by this constituency in the complex negotiations process should be applauded and given

increased support. Greater support from international agencies is still needed to ensure better representation across scales. Similar efforts are needed at a national level and at the district level where decentralisation processes are underway to ensure that climate change mitigation and adaptation planning takes account of women's voices and those of other marginalized groups.

The children and climate change literature is less extensive than the gender and climate change body of work, but it is expanding rapidly. As in the gender and climate change literature, the work on children and climate change seeks to delineate the potential impacts of climate change on children and challenges the dominant debates and activities in climate change arenas that ignore this (differentiated) social group. The physiological and social reasons which mean that children may be disproportionately vulnerable to climate change are analysed in different, mainly exploratory studies. The assumption that children are a passive group that do not have a particular role in responding to climate change is challenged time and again, with many studies positing a strong potential contribution of the group in question – naming them as active agents that may also have particular strengths – for example, children can act sometimes as trusted communicators on climate change and spell out (DRR) between parents and local government and development agencies.

The literature on what might constitute child-sensitive disaster risk reduction includes a few examples of action-learning from the field and generates several insights: children and youth can engage in local advocacy processes to influence risk-management and can play an active role in community training and planning; changes in national policies and legislation to protect children and youth in disaster risk reduction is often necessary; achieving more child-friendly adaptation measures requires greater awareness of the vulnerabilities and agency of children and greater political will to act; there are both risks and opportunities in supporting child/youth engagement in policy-making processes.

Both instrumentalist and moral arguments are drawn upon in support of the argument for the take-up of child-sensitive approaches in climate change adaptation and disaster risk management. The rights of children are already protected at an international level by the Convention on the Rights of the Child, but the concept of inter-generational equity is also brought to the fore: children will inherit a changed climate, created by historical emissions and will have to deal with the consequences. It is therefore incumbent on current generations to act now to respect the rights of future generations. Reporting on climate change issues should be an integral part of existing UN child-rights conventions and mainstreamed across the emergent climate regime (e.g. in the mitigation market mechanisms, adaptation funding).

The literature on climate change and older people is particularly sparse for developing countries (more studies are emerging focusing on developed countries). Yet older people are also disproportionately at risk from climate change. Chronological age is only an approximation of actual condition of risk, physical decline or frailty, and there is a difference between the vulnerability of those entering old age and the very oldest in society (precise definitions in terms of years of age will vary across cultures perhaps), but there are still potentially far-reaching health implications for all elderly people. Physical weakness and declining income levels mean that the elderly are more affected by extreme weather (hot and cold) and they also face higher mortality risks in extreme weather events. Reduced mobility, changes in physiology and more limited access to resources undermine the adaptive capacity of the elderly. Greater susceptibility to vector-borne diseases, which may increase in incidence and range with climate change, is also expected.

According to the literature, limited as it is, elderly people are insufficiently involved in adaptation and mitigation planning and initiatives. Thus adaptation efforts should seek to build the adaptive capacity of older people, taking greater account of their specific

susceptibilities and capabilities. It is important not to romanticize indigenous or traditional knowledge, not least because in some situations the pace of climate change may outstrip existing knowledge. But some authors argue that valuable knowledge of groups of elders is being lost (e.g. in sustainable agricultural practices) – knowledge that may be useful for adaptation. Loss of support mechanisms, trends of outmigration and often a lack of statutory welfare support mean that older people increasingly need to earn an income and the design of social protection schemes should take this into account.

Intra-national rural-urban dynamics are thought likely to be affected by climate change. In some rural areas increased seasonal and permanent mobility/migration (to both rural and urban locations) may exacerbate a trend towards an ageing of the resident rural population. Pressure may mount on the elderly (often women) that are left looking after the land. This is sometimes combined with a feminization of rural populations, as gender and age issues intersect. Migration is not always possible for the very poorest, given the social networks, financial resources and health that it requires. It is important to avoid generalizations, however, and improved data is urgently needed on these patterns of movement, on urbanization and urban growth processes, and on the differentiated impacts – not least to challenge many of the myths that abound in this field. There is a reported loss of support mechanisms in some rural areas, because of these migration and mobility dynamics and because of other stressors (e.g. the rise in grandparent headed households with rising rates of HIV/AIDS infection globally). These processes need to be taken into account in climate change and territorial planning (e.g. the amount of labour and inputs implied by new agricultural adaptation practices, food security implications for different sectors of rural and urban populations, social protection policies and investment needs etc). As well as more in-depth research and data collection, it is also important that future scenario building processes are facilitated and take into account the visions of all different stakeholders – including migrants that may often be ignored and the residents left behind. Remittances are likely to become increasingly important as an adaptation strategy and easier to transmit using mobile phone networks and mechanisms – again questions of the digital divide need attention.

New work in the field of social protection (principally by M. Davies and colleagues) highlights the importance of greater integration between three fairly separate spheres of thinking and activity, which nevertheless all involve multi-sectoral responses to risk, shock and stress reduction. These three fields are social protection (SP), climate change adaptation and disaster risk reduction. Each has varying origins, actors and areas of focus, but there are significant overlaps as well: SP measures currently respond to some climate-related disasters, but are not responsive to the long-term risks posed by climate change; adaptation initiatives overlook the policy and programme options that social protection schemes include, and in some cases fail to adequately take account of the root causes of poverty and of social and gender inequality. Opportunities exist to build adaptation into SP through 'adaptive social protection'. This is defined as adaptive strategies that can reduce dependence on climate sensitive livelihood activities, target actions on the structural root causes of poverty, and promote rights-based advocacy (e.g. universal social minimum concepts) linked to climate justice arguments. Where adaptive SP is not provided on a universal basis, Davies et al. (2008) argue for targeting of inputs to the most vulnerable through means-testing in broad-based measures (e.g. employment guarantee systems) or life cycle periods (e.g. social pensions). Further innovation in the various types of SP (protective, preventative, promotive and transformational) may be appropriate. But climate change analysis and risk assessment should be mainstreamed in SP programme design, and greater attention given to supporting coping strategies but also building longer-term adaptive capacity.

Because climate change will certainly mean more households will be affected by disasters and will require support in terms of increased funding, innovation in providing and targeting this support is needed. A number of SP measures have already been road-tested, such as safety

nets and social cash transfers in tackling food insecurity and malnutrition. Other options are also being adopted such as social insurance, pensions, child grants, social-welfare and employment schemes (the latter based on public works labour to invest in environmental assets). These SP measures could be used for adaptation purposes as long as they themselves are adapted to take account of climate change and the changing nature of the risks faced by vulnerable communities. More evidence is needed of the poverty impacts of these different schemes and of their viability and effectiveness, particularly the newer interventions such as climate-index insurance. Attention to the fundamental and structural root causes of inequality and discrimination is also important (at the transformative end of the SP spectrum) – because climate change impacts and responses will play out in these on-going norms, values and power dynamics.

A particular challenge is noted in the literature in terms of achieving greater integration and coordination between the (often relatively weak) ministries which are respectively responsible for DRR, social protection and adaptation as well as improved linkages to economic development planning and climate mitigation. It is also worth pointing out that social protection is not only provided by the state, but other groups may also act in this capacity such as NGOs and faith groups- and they too should seek to support the integration, overlaps and synergies between DRR, SP and adaptation.

Gender studies have always been about unpacking gender *relations*, including how societal constructions of femininity and masculinity create gendered roles, power and entitlements. This review finds several examples of how men are disproportionately affected by climate change impacts, but lesser attention has been given to date to nuanced analysis of understandings of men and masculinity in relation to climate change adaptation.

There is increasing recognition amongst policy makers in the global South of the seriousness of the challenges posed by climate change, some of the potential opportunities for innovation and financing, and of the need to respond appropriately. Despite pressing immediate concerns, there is increasing discussion at international and national levels of (the inter-linkages between) low carbon pathways, green growth and the mainstreaming of climate change adaptation in development planning. These types of debate ultimately focus on the economic, financial and political systems which shape the possibilities for climate justice, equal rights to ecological services and the existence of healthy ecosystems upon which all human societies depend. More research is needed on the gender dimensions of the range of economic, financial and political pathways that may be possible.

It is also important that it is not only *female* researchers, practitioners and policy-makers work on gender. Male researchers should also recognize the centrality of this area of work in development: gender and social difference should not be a side thought, but should be considered a central basis of development thinking and practice – and *especially* so in a climate challenged world.

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Annex 1: Annotated Bibliography

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CHILDREN AND CLIMATE CHANGE

1. Back, Emma, Cameron, Catherine and Tanner, Thomas (2009). *Children and Disaster Risk Reduction: Taking stock and moving forward*. Brighton: Children in a Changing Climate, IDS. (Available from: http://www.childreninachangingclimate.org/docs/Child%20Led%20DRR_Taking%20Stock.pdf)

[From Summary]

This report highlights some of the disaster risk reduction (DRR) activities focused on or led by children that CCC members and others have undertaken with children in different communities across the world. We know that DRR efforts cannot properly account for children's needs unless specific attention is paid to this during the design and implementation of any intervention. Such DRR can be said to be 'child-centred' or 'child-focused'. We also know that engaging children directly in the design and delivery of DRR activities can have many benefits. This work is referred to as 'child-led' DRR and covers a broad spectrum of actions.

This report characterises DRR interventions involving children along a continuum from expanding Knowledge, to enhancing Voice, to taking Action. This is further delineated as Action to Protect, to Influence and finally to Transform. The report discusses case studies along this continuum. It finds that to date effort and success have focused more on the earlier part of this continuum, with much learning available from initiatives to expand and transfer Knowledge and enhance Voice and, to a degree taking Action to Protect. The report recommends that the balance of effort could now shift, to focus more on supporting children engaged in Action to Influence and to transform. The report also finds that although much work has been done with local communities, and some with local and regional governments, there is less activity as one moves up to national and international levels there is less activity. In particular, although there has been growing engagement of youth in national and international arenas, under-18s who have specific needs as children as well as a right to determine the world in which they will live as adults – have been less engaged. To achieve influential and transformative change, more work at this level is required. If more DRR is focused on Action, the report also suggests that greater engagement with international processes and private sector interests could yield benefits, as illustrated in the mining case study on page 32. This approach to DRR is more challenging – for adults and children alike – and therefore currently under-explored.

The report also suggests that as the cost-effectiveness of DRR activities is well understood, it could be helpful for CCC to emphasize the additional economic benefits from delivering DRR with children, where the costs may well be lower and the benefits stream higher (using a lifetime analysis and taking into account intergenerational benefits). Importantly for DRR practitioners, this will require a shift in the way such interventions are assessed. More evidence is needed on the outcomes of DRR projects – for example, confirming anticipated improvements in child survival, educational attainment, health and well-being. Child-led and child-focused DRR cannot solve everything. However, given the considerable benefits that appear to derive from it, both social and economic, it deserves a greater share of effort and expenditure. The balance of that effort should now shift, emphasizing influential and transformative action to secure the future of today's children.

2. Back, Emma and Cameron, Catherine (2008). *Our Climate, Our Children, Our Responsibility: The implications of climate change for the world's children*. London: UNICEF United Kingdom. Available at <http://www.unicef.org.uk/publications/pdf/climate-change.pdf>

This report draws attention to the impacts of climate change upon children which has been a critical missing element from the debate to date. Whilst there is a growing body of literature on the links between climate change and vulnerability, particularly in relation to the impact of natural disasters, research and advocacy activity focusing specifically on children and climate change is less developed. UNICEF UK aims to draw attention to the specific risks faced by children, who are more vulnerable to climate change which may impact upon every aspect of their lives and how children themselves can be central to the response. The challenge is to rapidly develop a greater understanding of the impact of climate change on children and take appropriate measures to protect them from its consequences. Responding to climate change is a global issue and addressing it is a shared responsibility. Children in the world's poorest countries, particularly those in Africa, Asia and Latin America, are identified as the most vulnerable people who will bear the brunt of climate change. Climate change will have an overall adverse impact on livelihoods, especially of the world's poorest and most vulnerable children and their communities, affecting health, education and gender equality. There are adverse impacts on livelihoods, and all MDGs relating to children, including health, education and gender equality.

Impacts on livelihoods can be expected to be sudden (e.g. droughts and floods) or slower but cumulative. Falling agricultural output and deteriorating conditions in rural areas caused by climate change will increase directly the poverty of households in poor countries. Poor infrastructure (e.g. flood defences) and a lack of technologies (early warning systems) in developing countries will hinder capacity to cope with a changing climate.

Child survival and child health

- Water and sanitation: water borne diseases claim the lives of millions of children every year and this will be exacerbated by climate change. UNICEF programmes include improving water and sanitation in Zambian schools – women's and especially young girls' lives can be shattered by the extra time spent in collecting water in drought affected areas.
- Child health will be affected by poor nutrition, which will increase as a result of pressures on both large-scale and small-scale farming. Crop volumes and/or diversity may be reduced by water and other climate related stresses affecting subsistence production and what can be bought at market. Impacts upon livestock will affect meat and dairy availability but also the use of animals in small-scale farming such as ploughing or transporting goods to markets. Malnutrition is already a leading cause of infant and child mortality, and this could be exacerbated in Sub-Saharan Africa and expected gains in Asia and northern Africa may be challenged. Malnutrition can have a permanent impact upon child development (e.g. growth) with consequences for skills attainment, education levels achieved, complications in child birth more likely for shorter women etc. Nutritional and other impacts of climate change can be passed along generations.
- Child health will be affected by disease. Changing patterns of communicable diseases present a significant threat to infants and children across the globe. As land-use patterns change in response to evolving climatic and hydrological pressures this may exacerbate other drivers of communicable disease. Recent research from West Africa shows complex interactions between patterns of irrigation and malaria transmission, land degradation and meningitis, deforestation and onchocerciasis (river blindness), and these findings may be extrapolated to schistosomiasis. Climate variability shapes vector-borne disease patterns. Transmission of mosquito borne diseases such as

malaria is influenced by rainfall, humidity, temperature and levels of surface water – because they affect vector reproduction and lifespan. Changes in these environmental factors are facilitating malaria transmission in areas in which malaria had previously been eliminated. The range of dengue fever will also expand.

- Serious epidemics are more likely among previously less-affected communities, because these communities have less immunity and lower levels of disease awareness and capacity to respond amongst health workers.
- Higher risks to pregnant women as they are more likely to develop severe malaria if infected than non-pregnant women. Neonates and children also more at risk. National malaria programmes should take this into account (e.g. with greater emphasis on use of mosquito nets treated with insect repellent in areas considered at lower risk now, but which may become epidemic prone).
- Climate change conditions may affect susceptibility of the human body to disease. Meningitis may become more prevalent in areas that become drier as a result of climate change.
- Impact on water – climate change may threaten gains made in securing and maintaining access to water. Those countries making least progress now, are at most risk from climate change (e.g. Bangladesh from increased flooding, Ethiopia and Niger from more drought and land degradation)
- Higher incidence of waterborne diseases due to increased rainfall and flooding, especially in densely-populated urban areas will exacerbate sanitation problems. The process of urbanization may be increased by climate change pressures, further adding pressure to water and sanitation infrastructure in urban areas.
- Non-communicable diseases may be triggered by changes in environmental conditions (e.g. climate-influenced increases in aeroallergens that trigger asthma, heat or cold stress may cause child deaths from heat exhaustion or hypothermia and indirect impacts by exacerbating existing chronic medical conditions).
- Impact upon children's mental health: evidence already exists of increasing anxiety about cc amongst children. Exposure to natural disasters will exacerbate the burden of depression, anxiety and stress (post traumatic stress disorder and other mental health problems have been observed in natural-hazard displaced populations, including increased aggression and bedwetting following catastrophic events such as floods)
- Climate change may lead to the emergence of new diseases (e.g. mutations of zoonoses or diseases that originate in animal species such as plague, tuberculosis and avian flu strain H5N1, emerge in humans in response to changing environments, especially where animal to human transmission occurs through contaminated water or through new patterns of human-animal contact stimulated by processes such as forced human or animal migration. Emerging diseases cause high levels of mortality, especially amongst children, because of lack of vaccines and treatments, inconsistent diagnosis and case management, lack of population immunity etc.
- Thus progress on child mortality MDG will be undermined as the climate changes and many countries are already off-track on this. Efforts are needed to pre-empt the increased risk, particularly of waterborne and vector-borne disease and pressures on child nutrition.
- Loss of income, measured through GDP, is estimated to lead to increased child deaths. For example the Stern Review provides figures for additional child deaths as a result of income-related effects on poverty and child mortality – this does not even account for the millions likely to be exposed to heat stress, malaria, loss of jobs, assets and livelihoods.
- Mitigating the impact of climate change can be undertaken by intensification of existing strategies (e.g. the widespread rollout of childhood immunization programmes,

upgrading of water and sanitation infrastructure, expansion of public health messaging and environmental education.

Education and gender equality

- CC will affect education and gender equality MDGs because CC will make it more difficult for children to attend school, as household livelihoods are undermined. In most cultures girls will be removed from school first so they can work to supplement household income, gather fuelwood, and water – as natural resources become increasingly scarce the pressures will increase on parents to use their children in this way. Some children have to incorporate paid or unpaid work into their routine whilst still attending school. Educating girls benefits entire families and communities. As climate changes occur, education of girls would support their ability to adapt and to protect from disease (including HIV), domestic violence, and may help them avoid being drawn into exploitation in sex work and trafficking. Educated mothers have healthier, better nourished children and the children are more likely to benefit from an education.
- Impacts upon children's health and nutrition, may affect school attendance and educational attainment. Children may not be fit to learn, even where they have access to schooling. Schools may be affected by environmental pressures on water supply and sanitation. Lack of separate sanitation facilities for girls is the most commonly cited reason given by parents for keeping girls from attending school.
- Government budgets will be squeezed by CC related demands (e.g. disasters, droughts) and social sector spending is usually the first area to suffer. Health outcomes are improved by the education of women and girls, so reductions in education spending will undermine health outcomes possibly keeping more children out of school.
- Schools could play an increasingly important role in environmental education of children and their families and education on livelihood security and adaptation, hygiene and other health protection strategies – but few schools have sufficient capacity.

Emergencies and child protection

- Poverty and lack of development exacerbate people's vulnerability to extreme weather hazards, making disaster risk reduction of great importance and a highly cost effective response, which can also bring developmental benefits in normal times.
- Extreme weather threatens children's homes and habitats – increased rainfall, storms and flooding and follow on events such as landslides, will affect more and more homes in rural and urban areas. More people will be forced in temporary shelters, leaving them more vulnerable to adverse weather. Loss of possessions (e.g. vital supplies such as clothing, cooking equipment, bedding and medicines) often occurs when homes are destroyed. A child's few precious possessions may be lost (e.g. toys, school supplies)
- Traumatic circumstances may undermine a family's ability to protect children from abuse and exploitation.
- Forced migration of families and whole communities may be more likely for settled communities. There is a lack of agreement as to whether pastoralists can withstand volatile climate pressures more because of their mobility. Natural disasters will force people to move with increasing frequency, within and between countries, in search of shelter and livelihoods. Children are affected by displacement: families are fragmented; social networks disrupted; children's education interrupted and sometimes ended; health provision interrupted including longer-term access to health care and disruption of on-going immunization programmes; more disease outbreaks occur in displaced and refugee communities (communicable diseases such as cholera are rapidly transmitted between groups of people living in close proximity and with limited sanitation, and there is some evidence that underlying chronic conditions or

latent infections (e.g. TB) are more likely to emerge when people move into a new environment due to limited immunity, other pressures.

- Women and children more vulnerable to the impacts of natural disasters (they may be less able to escape from catastrophic events due to their smaller average size and physical strength). Pregnant and nursing women and those with small children are particularly vulnerable. Women may also be subject to cultural restrictions on their mobility, including dress codes and seclusion practices. Women and children account for more than 75 per cent of displaced people following natural disasters. The vulnerability of women and child refugees to sexual violence, both during transit and in refugee camps, has been extensively documented. There is some evidence that in natural disasters mothers may be more likely to attempt to rescue their children and other family members, increasing their own vulnerability. Longer-term livelihood consequences may also impact disproportionately on women and girls (e.g. a rise in the number of girls forced off the land to become sex-workers in Dhaka, Bangladesh in 1998 following extreme floods. In male dominated societies, women and children tend to be excluded from risk mitigation, disaster preparedness, planning and reconstruction strategies, unless specific efforts are made to include them.
- Water stress is increasing vulnerability. Water access is institutional and political, rather than hydrological, but climate change will introduce further pressures. Some regions will experience greater water scarcity (e.g. parts of sub-Saharan Africa, especially parts of Southern Africa; coastal regions which will be affected by rising sea levels; areas with greater flood risks from increased runoff, higher levels of precipitation, sea-level rise, tidal and wave extremes, 'storm surges', poor surface drainage, with the mega-deltas of East, South and South East Asia at high risk). Drinking water contamination can occur from flooding increasing the spread of disease. Water stress and other climate change impacts also threaten small and large-scale agriculture and economic production. Larger scale industrial operations and irrigation may be given priority in situations of water scarcity over and above household subsistence and farming uses.
- Potential population movements may increase tensions, as communities have to compete over scarce economic and natural resources and access to basic services (especially in contexts of cultural and linguistic barriers). Decreasing water resources especially may drive violent conflicts within and between nations. All major African rivers cross international boundaries. Assertions have been made (e.g. by UN Secretary-General Ban Ki-Moon) that the Darfur conflict began as an ecological crisis, arising at least in part from climate change – nomadic and settled farming communities first clashed when competing over fertile lands amidst failing rains. Conflict has a devastating impact upon children, especially girls who are exposed to sexual violence. Women and girls are often attached when they have to leave the refugee camps to collect firewood and water.
- Climate change makes it more difficult to achieve MDGs 1, 4, 5, 6, and 7. MDG 8 is the securing of a global partnership for development, including support to least developed countries and small-island developing states which are more vulnerable to climate change and its impacts, and making available the benefits of new technologies.
- Disaster risk reduction can prevent loss of life. Examples are given of UNICEF work in West Bengal, where floods in 2000 had severe impacts on the local population. UNICEF with government and humanitarian agencies have supported the development of action plans with 1,500 local communities to prepare better for future disasters (e.g. villagers identified high and low risk areas, the most vulnerable in the community, organized groups for flood warning, rescue, evacuation, first aid, water and sanitation; training on constructing rafts and life jackets, using local materials; each family learns how to prepare survival kits and how to store valuable documents. In 2004 massive floods occurred, but DRR saved lives and livelihoods.

Empowering children to act

- Children often have a high level of awareness and concern about climate change, which affects their visions of – and anxieties about – their own future and that of the world.
- Engage children as actors in the climate change agenda, not as passive observers or victims;
- Child-centred responses should take account of the level of fear and anxiety felt by children and adolescents with regard to climate change and should seek to reassure children that this is a threat that can be addressed. The specific needs of children globally must be taken into account as these will vary widely.
- Understanding children's awareness of climate change is important in influencing wider household and community actions and therefore policy responses. As today's children grow, their ability to address and adapt to the impacts of climate change will be crucial to sustaining development outcomes.
- Effective global action is needed and should be communicated to children, to encourage them to play a part through their own actions and in their campaigning for action by others.
- Based on the premise that what children learn today will shape the world tomorrow, instilling environmental awareness at a young age is an effective way to protect the environment. Yet in order for them to become effective agents of change, avenues must exist for children and young people's knowledge to be translated into advocacy and action. UNEP and UNICEF are developing an Environmental Education Resource Pack for Child-Friendly Schools, which will offer comprehensive solutions to empower children and will cover risk-mitigation efforts and disaster risk reduction.

Our responsibilities

- We all share a responsibility to respond to climate change. UNICEF will work in more than 150 countries on water and sanitation programmes (including rainwater harvesting, providing wells and pumps, tackling problems of contaminated or diminishing water supplies); ensuring communities are equipped to deal with the threat posed by malaria (provision of mosquito nets with long-lasting mosquito repellent, intermittent preventative treatment to pregnant women, ensuring health services can respond rapidly with the newest combination therapies when children fall ill; providing water, schools, health clinics, and support for rural communities whose livelihoods are becoming more challenging due to climate change; programmes that improve the availability and quality of environmental education, within schools and their wider communities, providing a voice for children and promoting their participation in local environmental initiatives; working with schools and youth groups to support children to plant and care for indigenous trees, thereby delivering environmental improvements and supporting education programmes; Using solar power in place of fossil fuels to power fridges in the cold chain, to provide lighting for schools or to power water pumps; □ Supporting communities to prepare for and cope with natural disasters such as storms, floods and drought, as they become more frequent and severe in the face of climate change, and ensuring that children are at the heart of disaster response strategies.
- UNICEF UK has developed an organisation-wide agenda to prioritise climate change issues, including action to reduce its carbon footprint.

"Looking at the moral"

As well as reducing emissions to achieve climate mitigation, the UK government should ensure that the Department for International Development does development differently by

- climate screening all new investment with the impact on children a specific assessment criteria;

- ensuring that the screening process is kept live and responsive to the fast-evolving understanding of the impacts of climate change on children;
- reviewing aid modalities, direct budget support and support to fragile states in terms of their responsiveness to the climate change implications for children;
- Work with partner governments to include the climate change implications for children in national mitigation and adaptation plans and ensure that plans to meet the MDGs include actions and sufficient resources to address climate change impacts upon children.

Increased funding for adaptation is urgently needed. UK companies and individuals should empower and assist the communities affected to adapt to climate change. When children have information and decision-making influence they are powerful agents of change, helping homes, communities and schools to adapt. Children's participation should be supported in the development of key documents, including the Poverty Reduction Strategy Papers (PRSPs), Country Assistance Plans, and National Adaptation Programmes of Action (NAPAs). Research is needed to feed into the December 2009 UNFCCC meeting in Copenhagen.

3. Baker, Lydia (2009). *Feeling the Heat: Child survival in a changing climate*. International Save the Children Alliance: UK. Available at:
http://www.savethechildren.org.uk/en/docs/Feeling_the_Heat_composite_low_res.pdf

This report, published in advance of the UN Climate Change Conference in Copenhagen in December 2009, examines the vulnerabilities of children to climate change and identifies the adaptation measures that can be taken to benefit them. It examines the close connection between climate change and the other challenges facing poor children, such as poverty and rapid urbanisation.

The effects of climate change on children need to be further documented in order to inform appropriate adaptation plans for developing countries as well as building on interventions that have proven successful in tackling child mortality. The report highlights that understanding the links between climate change and the diseases and conditions that kill children in large numbers each year including diarrhoea, malaria and malnutrition is the first step. Tackling such issues must become a global priority now to minimize the effects of climate change which otherwise will cause millions of children to be at increased risk from disease, under-nutrition, water scarcity, disasters, and the collapse of public services and infrastructure. The report also identifies that one of the largest groups to be affected will be children under the age of five.

The most immediate and *direct* impact of climate change on children's lives is increasingly frequent and intense natural disasters. The risks for children include: greater risk of injury, deteriorating nutritional status; water-borne diseases; and a lack of sanitation. The report also adds that the psycho-social disruption and emotional turmoil experienced by children during a disaster can have long-term implications for their health and well-being. Climate change is likely to have direct impacts upon food security and will contribute to the spread of disease (e.g. malaria and other vector-borne diseases, and diarrhoea and water-borne diseases), hunger and malnutrition and disasters. This report also highlights that climate change also threatens to damage the very systems that underpin child survival. Children will face a 'double exposure' from climate change, not only through its direct impacts but also its indirect impacts on health and social systems, access to water and sanitation, migration and population displacement. The indirect effects of climate change on children's survival in relation to five key areas are identified: health systems, increasingly fragile livelihoods,

increased migration and displacement, increased urbanization, and additional burdens on women.

Interventions to tackle child survival

- Adaptation strategies focus on the needs of children in the world's poorest countries. Funding should not be diverted away from existing development and humanitarian aid budgets. To ensure children's needs are covered, adaptation measures should prioritize attention to nutrition, health systems, child-centred disaster risk reduction and social protection.
- Strengthening of health systems at all levels to increase children's chances of survival as a central component of adaptation. Adults and children in good health are less vulnerable to disease and so have greater adaptive capacity, but health systems in many developing countries are weak and do not meet the needs of the poorest. Staff training for health emergencies, is needed as well as effective, multi-hazard early warning systems to detect epidemics and changing disease patterns and activate responses. Capacity building of health ministries is needed to build emergency response capacity. Simple solutions can be highly effective such as mosquito nets, access to oral rehydration therapy and vaccinations, but millions of children already lack access.
- Climate change will have negative effects on food security and nutrition, so adaptation measures need to focus on these. High levels of poverty, fragile and natural resource-based livelihoods and a lack of purchasing power are underlying causes leading to chronic food insecurity. Proven approaches to address malnutrition and the broader issue of food insecurity among poor populations are safety nets and social cash transfers (key components of social protection). Safety nets include transfers of, for example, cash or vouchers in emergency situations, often delivered by non-governmental or UN agencies, that strengthen access to food and that prevent them having to sell livelihood assets. Social cash transfers are usually delivered by governments on a permanent basis in order to address poverty and vulnerability. Both approaches have a critical role to play in building people's resilience to shocks, helping them cope with them when they occur, and reducing child mortality. Cash transfers provide predictable, regular cash grants to individuals or households. In Ethiopia, Save the Children successfully targeted the most vulnerable households, who received seasonal cash or food transfers as part of the government's Productive Safety Net Programme. In Swaziland, part of Save the Children's response to the drought in 2007 focused on providing food and cash transfers. Cash transfers thus increased the poorest families' access to nutritious foods, increased the diversity of food consumed, and increased investment in alternative livelihood activities and healthcare. Save the Children have found that spending on healthcare can triple when cash transfers are used. In addition, households receiving reliable and predictable sources of cash no longer turn to coping mechanisms that could be harmful in the long term, including withdrawing their children from school or the sale of assets such as livestock. Copenhagen climate change treaty negotiation preparations have focused on insurance as a way of supporting adaptation to the effects of climate change. Less attention has been paid to a wider package of social protection measures, including cash transfers. Cash transfers that actively target children under five as well as pregnant and lactating mothers have the potential to tackle malnutrition brought about by climate change.
- More broadly, adaptation measures should target the poorest people worldwide. During the Climate Change Congress in March 2009 (a meeting attended by more than 2,500 delegates from 80 countries), calls were made for funds for adaptation to support a global safety net for the poorest people affected by climate change. Save the Children supports this call and argues that children's needs must be prioritised in all adaptation interventions.

- National planning to address adaptation - Countries with high rates of child mortality should focus adaptation plans on reducing child mortality. Adaptation plans should be mainstreamed into national disaster management policy, poverty reduction programmes and other national-level instruments. For adaptation plans to be successful, they must be adequately funded and ensure that children participate in planning and decision-making. Of the 40 NAPAs to have been completed these do include priority needs and adaptation activities, but consideration of children's issues and especially child mortality varies considerably. Whilst funding was made available to draw up adaptation plans, there has been a lack of funding to implement the urgent activities identified. Future NAPA and adaptation planning should ensure children's right to participate in decision-making is observed.
- Integrating climate risk information to adapt to changing climate-induced environments and risks, it is essential that climate and weather-related projections and forecasts reach local people and key actors working with them. Farmers can adapt their planting with timely information which is shared effectively. This information is also essential for all aspects of development and humanitarian planning.
- Investing in child-centred disaster risk reduction - activities undertaken before the onset of a natural disaster can build people's resilience to shocks and help ensure that children and their families are as prepared as they can be. Disaster risk reduction (DRR) is defined as any activity carried out by a village, community, aid agency or government that helps prepare for, reduce the impact of, or prevent disasters. DRR includes all strategies and practices designed to minimise vulnerability and disaster risk at all levels of society. While some natural disasters are natural in their origin, the gravity of their impacts is not beyond our control. Children and their communities can become more resilient to the risks posed by disasters. The actions of donors, governments, aid agencies, communities and individuals can help reduce children's vulnerability. Indeed, DRR is increasingly considered a priority in climate change negotiations. More needs to be done to move beyond rhetoric and ensure that climate change adaptation and DRR are linked in policy and practice, to increase children's chances of survival whenever disaster occurs. Children are vulnerable when a disaster strikes, but they are not victims - given space and opportunity children can meaningfully participate and show leadership in activities to protect themselves as well as their wider community from the effects of a disaster. They are also best placed to identify their needs and plan what needs to be done for an effective response. In Vietnam, children in a Save the Children DRR programme joined disaster preparedness clubs at schools and developed risk maps showing vulnerable areas and evacuation routes. The children identified two simple interventions to help them during flooding: pre-positioning emergency boats to take them to school, and learning how to swim. Yet children's specific needs are frequently ignored or not sufficiently taken into account by communities, aid agencies and governments. There will be situations when local capacity is overwhelmed and international interventions are needed. The proliferation of natural disasters - including small-scale, climate-related events - will challenge the humanitarian system's ability to respond. In order to meet increased needs, aid must be swift and well targeted, and donors must ensure that staff on the ground in a position to scale up quickly. Wherever possible, it will be crucial to help communities prepare for and respond to the increasingly frequent threat of disaster.

Seven key recommendations are made including: i) donors and national governments should strengthen and 'climate proof' health, water and sanitation systems in developing countries with high levels of child mortality; ii) donors, national governments and multilateral institutions should increase investment for and support to social protection strategies that have proven effective in tackling malnutrition and poverty among the poorest families; iii) adaptation to climate change should involve children and support interventions that have

been proven to respond to their needs and priorities. iv) children have the right to participate in decisions that affect their lives, and as such, adaptation planning, particularly National Adaptation Programmes of Action (NAPAs), must involve children in identifying appropriate interventions; donors, national governments and the UN should ensure that the humanitarian system is fit for purpose and ready to cope with increased demand; v) Donors and national governments should put multi-hazard early warning systems in place to alert officials to both slow- and rapid-onset disasters, as well as epidemics, before they reach full emergency levels; vi) investments in disaster risk reduction by donors, national governments, the UN and multilateral institutions should be child-centred and ensure that children participate in identifying appropriate interventions; vii) national governments must sign a binding agreement in Copenhagen in December 2009 to reduce greenhouse gas emissions by 80% by 2050.

4. Bartlett, Sheridan (2009) 'Children in the context of Climate Change: A Large and Vulnerable Population'. Chapter 8 in eds Guzman, Jose Miguel, George Martine, Gordon McGranahan, Daniel Schensul, Cecilia Tacoli, 'Population Dynamics and Climate Change' UNFPA and IIED.

There are many vulnerable populations in the context of climate change – the poor, the elderly, pregnant women, those in particularly hazardous locations. Children are not unique but they constitute an extremely large percentage of those who are most vulnerable and the implications for the youngest children can be long term.

The poorest people, their enterprises, homes and places they occupy in developing countries are least well served by protective infrastructure and services. They also tend to be more reliant on local climate-sensitive resources and are less able to adapt and prepare for extreme weather events. In urban areas especially, poor people frequently occupy the most risk-prone areas. Children, especially very young children, are especially at risk. Children also make up a very large part of the population. Effective adaptation has to take into account the disproportionate and often different ways in which children can be affected, bearing in mind not only their substantial presence and their vulnerability, but also their potential resilience, with adequate support, and their capacity to contribute actively to adaptation measures.

The proportion of highly vulnerable children under five – they make up between 10 and 20 per cent of the population in countries more likely to be seriously affected. In sub-Saharan Africa over 40 per cent of the population is under 15 and the largest sector of the population is under 5. Quite often it is the poorest communities within a country that have the highest proportion of children. Child populations will grow more slowly in coming decades in many countries and may decline in many parts of the world, but in places where the proportions of children is already highest, the absolute number of children is expected to continue to grow. Increasing numbers of these children will live in urban areas, often in informal settlements and hazard prone parts of cities where land is more likely to be found – areas which tend to be more vulnerable to extreme weather events. Generalizations about how urban age structures are changed by migration are difficult, but high levels of in-migration often increase the proportion of young adults and thus can lead to increased birth rates initially (although fertility rates for rural migrants tend to decline once in urban areas). Out-migration by older groups returning to 'home' villages or towns can also affect urban age structures. Thus the populations most vulnerable to the likely challenges posed by climate change are also those with the highest concentrations of children in need of care, and with the lowest ratio of caregivers and breadwinners to children. Further, children who become ill, malnourished, injured or psychologically affected by disasters, famines, displacement or deepening poverty will increase the challenges faced by their families and communities. With appropriate

support, children can be extraordinarily resilient to shocks and stresses, but in extreme situations that affect many people, these supports may not be readily available. Older children may have energy, ingenuity, and willingness to contribute, but are rarely involved in formal planning for adaptation and preparedness.

The central section of this chapter explores the ways in which climate change will impact upon children. Young children have more rapid metabolisms, immature organs and nervous systems, developing cognition, limited experience and behavioural characteristics which make them more vulnerable to climate change. Their exposure to various risks is also more likely to have long-term repercussions. The paper sets out health and survival related impacts on children and notes that the disproportionate health burden for children of challenging environmental conditions is well documented and this burden will be exacerbated by climate change. Ways in which climate change affects children is explored in relation to morbidity in extreme events, water and sanitation-related illnesses, malnutrition, malaria and other tropical diseases, heat stress, injury, and quality of care. Children's learning may be deleteriously affected by climate change through an erosion of mental capacity and opportunities for learning and growth. For example, supportive social and physical environments in which children can master and build new skills may be undermined as climate change effects occur. In a section on coping with adversity, the paper highlights the high costs for children following the losses, hardships and uncertainties surrounding stressful events, although they note that some have argued that the focus on vulnerability to trauma is a western construct. Often it is the aftermath of an event, the deprivation and humiliations of a slow recovery process, which can be the most stressful and debilitating. Levels of psychological vulnerability and resilience depend on numerous factors, including children's health and internal strengths, household dynamics and levels of social support, as well as the ways experiences are perceived and interpreted.

Key priorities for adaptation are: ensuring children's optimal health and nutrition; strengthening families' capacity to cope; meaning, restoring, and enriching children's routines, networks and activities; respecting children's capacities, supporting their active involvement. Whilst it may seem an unrealistic burden, adding unduly to the need for time and resources in the face of so many other compelling priorities, but there are strong synergies between what children need and the adaptations required for responding to more general risks. For example, the most useful measures to protect children's health, e.g. adequate drainage, waste removal, and proper sanitation – are also fundamental in reducing risks from potential disasters.

5. Bartlett, Sheridan (2008). *Climate Change and Urban Children: Implications for adaptation in low and middle income countries*. London: International Institute for Environment and Development. Available at <http://www.iied.org/pubs/pdfs/10556IIED.pdf>

This detailed paper outlines the possible impacts for children of different ages from the increasing risk of storms, flooding, landslides, heat waves, drought and water supply constraints that climate change is likely to bring to most urban centres in Africa, Asia and Latin America. It also explores the implications for adaptation, focusing on preparedness as well as responses to extreme events and to changes in weather patterns. As is the case with many poor groups, if adaptations to climate change fail to take account of the disproportionate risks for children (who make up between a third and a half of the population in the most affected areas) they will be less than adequate in responding to the challenges. There are many vulnerable populations in the context of climate change – including the poor, the elderly, pregnant women, those living in particular locations. However, although children are not unique in this regard, they constitute an extremely large percentage of those who are most

vulnerable, and the implications, especially for the youngest children, can be long term. Children and climate change are closely linked: "If speculation about the impacts of climate change failed to take into account the particular vulnerabilities (as well as capacities) of children at different ages, measures for prevention and adaptation may prove to be inadequate in critical ways, and may even result in additional stresses for young minds and bodies" (p.71). Addressing children's concerns may appear to be an unrealistic burden, adding unduly to the need for time and resources in the face of so many other compelling priorities. Fortunately, this is not a zero sum game...there are strong synergies between what children need and the adaptations required to reduce or respond to more general risks.

- The most useful measures to protect children's health are also fundamental in reducing risks from potential disasters – such as adequate drainage, waste removal and proper sanitation.
- Supporting adults so that they are better able to address their children's needs also leaves them better equipped to work collaboratively on reducing risks.
- Preparing for disasters and rebuilding their lives after a crisis.
- Ensuring that children continue to have opportunities to play, learn and to take an active role in finding solutions will prepare them to be the citizens we need to continue addressing the problems faced by their communities and by the planet.
- Neighbourhoods and cities that work better for children tend to work better for everyone, and this principle also undoubtedly applies to the adaptations that are being called for by climate change.

6. Gautam, Dhruba and Oswald, Katy (2008). *Child Voices: Children of Nepal Speak Out on Climate Change Adaptation*. Brighton: Children in Changing Climate, Institute of Development Studies. Available at http://www.childreninachangingclimate.org/docs/Child%20Voices_np.pdf

This paper presents the findings of a participatory video project and additional research with poor children from three geographically diverse areas of Nepal (the plains, hills and urban areas). The research finds that poor children and their families in Nepal are being affected already by a changing climate. Increased floods, droughts, landslides, exacerbated by increasingly erratic and unpredictable weather patterns, are undermining the livelihoods of the poorest families, and affecting children's health, education, emotional well-being and their access to water. Children are not passive victims of climate change. They and their families are already making changes to their lives in order to cope, but they face severe constraints. In addition, the study notes the extra support these children and their families need to adapt: e.g. reforestation programmes; access to improved agricultural technologies; improved infrastructure; increased knowledge on climate change impacts; and good disaster prevention programmes. The report concludes by making a number of recommendations for upholding children's rights in the context of climate change:

- Children's right to be heard: Children understand the impacts of climate change on their lives and need help to adapt and find solutions. Children have a right to be heard at all levels, in their communities, and in climate change debates at national and international levels.
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- Children's rights to adaptation: Life, safety, participation and development are the basic rights of children. From a rights-based perspective, working with children on climate change adaptation is not optional; it is protecting their rights.
- Children's rights to education: The changing climate is impacting families' livelihoods and their ability to afford to send their children to school. Governments need to ensure, through scholarships, stipends or fee waivers that families do not take their children out of school as a coping strategy.

- Adaptation plans should include the needs of children: Many developing countries, including Nepal, have or are preparing National Adaptation Programmes of Action (NAPAs). In order for NAPAs to be both effective and equitable, consultation, dialogues and discussions in various policy spaces must include the views and needs of children.

7. *In the Face of Disaster: Children and climate change* (2008). International Save the Children Alliance, UK. Available at: [http://www.savethechildren.org.uk/en/docs/In the Face of Disaster.pdf](http://www.savethechildren.org.uk/en/docs/In_the_Face_of_Disaster.pdf)

This report explores the impact of increasing disasters on children, and examines some of the ways in which the international community can work effectively with children and their communities to reduce the impact of disasters and improve survival, resilience and the prospects of recovery. This report focuses specifically on disaster risk reduction, and the importance of involving children and communities in these strategies as well as the need to increase humanitarian responses for children in disasters. Given the increase in natural disasters as a result of climate change, this report establishes that climate change will have a huge impact on children's health, nutrition, education and protection around the world, combining with other trends such as population growth and greater urbanisation. In the face of the dangerous and erratic effects of climate change in the future, national governments, humanitarian and development donors and agencies must adapt and become more innovative. This means that, these institutions have to take a constructive action to plan for hazards before they happen and ultimately to reduce the risk of harm for vulnerable populations, especially children. This requires making innovative investments in reducing risk as well as ensuring greater coherence between relief, reconstruction and development activities. The report also emphasizes that education and training are very important tools to help children adapt to, cope with and even avert climate change in the future. Thus, it argues that children should not be seen as mere victims of natural disasters and climate change since they can be communicators of good practice and active agents of change.

One way of reducing underlying risk factors such as poverty, hunger and lack of income-generating activities is through social protection measures, including insurance, cash transfers, pensions, child grants and social welfare. Cash is either directly disbursed to vulnerable households or delivered in exchange for work or fulfilment of certain conditions. Social protection has been shown to be effective in both emergency and development situations, having the potential to make an impact in the short term and in a more sustained way. Save the Children has experience of working on social protection programmes in both emergency and development contexts, and has used cash transfers in a number of its responses to natural disasters. For example, following the declaration of a national emergency in Swaziland due to a severe drought between 2006 and 2007, Save the Children ran a cash transfer programme spanning the critical period up until the following harvest. A total of 45,000 children, women and men received a mixture of food aid and cash to support livelihoods during the crucial planting season. The evidence suggests that children benefit directly and indirectly from even very small cash transfers. Impact assessments consistently show that transfers help families to purchase food – as well as other household items such as soap and clothes – to pay school and medical fees, and to purchase school books for children. Families even find a way of investing their small transfers – for example, in buying chickens or goats to provide them with an additional source of income. Social protection can work in the short and long term to guard people's assets by providing them with reliable and predictable support during difficult seasons or a disaster. Social protection can prevent families from selling off assets as a way of coping with the threat of impending natural

disasters by providing them with the security and knowledge that reliable, regular cash transfers will arrive. Considering the risks to children's health, nutrition, protection and education if a family slides below the poverty line or is hit by a major disaster, innovative financing will be increasingly important in disaster-prone regions.

This report outlines the Save the Children Household Economy Approach (HEA) which is also outlined in the following report (see below, report 8).

8. *Legacy of Disasters: The impact of climate change on children* (2007). Save the Children UK, London. Available from: <http://www.savethechildren.org.uk/en/docs/legacy-of-disasters.pdf>

This briefing looks at the impacts of climate change on children and how children are involved in disaster reduction strategies. It asserts that climate change coupled with increasingly frequent and severe natural disasters, temperature extremes, a global rise in the sea levels will be unevenly felt and will hit children in developing countries hardest of all. Climate change will compound existing threats to children's health, food security, livelihoods, protection and education, and will lead to the degradation of natural resources. It adds that its actual effect on children largely depends upon the political choices of governments and donors. As such, this briefing proposes that governments, humanitarian agencies and the wider international community must back measures designed to help children and their communities prepare for and mitigate the effects of climate change. It maintains that from the individual child to the household level, to the community and national level, an adequate international response to climate change will demand new ways of working, imaginative solutions, and must have the active engagement of children and their communities.

Children should be considered when addressing both disaster risk reduction and climate change issues and therefore should be seen as leaders and activists who can bring about major changes in knowledge, attitudes and practices. However, it advocates that all Disaster Risk Reduction (DRR) strategies must have an adequate assessment of children's needs and rights violations, and must involve children in the design and implementation of solutions. Finally, it adds that not only will this decrease the specific risks children face, but it also will ensure their participation and, as a result, increase their capacity and confidence to cope with disaster.

Whilst child-centred DRR policies are effective in helping children prepare for and mitigate the risk of disasters, it is important to link disaster responses to analysis of livelihoods. The paper also outlines a specific tool the Household Economy Approach (HEA), which has been developed by Save the Children to show the impact of disasters on people's livelihoods. By examining people's ability to earn money or food through labour, bartering, outside support or subsistence farming, HEA analyses people's ability to access and secure food for their families.

HEA is not only able to identify the most vulnerable populations but also to calculate the size of their food deficit. This is particularly useful to humanitarian agencies and governments trying to estimate shortfalls and protect children from malnutrition when a main source of food or income has failed.

Current livelihood patterns will be affected by changes in temperature or changes in sea levels. In the absence of very clear predictions about future climate-related shocks, humanitarian agencies and governments should use existing baseline data and HEA or other tools to illustrate possible impacts. These scenarios could be used to identify appropriate interventions, adjustments to poverty reduction strategies, and increases in livelihood

support. In quick-onset disasters, rapid vulnerability assessment should be used to complement HEA in order to ensure that humanitarian response is targeted appropriately.

Education and child protection are closely linked to food security and the economy of the household. It is often the case that children are pulled out of school if there is no money for school fees, or if the child is needed to work in place of a sick parent or to care for younger siblings. In addition, as Save the Children has documented in West Africa, East Asia and Eastern Europe, exploitation of children – including sexual abuse, trafficking or early marriage – increases when families are under severe economic pressure.

The concept of inter-generational equity, the obligation of the current generation to protect the health of the planet for future generations, will come into question in cases of livelihood programming that require prioritising immediate human survival above sustainable development. In such cases, appropriate mechanisms will need to be developed to maximise both goals. Given that future generations of children will be even more seriously affected by climate change than children who are growing up now, it is clear that international action focused on children and climate change is vital.

9. Mitchell, Tom; Katharine Haynes; Nick Hall; Wei Choong; and Katie Oven (2008). "The Role of Children and Youth in Communicating Disaster Risk." *Children, Youth and Environments* 18(1): 254-279. Retrieved [date] from <http://www.colorado.edu/journals/cye>.
http://www.childreninachangingclimate.org/docs/CYE_CommunicatingRisk.pdf

[From the abstract]

Disaster management is dominated by top-down relief efforts that assume children and youth are passive victims with no role in communicating risks or preventing and responding to disasters. This article challenges these assumptions and critically assesses prevailing theoretical models of risk communication using two case studies that highlight the unique needs and potential roles of children and youth as resources or receivers of disaster management information. These studies in El Salvador and New Orleans used various participatory and qualitative techniques with young people, parents and policy makers. The findings suggest that the roles of children and youth as potential informants within informal and formal risk communication networks have been significantly underestimated, but their positive role in disaster risk reduction must also be seen in light of its possible burdens.

10. Molina, Grace, Fatima Molina, Thomas Tanner and Fran Seballos (2009) 'Children's participation in community-based disaster risk reduction and adaptation to climate change'. Participatory learning and action, No. 60, Chapter 14, Community-Based adaptation to climate change' IIED.

This chapter presents practical tips on how to conduct child-friendly participatory research. Child-friendly action research is most successful when the cultural norms and age range of participants shape research design and methods are focused on having fun. Similarly, activities should be carried out in small groups, so that individual children feel confident enough to participate and methods should be iterative allowing children to shape and change them. Researcher interventions should be limited to explanation of a tool or method and a mix of oral, visual and written activities can be used. Finally, children should gain from the experience of participating in the research. The authors recommend organizing the children into small groups, but differentiating between gender and age amongst participants. Icebreakers should be used to maintain energy and to develop confidence.

A Venn diagram approach can be used to explore the power of different stakeholders but where children may not be able to understand the concepts of power, stakeholders and involvement, a me/we map is suggested in which children list the people they interact with in four key spaces (home, community, school, beyond the community) on paper divided into four quarters. The relative power of the different stakeholders is then represented using colour-coded cards and located on a single line to show proximity to the individual or group (me/we). Other tools include: risk and activity ranking; benefits races; identifying messages through visioning; building pyramids and validating communication pathways; ranking enabling and limiting factors; other tools for creative expression such as songs, poems and video.

11. Plush, T. (2009) 'Amplifying children's voices on climate change: the role of participatory video'. Participatory learning and action, No. 60, Chapter 9, Community-Based adaptation to climate change' IIED.

Children's concerns are neglected by policy-makers, yet they will have to cope with both current and future impacts from increasing climate shocks and stresses. To amplify children's voices in adaptation decision-making, a participatory video action research project was undertaken in Nepal in 2008 as part of a Masters Research project. The project was implemented in collaboration with ActionAid Nepal, which had a programme underway with children – the Disaster Risk Reduction through Schools (DRRS) project. The work took place with five villages in three geo-climatic regions of Nepal. Each regional study began with a five day participatory video workshop involving those already working with children through DRRS. This group became the participatory video facilitators who then worked with children at the village level to articulate their climate change adaptation priorities in their own voice. Key steps in the participatory video process are outlined and a case study provided from Bageshwari, Nepal.

The study concludes that there participatory video has the following strengths: it can act as a catalyst for change and means children can speak for themselves. The participatory video *process*, when implemented as a research-reflection-action process, can be an empowering method enabling children to understand, validate and amplify their climate change concerns. Integrating participatory video into an existing disaster and climate change risk reduction project can strengthen the use of video as a tool to educate, empower and advocate. Using participatory video as a tool for awareness raising and people-centred advocacy can strengthen links between scientific climate change data and local knowledge for more meaningful adaptation debates. The study also concludes that using appropriate technology that is easy-to-use, affordable, and fits with the quality needs for video distribution increases sustainability. However, there are also limitations - participatory video cannot change power relations within communities and may even heighten or reinforce them. As video is an expensive novelty in many communities, introducing it to a specific group can add to tensions around who gets to use it and for what purpose. Awareness is needed that people may share experiences differently on camera than in other types of interactions and technology can also be a limitation. On-going training and the capacity for continued project management oversight must be considered for long-term use. A final limitation is the intensity of time and energy needed to effectively use participatory video as a process for social change rather than a one-off video project involving the community. Participatory video is said to be a useful tool for demystifying climate change which can be an incomprehensible scientific subject by linking it to the day-to-day challenges children face. Mobilization for adaptation support becomes a right for children and a cornerstone for advocacy, which they can address through film-making and which enables communication of their concerns across distances.

12. Polack, E. (2009) 'Mainstreaming Child Rights in National Climate Adaptation Policy Spaces', *IDS in Focus Policy Briefing 13.5*, Brighton: IDS. Accessible at: <http://www.ids.ac.uk/index.cfm?objectid=FDCEEBF0-D978-CBCB-22495ECF996D96C3>

A child rights approach to adaptation planning could increase the resilience of children and their families to climate shocks and provide a firm base for adaptation – as would placing a climate lens on national child rights reporting. This briefing takes existing experience of child rights, child-led and child-sensitive approaches to development and applies them to national climate change policy. It asks how policymakers can formulate and implement adaptation policies that are in 'the best interests of the child'. A child rights framework should guide all national adaptation initiatives. Strong national networks between inter-ministerial committees on climate change, children's ministries, civil society and international agencies will be needed to orient key actors through collaborative child rights analysis of adaptation priorities and planning.

Key policy implications are as follows:

- National frameworks must learn from existing national experiences that have supported people out of intergenerational poverty cycles and incorporated children's own perspectives on climate change.
- The CRC reporting process should consider climate change so that all government and private development interventions serve to safeguard child rights. This will increase children's resilience to climate change rather than undermining it (particularly within new mitigation initiatives).
- A continued emphasis on developing spaces for children's participation in decision-making should mean that children's experiences of climate-related shocks and stresses and their priorities for action are more influential.

13. Seballos, Fran (2009) 'Rights, Needs and Capacities of Children in a Changing Climate'. Issue 13, *Children in a Changing Climate: Lessons from research and practice*. November, 2009. IDS in Focus Policy Briefing.

This briefing paper covers various issues including: rights, communication, and the participation of children in debates, mainstreaming, and child-centred participatory research for adaptation. In terms of child rights and Intergenerational justice – the UN Convention on the Rights of the Child provides a clear moral framework from which child rights in relation to climate change adaptation can be understood, articulated and measured. Inter-generational justice perspectives extend those rights to cover tomorrow's children as well as those living currently. A child rights approach to climate change could radically transform the policies and commitments of those in power but awareness-raising is needed. Well-supported children's groups have the potential to make tangible contributions to climate change responses and have been doing so, but their capacity as active citizens and agents of change has been largely overlooked. Evidence is being gathered through research on children's involvement in climate change. Ethical approaches and sensitive facilitation is needed to ensure children's voices are heard in policy arenas and programme formulation. Rarely are children put to the forefront in national adaptation policy-making and programming. As guiding frameworks for implementing national adaptation programmes are still under development this presents an opportunity to integrate child perspectives. Taking a participatory action research approach with children supports them to identify and articulate their own vulnerabilities, capacities and needs, contributes to knowledge building and child capacity development and is part of the empowering process to support child action on climate change.

The policy implications identified in the briefing are as follows:

- Policymakers at all levels should apply child-rights frameworks and perspectives to policies and programmes;
- Fair and equitable climate change responses require pathways such as direct dialogue and participatory research to connect children's views, rights and capacities to political spheres of influence.
- Child agencies should sensitize the policy and programming arena at national and international levels to support dialogue between children and power holders.
- Child-centred participatory research can provide policymakers and practitioners disaggregated information on impacts of climate change on children that embrace the different needs and potentials that exists within 'child' groups whilst enhancing their capacity to take action.
- Child agencies should work with children alongside parents and community leaders to improve the understanding of children's issues in a changing climate and avoid misplaced perceptions of children as powerless victims of climate change.

14. Seballos, F. and Tanner, T. (2009) 'The Importance of Participatory Child-Centred Research for Climate adaptation', *IDS in Focus Policy Briefing* 13.6, Brighton: IDS Accessible at: <http://www.ids.ac.uk/index.cfm?objectid=FDD52B4F-9C17-1758-444B8522DB9AA3E6>

Involving children in research on climate change improves the quality and relevance of knowledge that informs policies and programmes for climate change adaptation. However, there is a risk that exposing children to concepts and discussion around life-threatening issues will create feelings of helplessness, denial and disempowerment. Participatory action research (PaR) nurtures two-way relationships between researchers and children that minimises negative effects and builds the capacity of child participants to take action. This briefing reflects lessons and good practice for supporting and delivering child-centred research.

Involving children in research on climate change improves the quality and relevance of knowledge that informs policies and programmes for climate change adaptation. However there is a risk that exposing children to concepts and discussion around life-threatening issues will create feelings of helplessness, denial and disempowerment. Participatory action research (PaR) nurtures two-way relationships between researchers and children that minimises negative effects and builds the capacity of child participants to take action. This briefing reflects lessons and good practice for supporting and delivering child-centred research.

Policymakers should use child-centred research into child needs and capacities from children's own perspectives to inform policies and open up spaces for child participation in designing climate change responses.

- Research funders should prioritise approaches such as participatory action research to enhance children's voices in policy and programme design.
- Researchers must recognise the differences between children and identify methods that empower child participants and allow children to refine and improve their methods.
- Community-level practitioners need to act on new knowledge and capacities generated within child groups, with communities and within partner organizations by integrating learning into their programming. Children have their own way of understanding, perceiving and articulating climate risk and therefore have different adaptation priorities and capacities to respond. Meaningful engagement with children for climate adaptation requires all parties to support children to take control of the process, let children talk about what's important to them and to act on their own priorities.

15. Stone, Lucy and Katherine, Lofts (2009) 'Climate Change, Child Rights and Intergenerational Justice'. Issue 13, Children in a Changing Climate: Lessons from research and practice. November, 2009. IDS in Focus Policy Briefing. IDS, UNICEF, Plan International, Children in a Changing Climate Research.

This briefing paper explores a child-rights approach to climate change. The authors state that the response to climate change will profoundly affect the quality of life of future generations of children, yet this intergenerational aspect has yet to be placed at the heart of climate change discussions. A child rights approach to climate change would take the concerns of intergenerational justice into account and radically transform the policies and commitments of those in power. Such an approach urgently needs to be implemented by governments and civil society actors shaping the response to climate change.

Key policy implications of a child rights based approach are identified. Given the compelling intergenerational implications of climate change, related decision-making and policy implementation must take the UN Convention on the Rights of the Child (CRC) into consideration:

- The implementation of a global deal will be made at the national, regional and local levels. Policymaking and fiscal decisions at those levels should fully reflect the need to invest in long term solutions that ensure the full rights of future generations are met.
- Policy-makers at the international, national and local levels need to apply a cost benefit analysis that values future quality of life.
- National governments should adhere to the IPCC recommendation for reductions of greenhouse gas emissions of between 25 and 40 per cent by 2020 as a minimum for developed countries, on the basis of intergenerational equity.
- Adherence to the CRC requires that national governmental policy makers, especially those in developed countries, ensure the fair representation of children and young people and that children's specific needs are given due consideration in adaptation and mitigation policy.
- Reporting against climate change and child rights could be included under existing CRC commitments.
- Tackling climate change presents a tremendous opportunity to implement the rights of the child by committing the world to a low-carbon pathway. By failing to reflect this within a very short political time frame, the lives of children now and in the decades to come will be put at risk and international and national decision-makers will be missing an important opportunity to ensure a healthier, more equitable and sustainable future.

The briefing concludes by arguing that tackling climate change presents a tremendous opportunity to implement the rights of the child by committing the world to a low-carbon pathway. By failing to reflect this within a very short political time frame, the lives of children now and in the decades to come will be put at risk and international and national decision-makers will be missing an important opportunity to ensure a healthier, more equitable and sustainable future.

16. Tanner, Tom (2009) 'Children Communicating Climate and Disaster Risks' Issue 13, Children in a Changing Climate: Lessons from research and practice. November, 2009. IDS in Focus Policy Briefing. IDS, UNICEF, Plan International, Children in a Changing Climate Research.

There is growing evidence of the ability of children to act as protagonists for action to reduce climate and disaster risks in their communities. Children have a unique perception of these risks, combining external information with their own experiences. They are also able to communicate these perceptions of risk to others to bring about changes in behaviour that will reduce risks and vulnerabilities. An improved understanding of these processes is essential to make policies and programmes sensitive to children's needs and to create enabling environments for their participation and agency.

Policy implications are set out as follows:

- DRR, adaptation and mitigation policies and programmes require a much greater focus on the needs of children. To do so, they need to be grounded on children's own perceptions, opinions and experiences.
- Adults in the community and organizations working on climate change adaptation and DRR should create enabling environments where children are able to conceive, initiate and lead actions that reduce risks and adapt to a changing climate – integrating children and adults into collective action.
- Improving the ability of children to extend their voice beyond community boundaries, including by developing networks, exchanges, forums and use of the internet to support their advocacy will contribute to more effective climate change adaptation and DRR policies and programmes.
- Children's adaptation needs and spaces for child participation must be prioritised in international frameworks such as the deliberations of the UNFCCC and Global Platforms for DRR, including in financial flows and reporting mechanisms.

17. 'Tanner, Tom; Mauricio Gaborit (2007) 'Children's Voices in Disaster Policy Spaces'. Field report: El Salvador.

Plan UK is spearheading an innovative project in which children and youth organisations are supported in their efforts to claim their right to safety and to campaign for disaster risk reduction (DRR). This project also involves integrating DRR within Plan's ongoing development work, ensuring child-centred disaster reduction approaches are a programmatic concern for all sectors. This research represents a preliminary scoping phase to explore the opportunities and capacities for children's voices to contribute to policy-making on DRR. The research is comparative study of El Salvador and the Philippines, two countries in which Plan's child-centred DRR work is most advanced. This report presents a summary of the research process and early findings from El Salvador following similar research in the Philippines.

The dominant pathways for children's voices were found to be confined to the local community, where partnership with the adult emergency committee has yielded beneficial actions. The abilities for children's voices to influence policy are limited by lack of spaces for dialogue and poorly developed national and regional systems for disaster risk management. However, they are also impaired by a prevailing adult perception that views the role of children and young people not as proactive protagonists, but as vulnerable recipient participants in externally generated disaster risk reduction plans and programmes. This field report is the result of a week-long scoping research trip to identify the policy spaces for children's voices and their current experience and capacity to influence disaster risk reduction policy. It also built research relationships between academic partners and with Plan staff, and to raise the profile of risk reduction both within Plan and amongst the research participants. The research links formed and the momentum gained with participants and staff in the field during this

short field visit has been extremely valuable and constructive. Further research, will allow additional locations and a more detailed project to examine and promote the communication links from the child to adults within the home, wider community and policy level. Finally, the self-belief and motivation demonstrated by the children's group in Petapa should encourage Plan in its work to directly facilitate and create an enabling policy environment to help children take concrete actions to reduce disaster risks in their communities.

18. Tanner, Tom, Mercedes Garcia, Jimena Lazcano, Fatima Molina, Grace Molina, Gonzalez Rodriguez, Baltz Tribunalo, and Fran Seballos. 'Children's participation in community-based disaster risk reduction and adaptation to climate change'. Participatory learning and action, No. 60, Chapter 3, Community-Based adaptation to climate change' IIED.

Children under 18 are often considered the vulnerable, passive victims of disaster events who are in need of protection from parents and adults in the community, with the latter making decisions and taking action on their behalf. However, children have unique perceptions of the world in which they live and, and they have the capacity to act as agents of change. Child-friendly participatory methodologies and processes can enable children to take an active role in communicating their perspectives to other members of the community, tackling climate change impacts, and preventing disasters.

This paper presents findings and lessons from participatory action research in the Philippines and El Salvador– countries which are prone to disasters and with high incidences of poverty and dependence on climate-sensitive natural resources, and in which the NGO Plan International has child-led development projects underway including disaster risk reduction and adaptation related activities, and with whom the collaborators worked. The researchers explore how children perceive risks and take action, with children's groups actively engaging in the research process.

It is argued that children can participate in DRR and adaptation activities as analysers of risk (related to natural hazards, human-induced and societal risks) and risk reduction, as designers and implementers of projects, as communicators of risks and risk management options, as individuals that can mobilize resources and people, and as constructors of social networks and capital. The conditions for participation vary, influenced by community and institutional dynamics, livelihood strategies and living standards, and cultural factors as well as the hazard burden facing the communities. Perceptions of hazards and risk in the Philippines, for example, were found to reflect gender and age differences, as well as lived personal experiences. Women and children named social hazards (gambling, drugs, and community conflict) as witnesses of male actions, also health and disease. All adults name food and financial crises, but more men noted agricultural hazards as pests and drought etc. Children often understand risks in relation to the hazards they have experienced (localized landslides, polluted water courses or dangerous roads). In El Salvador, the motivations for participation in group activities were also gendered. Both boys and girls identified learning as a key motivator for participation, but girls' were more likely to mention teamwork and helping others, compared to boys who spoke more of individual benefits (having fun, making friends etc).

Children can be agents of change to tackle disasters and climate change and a number of projects conceived of and managed by children's groups with support from Plan International are outlined in the study. Examples include building live barriers, improving waste disposal containers and trimming trees. Sometimes these activities can stimulate further support from adults in the community and it is clear that children can play a role in communicating about risk and climate change within and beyond the community. An example is given of

child-led mobilization around environmental issues such as mining in Eastern Samar using participatory video and facilitated dialogue with key stakeholders.

There is a moral imperative to include children in climate change work, as they are the generation to inherit climate impacts. The research demonstrates they can understand, communicate and act upon climate change. Scaling up their participation requires enhanced efforts to incorporate children's perspectives, knowledge and potential for action into regular community-driven development programmes. The participatory techniques outlined in this publication are put forward as facilitating this process, but the need for advocacy to change attitudes in relation to the role of children in climate and DRR processes is highlighted. There are differences in risk perceptions and priorities between groups of children, depending on age and gender, and also there may be differences between those not attending school or participating in established groups and those that do. Holistic child-led adaptation and DRR should involve both children and adults to achieve more consensual support for action at the community level.

19. United Nations Children's Fund Innocenti Research Centre – UNICEF IRC (2008), *Climate Change and Children: A Human Security*. Florence: UNICEF IRC. Available at http://www.unicef-irc.org/publications/pdf/climate_change.pdf

(from the executive summary)

The evidence presented in this policy review paper confirms the centrality of children because of their unique vulnerabilities to global, national and sub-national policies and frameworks on climate change and human security. Children are the most vulnerable to climate change, but can also be powerful protagonists for change, making significant contributions to collective efforts to mitigate climate change. The implications of climate change for children and future generations are reviewed, drawing on experiences in different sectors and countries of promoting child rights and well-being. The Convention on the Rights of the Child adopted in 1989 by the UN General Assembly and ratified by 193 countries protects and preserves the right of every child to a safe, healthy environment in which to grow that have not sufficiently addressed children's issues in the past. The World Fit for Children (WFFC) Declaration of 2002, a consensus outcome of the UN General Assembly Special Session on Children, articulates the commitment of States to give every assistance to protect children and minimize the impact of natural disasters and environmental degradation on them'. Combined with the Millennium Development Goals, this report argues that these are important commitments for responding to the myriad threats that climate change poses for children. Environmental protection and providing for the health, education and development of children are mutually inclusive and hence climate risk should be integrated into development planning and initiatives, rather than treated as a separate issue. Existing national adaptation plans, including National Adaptation Programmes of Action (NAPAs) do not reference the specific vulnerabilities of children or their needs and do not recognize the capacities of children to create change especially at sub national and community levels. Frameworks and protocols should recognize, protect and empower young people in the light of climate change impacts.

Key recommendations are:

- a human rights-based approach requires that children's issues should be included in all international and national efforts, especially in the climate regime (e.g. UN negotiations, NAPAs, poverty reduction strategies;
- increasing evidence shows that the main killers of children (malaria, diarrhoea and under-nutrition) are highly sensitive to climatic conditions;
- an integrated approach is needed because of the complexity of a changing global environment (challenges of securing access to clean household energy, water,

sanitation and education) are compounded by the increasing and chronic prevalence of natural disasters, and are often simultaneous;

- inter-sectoral coordination and collaboration is needed between line ministries (Education, Health, Environment, Youth and Finance) paying special attention to the needs and vulnerabilities of children of different ages;
- increased action to meet the MDGs will reduce risks caused by socio-economic factors shown to exacerbate climate change impacts;
- gender sensitive participatory approaches to community development (including water and energy stewardship, environmental education, food security and disaster risk reduction activities) will create economic opportunity, to reduce vulnerability and empower the most marginalized citizens to take part in creating a sustainable society;
- empowered children are dynamic and ultimately protagonists for protecting and improving the environment. They will bear the brunt of the impacts of climate change but can be forces for change and should thus be involved locally and in international negotiation processes;
- climate change is so wide-reaching and complex that coherent partnerships are needed between governments, civil society, UN organizations, donors, the private sector and every individual (across generations and genders) to reduce risks;

20. United Nations Children's Fund – UNICEF (2007). *Climate Change and Children*. New York: UNICEF. Available at http://www.unicef.org/publications/files/Climate_Change_and_Children.pdf

This publication integrates comments and letters from children and young people from all over the world on the topic of climate change. The report summarizes the voices of children on climate change drawn from child delegates to the UNICEF Voices of Youth, 2007 UNEP African Regional Children's Conference for the Environment and the 2007 World Scout Jamboree in cooperation with the UNDP. The study reflects on the mounting crisis presented by climate change impacts on the livelihoods and communities of poor and vulnerable children. The issues discussed include the risks of climate change for children, as well as natural disasters, diseases, water, food security, trees, energy and action and advocacy and includes positive examples of what can be done to adapt to climate change (e.g. tree planting, community gardening in Niger, local community disaster management etc). Climate change has evolved from being an 'environmental issue into an issue that requires collective expertise in sustainable development, energy, food security, health and the well-being of children.

21. Walden, D., Hall, N. and Hawrylyshyn, K. (2009) 'Participation and Protection: Children's involvement in Climate Change Debates', *IDS in Focus Policy Briefing 13.4*, Brighton: IDS. Accessible at: <http://www.ids.ac.uk/index.cfm?objectid=FDC9AA13-EC45-730C-78D6FA41F160BA8A>

Children are not only interested in being part of decisions that affect them. It is also their right to be involved in decision-making. Despite sceptics' accusations of 'tokenism' and adult 'manipulation', when they are well-informed about climate change and appropriately supported, children can meaningfully participate in global debates. Organisations that support children's participation must provide appropriate knowledge and support mechanisms to make this participation effective whilst also addressing concerns of safety and wellbeing. This briefing explains how children's contributions to global climate change decision-making are achievable and can benefit everyone, not just children.

Key policy implications are:

- Ensuring transparency in children's interaction with adult actors helps preclude accusations of 'tokenism' and 'manipulation' of children in policy-making. Organisations that support children's participation need to follow accepted standards (e.g. Inter-Agency Working Group on Children's Participation's *Operations Manual on Children's Participation in Consultations*) to address children's rights to protection and their right to participation.
- Governments and civil society should establish and support lasting, child-friendly dialogues on climate change between children's groups and adult actors in the climate change context. Children are already engaging in climate change policy-making and implementation at local and national levels and in many cases existing procedures can be replicated and adapted for the global context.

Children must have access to relevant information so that they can:

- retain and exercise control of the level and extent of their involvement. This requires knowing their options, and knowing where to go for advice;
- stay informed about the topic they are discussing, and the mechanisms and workings of the arena in which they are discussing it;
- understand all potential outputs and outcomes, both positive and negative;
- understand the intricacies of climate change debates and the associated jargon. Information provided must be sensitive to children's 'absorptive capacity' (including language barriers, education and social norms).

22. *Watermarks: Child protection during floods in Bangladesh* (2006). Save the Children UK, London. Available from: http://www.savethechildren.org.uk/en/docs/watermarks_fullreport.pdf

In recognition of a clear gap in understanding of children's experiences during natural disasters in Bangladesh, the *Watermarks* report explores children's protection needs and the scope of disaster response plans in that country. It provides some background discussion of the concept of 'child protection' in emergencies and proposes an analytical framework for assessing the findings of the study. The study is based on a desk review of relevant flood response plans and extensive consultations held with children and other stakeholders from a range of different backgrounds, (e.g. working children, students, unaccompanied children and children from ethnic minorities). Interviews were also spread across areas affected by different types of flood; slow onset urban floods, rural flash floods and rural slow onset floods. Patterns of similar experiences of children from particular groups, backgrounds and locations were sought. Over a thousand people took part in interviews focusing on the dangers that children face during floods. Focus group discussions (FGDs) covered potential key child protection areas, such as issues relating to flood shelters, separation, evacuation, abduction, relief distribution, health care, education, hazardous work, and psycho-social distress. The report finds that whenever there is a natural or man-made disaster, children face a wide range of threats. These may include the risk of abduction or sexual abuse, or the more familiar needs of food and shelter. Three sets of improvements are recommended:

- More flexible models of intervention which are sensitive to children's needs.
- A greater level of awareness of the specific dangers that children face during floods, and consequently, specific steps taken to protect children from harm.
- The need to introduce 'recreation' as a component of relief packages and distributions.

Complementing these three specific goals, the publication reports that the vast majority of children interviewed said that adults' attitudes towards them need to change. It notes that children need to be respected, listened to and involved. Finally, it maintains that all disaster

response actors in Bangladesh including non child-focused organizations, have an impact on children's protection during floods; knowingly or unknowingly, positively or negatively. Thus, it proposes that all actors should consider how their particular areas of expertise or particular interventions can help to strengthen child protection measures.

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23. Akachi, Yoko, Goodman, Donna and Parker, David (2009). *Global Climate Change and Child Health: A review of pathways, impacts and measures to improve the evidence base*. Florence: United Nations Children's Fund Innocenti Research Centre. Available from http://www.unicef-irc.org/publications/pdf/idp_2009_03.pdf

This paper was initiated as a background review for the UNICEF IRC Policy Review Paper on Climate Change and Children (UNICEF 2008). It covers the published evidence of pathways and impacts of global climate change on child health. The review was occasioned by the recognition that most of the work to date on climate change and health lacks a clear focus on the children, while the climate change and children literature tends to be brief or imprecise on the complex health aspects. This paper attempts to summarise what is known about global climate change and its link to child health. Studies were identified by searching the PubMed database for articles published before April 2009. Most articles referenced are from peer-reviewed journals, the full-text accessed on-line through the Harvard Countway Medical Library. Publications by agencies (e.g., UNICEF, WHO, IPPC) were also included. The list of references provides evidence about linkages between climate change and health outcomes, and on specific health outcomes for children.

The analysis explores the hypothesis of disproportionate vulnerability of children's health to environmental factors, specifically those most closely related to climate change. Based upon scientific and policy research conducted to date there is found to be substantial evidence of disproportionate vulnerability of children in response to climate change. The diseases likely to be potentiated by climate change are already the primary causes of child morbidity and mortality, including vector-borne diseases, water-borne diseases and air-borne diseases. For this reason, further research, assessment and monitoring of child health in respect to climate change are critical. Proposals are made for governments to integrate environmental health indicators into data collection in order to accurately assess the state of child health in relation to other age groups and its sensitivity to climate change.

The review highlights the role of malnutrition as a key underlying factor in morbidity and mortality among children under five, and the likely sensitivity of children's nutritional status to effects of climate change. It also outlines that malnutrition is currently classified as a Children's Environmental Health (CEH) indicator under the heading of perinatal diseases. Based on the evidence from this review, the authors suggest that malnutrition merits greater emphasis as a core CEH indicator category, and that countries develop further indicators of nutrition status within the CEH framework according to their situations. This means, governments should be encouraged and supported to integrate environmental health indicators within national health information systems, covering the entire population but including specific focus on children.

To tackle the challenge of global climate change and child health a concerted effort is required by all partners. A cross-sectoral and interdisciplinary approach is paramount. The authors advocate that at the national level, all the relevant ministries and offices concerned with environment, water, sanitation, health, education, statistics and social policy should be

involved. At the international level, relevant organizations and partnerships should establish this issue as a priority and take actions accordingly.

24. Mitchell, Tom, Thomas Tanner, Katherine Haynes (2009) 'Children as agents of change for Disaster Risk Reduction'. Children in a Changing Climate Research. Accessible at: http://www.childreninachangingclimate.org/docs/CCC_Working%20Paper_Final1_Screen.pdf

[From the summary]

Disaster management has been dominated by top-down relief efforts targeted at adults, who are assumed to be attuned to the needs of their families and the wider community, and to act harmoniously to protect their immediate and long-term interests. Whilst a growing number of development approaches focus on reducing the risk of disasters, they tend to treat children as passive victims with a limited role to play in communicating risks or preventing and responding to disasters.

This paper challenges these assumptions by examining how children's voices are represented and heard in disaster risk reduction (DRR) policy and decision-making spaces, and by assessing the level of capacity children have for preventing disasters vis-à-vis their parents. This challenge and the research presented here are prompted by the anecdotal field reports provided by child-focused development agencies, which suggest that children in developing countries are making significant contributions to minimizing disaster risks.

Through this lens, the paper explores three linked areas of enquiry that help to frame the emerging 'child-centred approach to DRR'. First, it considers a history of youth empowerment through children's active participation in decision-making forums. Second, it looks at whether the international human rights architecture provides for a child's right to protection from disasters; and third, it asks whether children can be effective as communicators of risk within their own households and communities.

These three elements contextualise the results of field research in El Salvador and the Philippines, which explored what opportunities exist for the voices of children and their groups to be heard within local and national DRR policy spaces and the experiences and capacity they have for doing so. The concluding section considers why children may be suited to the role as DRR advocates and as communicators of disaster risk, and indeed, whether this is desirable, before raising a number of further questions emerging from this research.

CLIMATE CHANGE AND SOCIAL PROTECTION

25. Davies, Mark, Oswald, Katy and Mitchell, Tom (2009). *Climate Change Adaptation, Disaster Risk Reduction and Social Protection*. Brighton: Institute of Development Studies. Available at <http://www.oecd.org/dataoecd/25/55/43280946.pdf>

Poorer developing countries are especially vulnerable to climate change because of their geographic exposure, low incomes and greater reliance on climate sensitive sectors, particularly agriculture. People exposed to the most severe climate-related hazards are often those least able to cope with the associated impacts, due to their limited adaptive capacity

which poses multiple threats to economic growth, wider poverty reduction, and the achievement of the Millennium Development Goals as documented by ADB *et al.* (2003) and Stern *et al* (2006).

The common responses to these challenges, namely climate change adaptation, disaster risk reduction (DRR) and social protection, are explored in comparative analysis. The approaches have much in common in terms of measures and broad objectives – they seek to take integrated, multi-sectoral approaches to mitigate risks faced by poor people, and aim to tackle the impact of shocks and stresses and to increase individual, community and society resilience. All are in formative stages of development especially in low-income countries (see table 9 below, p206)

Table 9. Key Characteristics of social protection, adaptation and disaster risk reduction

	Social protection	Adaptation	DRR
<i>Core disciplinary grounding</i>	Development and welfare economics	Social development and physical sciences	Physical sciences
<i>Dominant focus</i>	Implementation of measures to manage risk	Enabling processes of adaptation	Prevention of disaster events
<i>Main shocks and stresses addressed</i>	Multiple	Climate-related	All natural hazard-related, including climate
<i>International coordination</i>	Informal, OECD task group	UNFCCC – Nairobi Work Programme	UN-ISDR Hyogo Framework for Action
<i>Main Funding</i>	Ad hoc multilateral and bilateral	Coordinated international funds: Global Environment Facility, UNFCCC/Kyoto Protocol funds. Ad hoc bilateral	Coordinated international funding: ISDR, GFDRR Ad hoc civil sponsored and bilateral

The authors argue that understanding the intra-household dynamics around how age and gender influence resource access and time expenditure, and anticipated impacts of shocks, is critical for addressing future adaptation needs. Further, the impacts of climate change will be overlaid onto existing vulnerabilities of both the rural and urban poor and the excluded, such as vulnerability to seasonality, to poor health and to market fluctuations (e.g. food and fuel price volatility). This is because poor communities are not homogenous and so it is important to understand the differentiated social impacts of climate change based on gender, age, disability, ethnicity, geographical location, livelihood, and migrant status (Tanner and Mitchell, 2008). In their view, social protection, DRR and climate change adaptation have much in common in terms of measures and broad objectives.

The authors examine the role of social protection in strengthening adaptation, for example, in developing more climate-resilient livelihoods. Country experiences of a diverse range of social protection instruments - weather-indexed crop insurance, employment guarantee schemes, asset transfers and cash transfers - reveal how measures can enhance the resilience of vulnerable communities. These examples point to ways in which the design of social protection measures could be strengthened and how they could take into account current and potential future climate related shocks.

Rural and urban livelihoods are already affected by shocks that are threatening their sustainability, with negative implications for the poor and excluded. The authors question, the assumptions upon which many social protection policies are based. They highlight the importance of ensuring that social protection approaches are relevant to the needs of the population, particularly the poorest and excluded, at threat from climate change. To this end, they propose the concept of adaptive social change.

Social protection has much to offer in helping the poorest reduce their exposure to current (DRR) and future (adaptation) climate shocks. Social protection policy needs to learn from and incorporate DRR and adaptation approaches to ensure programmes continue to effectively support livelihoods and protect the poor and excluded from shocks and risks in the face of climate change. The specific adaptation benefits that could be obtained via different strands of social protection are summarized in table 8 (Davies et al, 2008, p 205):

Table 8. Promoting adaptation through social protection

SP category	SP instruments	Adaptation and DRR benefits
<i>Protective</i> (coping strategies)	<ul style="list-style-type: none"> - social service provision - social transfers (food/cash), including safety nets - social pension schemes - public works programmes 	<ul style="list-style-type: none"> - protection of those most vulnerable to climate risks, with low levels of adaptive capacity
<i>Preventive</i> (coping strategies)	<ul style="list-style-type: none"> - social transfers - livelihood diversification - weather-indexed crop insurance - social insurance 	<ul style="list-style-type: none"> - prevents damaging coping strategies as a result of risks to weather-dependent livelihoods
<i>Promotive</i> (building adaptive capacity)	<ul style="list-style-type: none"> - social transfers - access to credit - asset transfers or protection - starter packs (drought/flood-resistant) - access to common property resources - public works programmes 	<ul style="list-style-type: none"> - promotes resilience through livelihood diversification and security to withstand climate related shocks - promotes opportunities arising from climate change
<i>Transformative</i> (building adaptive capacity)	<ul style="list-style-type: none"> - promotion of minority rights - anti-discrimination campaigns - social funds - proactively challenging discriminatory behaviour 	<ul style="list-style-type: none"> - transforms social relations to combat discrimination underlying social and political vulnerability

The social protection policy agenda focuses on the poorest and most vulnerable in society and the transfer of resources (especially cash) to households to smooth consumption or support income. Social protection can target different groups such as the income poor, children, disabled and elderly. In DRR, efforts within relief and recovery are designed to smooth the social impact of shocks, with far less emphasis on preventative approaches that tackle disasters from a holistic perspective. In adaptation, attention to building on existing coping practices is also focused on smoothing shocks as a first step.

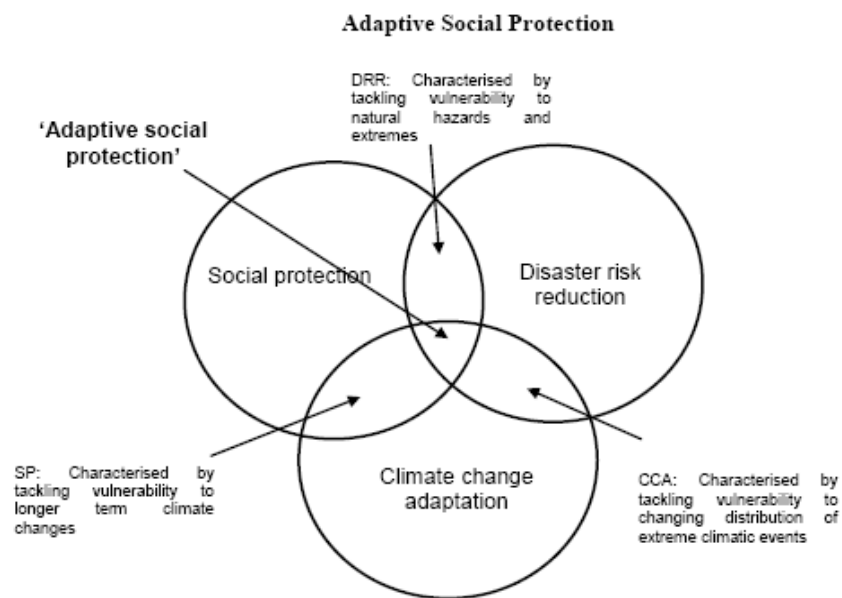
Key lessons include the importance of having longer-term perspectives in social protection and adequate tackling of social exclusion and marginalization in disasters and adaptation work. They note the weaknesses of the ministries responsible for each of these fields in many places which constrain the building of political ownership and policy coherence. Policies and activities in these spheres of action should be linked to wider poverty reduction frameworks and growth strategies. An instrumentalist interpretation of social protection (e.g. to enable efficient delivery of MDGs) is widely held and this is similar in DRR and adaptation (e.g. preventing future negative impacts on development investments). A rights-based or activist perspective other drivers such as equity and justice have been behind advocacy work on adaptation and social protection (e.g. universal social minimum concept). There is likely to be more attention given to the latter and linked to arguments around climate change injustice in the future.

Where adaptive social protection provision is not universal, it is critical that inputs are effectively targeted, although this may become more complex as climate change impacts are increasingly felt (e.g. increases in migration and more people falling into poverty etc), and so means-testing might be required to target the most vulnerable. Targeting may need to be focused on vulnerable life cycle periods, e.g. social pensions, or be broad-based, such as employment guarantee schemes, to ensure that access is available to those who need it. Uncertainty is still high in relation to climate change impacts so achieving adaptive social protection (i.e. consideration by policy-makers of climate change and adjusting plans accordingly) may be difficult.

The concept of 'adaptive social protection' (see diagram Davies et al, 2008, p212) relates to social protection being placed in the context of the impacts of natural phenomena, especially climate and a framework can then be developed for strengthening poor people's resilience to disaster risks and recognizing changing and unpredictable climate change risks. The aim should be to transform productive livelihoods, as well as protecting, and adapting to changing climate conditions rather than simply reinforcing coping mechanisms. The structural root causes of poverty for particular people must be an underpinning of such approaches, permitting more effective targeting of vulnerability to multiple shocks and stresses. An incorporation of rights-based rationale for action, stressing equity and justice dimensions of chronic poverty and climate change adaptation in addition to instrumentalist rationale based primarily on economic efficiency is needed.

There is a need for natural and social scientific research to inform the development and targeting of social protection policies and measures in the light of the burden of geophysical hazards and changing climate-related hazards. A longer term perspective for social protection policies are needed taking into account the changing nature of shocks and stresses. Adaptive Social Protection suggests ways in which social protection programmes themselves can be made more robust in the face of current and future shocks. This includes:

- *Climate proofing social protection* through a long-term vision in the context of more reliable and accurate predictions and consideration of vulnerability.
- *Policy and programmatic options* for social protection for climate change adaptation.
- *A preventative and holistic poverty approach* for DRR.



More evidence is needed on how to combine social protection measures to mitigate vulnerability to climate change in different contexts (e.g. gather lessons from on-going case studies, combining of long-term studies of poverty impacts and social responses to climate change with trends and projections for future climate hazards and building evidence on the economic costs and benefits of different social protection measures for climate change adaptation. Evidence on the cost-effectiveness of social protection measures compared to alternative interventions is also required.

Climate risk assessments should be conducted in conjunction with social protection programme design and implementation. Practical guidance should be developed on the design and implementation of appropriate adaptation methods, taking into account the views of affected groups, particularly women, children and the elderly. Support for civil society should be provided to help the poor build voice to demand access to social protection instruments. Reviews of existing adaptation funding guidelines and criteria should seek to identify opportunities to integrate appropriate social protection responses. Linkages between researchers and practitioners in each field is important to share best practice and monitoring and evaluation systems should gather lessons on the effectiveness of an adaptive social protection approach.

26. Davies, Mark, Guenther, Bruce, Leavy, Jennifer, Mitchell, Tom and Tanner, Thomas (2008). *Climate Change Adaptation, Disaster Risk Reduction and Social Protection: Complimentary Roles in Agriculture and Rural Growth*. IDS Working Paper 320. Brighton: Institute of Development Studies. Available at http://www.climategovernance.org/docs/SP-CC-DRR_idsDFID_08final.pdf

[From Summary]

This study examines the opportunities for linking social protection, adaptation and DRR in the context of agriculture and rural growth, exploring whether linking these three approaches together will help enhance resilience to shocks and stresses in agriculture-dependent rural communities. The study does this by;

(i) *Reviewing conceptual and policy-related similarities and differences between the three disciplines:* Social protection, adaptation and DRR have much in common, but have developed as separate disciplines over the last two decades. They all seek to mitigate risks faced by poor people, they tackle the impact of and seek to build resilience against shocks and stresses on livelihoods and they are all in relatively formative stages of development and testing, rather than established components of development and poverty reduction. However, to date, despite ongoing efforts to link disasters and climate change communities (Sperling and Szekely, 2005; DFID, 2007), there has been little cross-fertilisation with social protection policies and practices.

(ii) *Collecting evidence from case studies where climate change-resilient social protection approaches have been trialled:* Within the agricultural sector, social protection measures that could both build resilience to climate change and benefit from integrating climate change adaptation include: weather-indexed crop insurance, asset restocking (including direct livestock provision), and cash transfers. Assessing evidence from country's experiences of these measures indicates ways in which social protection measures could better integrate DRR and climate change adaptation.

(iii) *Developing an adaptive social protection framework that highlight opportunities better co-ordination:* The evidence presented in this paper suggests social protection and DRR measures designed to limit damages from shocks and stresses may simply not be sufficient in the longer term. For social protection to be resilient to climate change impacts, it will therefore need to consider how reducing dependence on climate sensitive livelihood activities can be part of adaptive strategies. Similarly, adaptation and DRR cannot effectively address the root causes of poverty and vulnerability without taking a differentiated view of poverty, something that further integration with social protection can help with.

To offer a way forward, the study concludes by suggesting follow-up work and by establishing the concept of *adaptive social protection*, which features:

- An emphasis on transforming productive livelihoods as well protecting, and adapting to changing climate conditions rather than simply reinforcing coping mechanisms.
- Grounding in an understanding of the structural root causes of poverty in a particular region or sector, permitting more effective targeting of vulnerability to multiple shocks and stresses.
- Incorporation of rights-based rationale for action, stressing equity and justice dimensions of chronic poverty and climate change adaptation in addition to instrumentalist rationale based primarily on economic efficiency.
- An enhanced role for research from both the natural and social sciences to inform the development and targeting of social protection policies and measures in the context of the burden of both geophysical hazards and changing climate-related hazards.
- A longer-term perspective for social protection policies that takes into account the changing nature of shocks and stresses.

27. Davies, Mark, Leavy, Jennifer, Mitchell, Tom and Tanner, Thomas (2008). *Social Protection and Climate Change Adaptation*. Brighton: Institute of Development Studies. Available at http://www.ccdcommission.org/Filer/pdf/pb_social_protection.pdf

This study, undertaken for the Commission on Climate Change, explores the linkages between climate change adaptation and social protection. It examines the approaches to social

protection and what these might provide for adaptation, and how climate-resilient social protection programmes might be developed.

The impact of climate change is deepening the risks already faced by poor and vulnerable people in rural areas. However, recent studies have shown that adapting to these impacts has grown from a minor environmental concern to a major challenge for human development, and a crucial element in eradicating poverty and achieving the Millennium Development Goals. As approaches to minimizing the risks faced by these vulnerable people, social protection and climate change adaptation have much in common, as they both seek to protect the most vulnerable and promote resilience. They, however, argue that while social protection aims to build resilience to some climate-related disasters, insufficient attention has been played in the social protection sphere to the long-term risks posed by climate change. Climate change adaptation on the other hand has not fully considered the policy and programmatic options that social protection can provide. Whilst social protection can enhance climate change adaptation with respect to different categories of the poor and vulnerable, climate change adaptation cannot effectively address the root causes of poverty without taking a differentiated view of poverty and vulnerability. Thus, they suggest that more recent social protection policies and programmes should refer to the need for 'long-term' interventions.

The paper examines the activist arguments underpinning social protection as inviolable rights to combat social injustice and inequality which also have parallels with climate change debates. As discussed in the paper, they argue that the social protection rationale is informed by the ideal of a guaranteed 'universal social minimum' based on citizenship. In addition, activists argue that a key implication for designing and implementing social protection in the context extreme events and climate change is therefore likely to be an enhanced engagement with rights and equity-based arguments around climate change injustice. However, the authors highlight that in a recent IDS/DFID study local experiences of social protection instruments were found to enhance the resilience of vulnerable communities. Ways in which social protection measures could better integrate climate change adaptation are divided into four areas: weather-indexed insurance crops, seed fairs, asset transfers and cash transfers.

28. Davies, Mark and Leavy, Jennifer (2007). *Connecting Social Protection and Climate Change*. Brighton: Institute of Development Studies. Available at <http://www.ids.ac.uk/index.cfm?objectid=1A4227A8-5056-8171-7B4DFB7B3C8947FB>

This two page briefing paper explores linkages between climate change adaptation and social protection. It describes the study of adaptive social protection as examining opportunities that approaches to social protection provide for climate change adaptation, and for developing climate-resilient social protection programmes. The authors argue that the impacts of climate change are deepening the risks already faced by poor and vulnerable people in rural areas. However, recent studies have shown that adapting to these impacts has grown from a minor environmental concern to a major challenge for human development, and a crucial element in eradicating poverty and achieving the Millennium Development Goals.

As approaches to minimizing the risks faced by vulnerable people, social protection and climate change adaptation have much in common - they both seek to protect the most vulnerable and promote resilience. Even though social protection aims to build resilience to some climate-related disasters, insufficient attention has been played in the social protection sphere to the long-term risks posed by climate change.

Social protection approaches could inform disaster risk reduction and climate change adaptation based on established implementation frameworks for vulnerability reduction. More

recent social protection policies and programmes should refer to the need for 'long-term' interventions. To strengthen social protection and climate change adaptation approaches, IDS researchers have developed an 'adaptive social protection' framework. This framework characterizes social protection measures that acknowledge the changing nature of climate-related impacts, including the future existence of conditions that have not been experienced before. Features of this framework include:

- An emphasis on transforming productive livelihoods as well protecting, and adapting to changing climate conditions rather than simply reinforcing coping mechanisms.
- Grounding in an understanding of the structural root causes of poverty in a particular region or sector, permitting more effective targeting of vulnerability to multiple shocks and stresses.
- Incorporation of rights-based rationale for action, stressing equity and justice dimensions of chronic poverty and climate change adaptation in addition to instrumentalist rationale based primarily on economic efficiency.
- An enhanced role for research from both the natural and social sciences to inform the development and targeting of social protection policies and measures in the context of the burden of both geophysical hazards and changing climate-related hazards.
- A longer-term perspective for social protection policies that takes into account the changing nature of shocks and stresses.

GENDER AND CLIMATE CHANGE

29. Aguilar, Lorena (2009). *Training Manual on Gender and Climate Change* Prepared with joint contributions from International Union for Conservation of Nature (IUCN) and the United Nations Development Programme (UNDP) in partnership with the Gender and Water Alliance, International Network on Gender and Sustainable Energy (ENERGIA), United Nations Educational, Scientific and Cultural Organization (UNESCO), Food and Agriculture Organization (FAO) and the Women's Environment and Development Organization (WEDO) as part of the Global Gender and Climate Alliance (GGCA). Available at http://www.generoyambiente.org/archivos-de-usuario/File/ecosistemas_especificos.pdf

This 262 page training manual was produced and published by a range of international development and conservation agencies and networks as part of the Global Gender and Climate Alliance (GGCA). It aims to respond to the needs of policy makers and climate change scientists to understand and address better the gender dimensions of climate change. It also serves as a practical tool to increase the capacity of policy and decision makers to develop gender-responsive climate change policies and strategies. It simply clarifies the linkages between gender and climate change mitigation and adaptation by providing all actors with the essential knowledge and concrete guidance on how their actions on climate change can better answer the needs of women and men in developing countries. The concepts presented in this manual are tailored to increase the capacity of policy and decision makers so that efforts to mitigate and adapt to climate change are gender-sensitive. Drawing on existing in-house materials (research data, analyses and extracts from international frameworks) that have been adapted or expanded, the manual also includes newly compiled case studies to illustrate the concepts in each module. It presents key conceptual and methodological advances in gender relations in the context of climate change.

The topics covered in this manual are as follows. Module 1 covers gender and gender mainstreaming. Module 2 focuses on international legal instruments as a framework for mainstreaming gender in climate change, including human rights, CEDAW, Gender and the UN Declaration on the Rights of Indigenous Peoples, gender equality, etc. Module 3 presents

an overview of gender issues and climate change, including vulnerability causes, additional risks in securing wellbeing, gender equality/climate change and the Millennium Development Goals, and provides some case studies (e.g. highlighting local coping strategies for drought). Module 4 explores gender mainstreaming in adaptation efforts, including: women's risks and roles in disasters; the role of women in climate change adaptation; and the potential of both women and men as agents of change; risk management and women's empowerment; and climate change adaptation and equitable access to a range of resources; gender-sensitive national planning (adaptation and DRR planning); case studies such as girls as leaders in community resilience in South Africa, gender roles in disasters in Pacific Island countries, and gender-sensitive strategies for climate adaptation drawing on Indian farmers' experiences.

Module 5 explores the links between gender and mitigation, and identifies gender-sensitive strategies for mitigation actions such as carbon capture, fixing and sequestration, reducing emissions through clean energy sources and technologies, gender implications of emissions reductions, and gender matters in relation to consumption. Further case studies are provided including, biofuel production in rural India, trees for climate change mitigation, and a Nepal National Biogas Project providing community benefits whilst reducing emissions. Module 6 focuses on gender-sensitive strategies on technology development and transfer to support actions on mitigation and adaptation. It analyses what we mean by technology, its role in climate change and the gender dimensions of technological developments (including needs assessments, information, enabling environments, mechanisms and capacity building for technology transfer, and both mitigation and adaptation technologies). Finally, module 7 covers gender mainstreaming in climate change financing mechanisms (including: the diverse instruments, mechanisms, and modalities; market-based schemes and private-sector financing; social, development and gender issues).

30. Aguilar, Lorena, Araujo, A and Quesada-Aguilar, A (2007). *Gender and Climate Change – Women as agents of change*. Climate Change Briefing. Fact Sheet IUCN. Gland: IUCN. Available at http://cmsdata.iucn.org/downloads/climate_change_gender.pdf

Fact sheet presented at the UNFCCC COP 13, held in Bali in December 2007. It establishes that the impacts of climate change affects all countries, and are unevenly distributed among the different regions, generations, age classes, income groups, occupations and gender. It acknowledges that although women constitute 70 percent of the poor, they are regarded as powerful agents of change as they play a key role in energy consumption, deforestation, burning of vegetation, population growth and economic growth. This IUCN factsheet proposes that all aspects related to climate change such as mitigation, adaptation, research, policy development and decision making must include a gender perspective.

31. Aguilar, Lorena (2004). CLIMATE CHANGE AND DISASTER MITIGATION: Gender Makes the Difference. Gland: The World Conservation Union (IUCN). Available at http://www.genderandenvironment.org/admin/admin_biblioteca/documentos/Climate.pdf

This brief is part of the series of fact sheets "Gender Makes the Difference" of the Office of IUCN Senior Adviser on Gender. It analyses the gender approach on the theme of climate change and disaster mitigation. Gender is absent from the climate change discussions and initiatives which have largely focused on mitigation (e.g. reduction of greenhouse gases) rather than on the adaptation strategies which poor women and men need for their security. This two-page fact sheet provides bullet-point evidence of how women bear the brunt of climate change and shows how drawing on the skills of women can greatly enhance the likely success of an initiative. For example, the community of La Masica in Honduras reported no

deaths after Hurricane Mitch in 1998. Six months earlier a gender-sensitive community education initiative on early warning systems and hazard management had led to the women taking over the abandoned task of monitoring the early warning systems. There are four major opportunities for addressing gender inequalities in climate change mitigation and adaptation programmes and policies, which recognises that women are already more vulnerable to poverty than men and have gender-specific needs in climate change driven scenarios - addressing gender-specific resource use patterns that can degrade the environment - using women's particular skills in managing household livelihoods and natural resources - strengthening the quantity and quality of women's participation in decision-making at all levels.

32. Ahmed, Sara and Fajber, Elizabeth (2009). "Engendering adaptation to climate variability in Gujarat, India". *Gender & Development*. 17(1): 33 — 50. Available from <http://dx.doi.org/10.1080/13552070802696896>

Drawing on insights from coastal Gujarat, in India, this article illustrates how researchers and practitioners can collaborate to strengthen learning across communities and regions. The authors establish that, even though, most policy makers and practitioners recognise that making adaptation policies and programmes sensitive to gender issues is key to minimizing climate effects, it also requires a detailed understanding of the different gendered forms of vulnerability and a stronger commitment of resources, be it/ financial, technical or human to address specific gendered priorities and needs. Thus, this article looks at how ISET (the Institute of Social and Environmental Transition) members and partners have worked together to (i) identify differential vulnerabilities, and (ii) facilitate initiatives to strengthen the adaptive capacity of poor women and men, such as participatory livelihood diversification and decentralized disaster governance.

This article outlines conceptual understanding of adaptation and vulnerability and then examines lessons learnt from ongoing adaptation pilots via shared learning dialogues which helped in the identification of gendered strategies for strengthening adaptive capacity and building resilient communities, by ISET's NGO partner, Utthan, in drought- and flood-prone villages in coastal south Gujarat. These pilot studies were carried out in Sartanpar, Katpar and Tarasara. Due to limited space the authors found it difficult to discuss the VCI and methodological challenges in more detail.

The participatory research showed women in all three villages to be more vulnerable than men from the point of view of gender identity, but the experience of gender inequality is mediated by other aspects of social identity. Hence, the vulnerability of individual women varies, according to their socio-economic group and access to entitlements. It shows how the caste system which intersects with gender in all three villages determines who is vulnerable, where they live, and their access to resources, including communication and information systems. In Sartanpar, for example, poor tribal groups reside in low-lying, flood-prone areas on the outskirts of the village, making it difficult for them to access relief, or get information on impending disasters. The village temple provides the only safe sanctuary for people during floods and cyclones, but space is limited, and it is possible, though difficult to prove, that lower-caste groups are denied access because of social practices, ritual pollution that discriminate against them. The article summarized its discussions by emphasizing that state actors and the civil society need to ensure gender issues are integral to their approaches and explicitly engage women and men of different social groups in priority-setting and development of interventions most relevant to their situation.

33. Ahmed, Sara and Fajber, Elizabeth (2009). "Engendering adaptation to climate variability in Gujarat, India". *Gender & Development*. 17(1): 33 — 50. Available from http://pdfserve.informaworld.com/939580_908839353.pdf

Ahmed and Fajber's article draws on insights from coastal Gujarat, in India by illustrating how researchers and practitioners can collaborate to strengthen learning across communities and regions. They added that most policy makers and practitioners have now started to recognise the different ways in which climate change impacts on poor, vulnerable, and socially excluded women and men. Thus, they proposed that making adaptation policies and programmes sensitive to gender issues does not simply mean 'adding on' a concern for women, rather, it required considerable understanding of gendered forms of vulnerability and a stronger commitment of resources; financial, technical and human to address specific gendered priorities. In their discussion, they attested to the fact that simple and practical tools for assessing vulnerability as well as empirical research and documentation, can further and support advocacy on climate-resilient development policies.

34. Alber, Gotelind (2009) 'Gender and Climate Change Policy'. Chapter 9 in ed.s Guzman, Jose Miguel, George Martine, Gordon McGranahan, Daniel Schensul, Cecilia Tacoli, 'Population Dynamics and Climate Change' UNFPA and IIED.

This chapter describes how the various aspects of discrimination against women are linked to climate change, in relation to both adaptation and mitigation. Based on a rapid assessment of the flaws of international climate policy in terms of gender, guidelines are provided on how to address the gender dimension. One of the main factors of gender inequality is the gender division of labour and the impacts of climate change are likely to increase the unpaid work burden of women (such as collecting fuel and water). Women's higher vulnerability also stems from the difference in incomes and economic resources for women and men. Women's wealth tends to be lower than men's, and there is an expansion in female headed households, a trend in both industrialized and developing countries, which may add to the feminization of poverty. Pay gaps exist all over the world in varying degrees and gender segregation in occupations also contributes to lower incomes for women. There is also a huge gender gap in assets, including financial assets, land and real property, driven by the insecurity or denial of land and inheritance rights whether based on formal legal restrictions or customary rights or the lack of enforcement of legal provisions for equality. Women's access to markets and credit is also limited. Due to their paucity of resources women have fewer options for coping with or avoiding the impacts of climate change. The informal rights of women could disappear in times of scarcer land resources as there is likely to be increased competition over the control of land. Differences in power and the lack of representation and participation of women in public and private decision-making bodies represent another factor. Women have been under-represented in the UN climate change negotiations. There are some indications that more ambitious policies in relation to mitigation would receive increased attention and at the local level it is incontestable that the increased involvement of women would help to better take their specific vulnerabilities and that of their entire families into consideration. Cultural patterns and social roles discriminate against women but vary from country to country. In addition to gender-related causes, sex-related factors stemming from biological differences add to greater vulnerability, including reproductive health issues, the need for sanitation during menstruation and after giving birth, constrained mobility during pregnancy, and higher nutritional needs during lactation are all examples. The cumulative impact of these factors will result in a larger number of women being severely affected by the impacts of climate change and fewer options for women to cope with climate variability. Secondary effects may be seen in specific patterns of migration.

An analysis of National Adaptation Plans for Action (NAPAs) that the Least Developed Countries are required to set up to identify priorities and receive funding do not explicitly address gender in the identification of projects. Integrated climate change policy is needed, that addresses both adaptation and mitigation, but at the same time gender has to be mainstreamed as well – thus there is a need for ‘double mainstreaming’ to integrate climate into all relevant sector policies and day-to-day administrative procedures, whilst integrating gender at all stages. Because climate change itself is not yet mainstreamed adequately in national policy-making, it is difficult to anticipate whether they will be more open to the inclusion of gender issues, or if an effort at double mainstreaming would end up in an attempt to square the circle – but first steps are urgently required drawing on national and local experiences and building capacity on gender and climate mainstreaming. There is a wealth of proven and tested methods and tools to address gender issues which can be adapted to climate policy, including Gender Impact Assessments and Gender Budgeting. An example is given of Gender Impact Analysis of Transport Projects, a method which is far-reaching, addressing issues relating to discrimination and harassment, but also andro-centrism and symbolic order. Building women’s access to information, education and capacity building is critical in terms of gender and efforts relating to Article 6 of the UNFCCC requiring public awareness and capacity building, should integrate gender and diversity awareness. Gender-sensitive communication is critical – there are no neutral means of communication – requiring attention to the contents, topics and media used.

Gender mainstreaming is essential for the application of adequate instruments for analysis and participation as part of mitigation policies and measures. Regulation would be preferred to market-based instruments, in order to avoid disadvantages for women due to their lower incomes and limited access to markets. The chapter concludes with a discussion on the issue of population issues, arguing that this cannot be seen as a ‘women’s issue’. Whilst women do have needs in relation to reproductive health and contraceptives these should not be mingled with population issues. Emissions will rise with the population growth in the developing world, but at the moment population growth in developing countries is largely occurring in countries with very low per capita emissions. There is also a large unmet need for family planning and some advocates hope that the issue will receive more attention from donors if connected to climate change. However, industrialized nations have to demonstrate deep emissions cuts and it is not correct ethically, tactically or performance-wise for the issues to be subsumed in climate policy negotiations.

35. Anderson, Cheryl (2009) ‘Gendered dimensions of disaster risk management, natural resource management and climate change adaptation in the Pacific’. The SPC Women in Fisheries Information Bulletin Number 20. Accessible at: http://www.spc.int/Coastfish/News/WIF/WIF20/WIF20_03_Anderson.pdf

This paper sets out the intersections between disaster risk reduction, climate change adaptation and natural resources management and identifies the disaster trends and climate change effects in small island states. The background of gender in the Pacific is also discussed. Variation across the Pacific Islands is noted, with gender being embedded in complex island social systems which have enabled centuries of survival. Historically and culturally, there are a number of societies with matrilineal systems of property rights and inheritance, but others follow patrilineal systems, and in others there has been a transition from the former to the latter. Land is associated with power in societies with so little land mass available to them. Traditionally there are gender divisions of labour, with men being more likely to build and thatch houses, whereas women weave the thatch. However, family heritage also shapes livelihood activities by different household members or between different households - traditional healing methods or canoe building skills are passed on by lineage in some communities. In many Polynesian islands, (e.g. Samoa and Hawai’i) women once retained ownership of land but many of these holdings were dissolved during colonization

processes that used legal mechanisms and constitutional arrangements to systematically eliminate women's rights and secure property in men's names. In Hawai'i missionaries applied legal pressure to prevent a woman from divorcing her husband, and if she did, no matter the reason, the man retained possession of the property which encouraged further abuse of native Hawaiian women as foreign men became wealthy property owners.

Despite the loss of land and power that accompanied colonization, many women retained a "matriarch" status at the household and community levels. At the household level or in rural communities, it is easier to discern gender roles. In some communities, men take care of building and maintenance, while women clean and take care of children, but these stereotypes do not exist uniformly. In some islands, women may not be involved in community fishing activities and may be more involved in land-based activities, such as gardening. As livelihoods shift from subsistence to cash economies and from rural to urbanised settings, these roles have transitioned. It has become increasingly important to understand the details of household and community operations because these are the areas that will be stressed — from disasters, climate changes or environmental degradation. The more inequitable a society the more likely there are to be differentiated impacts of disasters. Although there is significant evidence that women are more vulnerable to natural hazards than men, they also have important specialized knowledge and social practices which can be used to build resilience if they receive more information. In the remote islands of Yap, women's knowledge of the island hydrology enabled them to find potable water and build new shallow wells during an ENSO-related drought. However, it is also clear that local and indigenous community responses may not be sufficient to cope with rapid environmental changes – so it is important to understand the capacities of women, men, girls and boys in addressing their risks in each specific location.

Key indicators for risk assessments with integrated gender analysis should include:

- population statistics (demographic records including migration)
- poverty – variance amongst islands. Most islands do not have sufficient production for calculating GDP. Islands with largely subsistence based economies may not need cash and may be considered 'poor' in income terms, but may have healthier diets and more land titles in their possession – both of which are strong factors in resilience to natural hazards. More evidence is needed from urban areas.
- Human development: Climate change has been included as a new area for review in human development in UNDP Human Development Index. Islands are classed differently under 'high' or 'medium' development, but there are none that are 'low development'.
- Gender Development Index (GDI): Includes life expectancy at birth, adult literacy and education enrolment as indicators. GDI is part of the HDI captures inequality in achievement between women and men.
- Land tenure: Land rights and land tenure are important determinants in rights of women and men, access to resources and livelihood sustainability.
- Labour statistics: Formal employment records and gendered divisions of labour show sectors that may have more participation by men or women. Sorting wage rates and income reveals the levels of work affected.

The study concludes by assessing global efforts and initiatives to integrate climate change and disaster risk reduction in international and regional initiatives, including the Hyogo Framework for Action, Words into Action, the Global Platform on Disaster Risk Reduction, National disaster risk reduction plans and National adaptation programmes for action.

36. Anderson, Cheryl; Fischer, Elizabeth; and Marra, John (2009) 'Integrating Climate Adaptation in Hawai'i Disaster Risk Management'. Presentation at the Sheraton Hotel, Waikiki, HCPO and HIGICC conference. Sept. 23-25, 2009. Accessed at: <http://resilientcommunitieshawaii.org/presentations/04%20Molokai%20Integrating%20Climate%20Adaptation/Anderson/Integrating%20Climate%20Adaptation%20in%20Hawaii%20Disaster%20Risk%20Management.pdf>

In this presentation Anderson focuses her slides on the socially-differentiated impacts of climate change in Hawaii. She lists gendered impacts on tourism, agriculture, fisheries and livelihoods. Women and men are being affected differently, with the more immediate threat being to women's traditional work and household sustainability. Hawaiian female single-headed households with children represent those most vulnerable because they experience the highest poverty and food insecurity creating in turn the greatest health risks. Indigenous People are also affected by a lack of access to policy-making, resources (more notably in islands with mixed populations). Age is a factor with disproportionate generational impacts on nutrition and health for the young and elderly. Immigrant and minority populations and environmentally displaced persons are affected by language and communication barriers, lesser access to resources and information, competition over increasingly scarce resources. Anderson concludes that conflict, violence and poverty will be exacerbated if these issues are not addressed.

37. Anderson, Cheryl (2002). *Gender Matters: implications for climate variability and climate change and for disaster management in the Pacific islands*. Deakin WEST ACT: United Nations Development Fund for Women (UNIFEM Australia). Available from www.unifem.org.au/LiteratureRetrieve.aspx?ID=40060

Climate variability and climate change have implications for gender in disaster management in the Pacific islands. The Pacific Island nations are extremely vulnerable to climatic conditions and events such as droughts, floods, sea level rise and coastal erosion which exacerbate their standard of living. Hence women are often affected because they have unequal access to information and resources, and are under-represented in decision making which makes them even more vulnerable to natural disasters and weather events.

This report, however, argues that in spite of all these inequalities, the women in most Pacific nations are largely responsible for climatically sensitive tasks for their households such as securing food, water and energy. As such, it points out that this puts greater pressure on women to shoulder the adverse consequences on the household. It also notes that despite women's vulnerabilities, their knowledge and social practices could be used to build community resilience if they were included in adaptation and mitigation efforts. To this end, UNIFEM Pacific and UNIFEM Australia, and the Australian government have implemented and invested in a number of strategies and programs, for example, the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), which address the impacts of climate change on women in the Pacific.

38. Araujo, Ariana, Quesada – Aguilar, Andrea, Aguilar, Lorena and Pearl, Rebecca (2007) *Gender Equality and Adaptation*. New York: WEDO. Available from <http://www.wedo.org/wp-content/uploads/genderequaladaptation.pdf>

Presented at the UNFCCC COP 13, held in Bali in December 2007, this fact sheet states that vulnerabilities are socially created and are diverse for different stakeholders. Social, economic and geographical characteristics will determine the vulnerability of people to climate change.

Women are generally more vulnerable to the negative impacts of natural disasters because of their socially constructed gender roles and behaviours in societies. Physical and biological differences can disadvantage women in their initial responses to natural hazards; social norms and given roles (related to the expected behaviour of women) affect the way women and men react to a disaster; and the distribution of aid and resources is often inequitable.

Although the factsheet mentions that women are disproportionately affected by disasters and swift environmental changes, it also states that women have also contributed to curbing the impacts of climate change. Women's knowledge and responsibilities related to natural resource management have proven to be critical to community survival. For example, after Hurricane Mitch in 1998, La Masica, Honduras there were surprisingly no reported deaths. A disaster agency had provided gender-sensitive community education on early warning systems and hazard management six months earlier. Women took over from men the abandoned task of continuously monitoring the early warning system. As a result, the municipality was able to evacuate the area promptly when Hurricane Mitch struck (Aguilar, 2004).

39. Brody, Alyson, Demetriades, Justina and Esplen, Emily (2008). *Gender and Climate Change: Mapping the Linkages. A Scoping Study on Knowledge and Gaps*. Brighton: BRIDGE, development – gender, Institute of Development Studies (IDS). Available from: http://siteresources.worldbank.org/EXTSOCIALDEVELOPMENT/Resources/DFID_Gender_Climate_Change.pdf

This paper, commissioned by the UK Department for International Development's (DFID) Equity and Rights Team, seeks to identify and synthesize useful insights from previous efforts to link gender and climate change in order to reinforce future research. It attempts to outline key linkages between climate change and gender inequality – focusing particularly on adaptation and mitigation policies and practices. It seeks to identify gaps in the existing body of work on gender and the environment, which has focused primarily on women's agricultural livelihoods, access to natural resources or disaster risk reduction.

It examines some of the differential impacts of climate change on men and women, and highlights the implications for gender inequality. It utilizes a gendered approach to climate change adaptation, drawing particularly on a recent study from ActionAid and the Institute of Development Studies (IDS) which centres on poor, rural women's own experiences of, and responses to, climate change.

The paper argues that even though a gendered approach is essential for effective mitigation and adaptation responses to climate change, it should not simply be tailored to the specific needs of the poor and vulnerable women - men and boys are also equally vulnerable to the impacts of climate change but often in different ways and these needs to be identified and communicated. It recognises that women and men, girls and boys can all contribute to effective adaptation strategies of climate change. Men and women as well as their children and local communities could be involved in developing and implementing mitigation strategies, both to ensure their full participation in these processes and to ensure that such strategies are effective in addressing the 'bigger picture' of climate change and its human impacts. It ends with recommendations regarding priority areas for future research and highlights some practical steps required to achieve more equitable, appropriate climate change policies and programmes.

40. Canadian International Development Agency (CIDA) (2002). *Gender Equality and Climate Change - Why consider gender equality when taking action on climate change?* Gatineau:

Canadian International Development Agency. Available at [http://www.acdi-cida.gc.ca/INET/IMAGES.NSF/vLUIImages/Climate%20change3/\\$file/Gender-2.pdf](http://www.acdi-cida.gc.ca/INET/IMAGES.NSF/vLUIImages/Climate%20change3/$file/Gender-2.pdf)

Why is it important to consider gender equality when taking action on climate change? This paper focuses on essential matters such as food security, hydraulic resources and the effects of climate change on human health. It outlines gender-specific vulnerabilities and responses to climate change - for example male out-migration may occur due to resource shortages, thereby generating increased work for women. Similarly, women's informal rights to resources could decrease or disappear as access to land and natural resources dwindle. Interventions should therefore create greater awareness and understanding of the complex links between gender equality and the environment, so as to help build the capacity of the poor - especially poor women - to adapt to the impacts of climate change. Recommendations for policy and programming include the need to promote cleaner burning and more efficient fuel for household use to reduce air pollution and cut costs. Also useful is the provision of tools, including vulnerability assessments that build on local and indigenous knowledge held by women and men of measures to adapt to the impacts of climate change.

41. Cannon, Terry (2002). "Gender and climate hazards in Bangladesh". *Gender & Development*. 10(2) 45 — 50. Available from http://pdfserve.informaworld.com/748777_666_741921480.pdf

This article discusses Bangladesh's recent experience of high-profile disasters, including devastating cyclones and annual floods. It explains that the Bangladesh's poverty is a cause of vulnerability and a consequence of hazard impacts. It also asserts that the evidence of the impacts of disasters which are known to be worse for women is either inconclusive or variable according to how the analysis is carried out. However, Cannon, the author, ascertains that since being female is strongly linked to being poor, unless poverty is reduced, the increase in disasters and extreme climate events linked with climate change is likely to affect women more than men. In addition, Cannon maintains that there are some specific gender attributes which increase women's vulnerability in some respects. To this end, this article suggests that gendered vulnerabilities may, however, be reduced by social changes.

42. Cappello, Sonja and Harcourt, Wendy (2009). "Gender and Climate Justice". *International Journal of Green Economics*. 3(3/4):343 - 350.
[Abstract]

The authors look at how to bridge the gap between science, technology and social justice in their examination of the gender dimension of climate change. The authors argue for the need to understand in both analysis and policy the profound link between gender and climate change. They ask in the context of the current search for ecologically justice how to take a nuanced gender approach to in sustainable development policy. The authors conclude that effective and enduring solutions to climate change will have to come from those who have protected the environment – indigenous peoples, women, peasant and family farmers, fisherfolk, forest dependent communities, youth and marginalised communities in the global South and North.

43. Climate Change Cell (2009). *Climate Change, Gender and Vulnerable Groups in Bangladesh*. Dhaka: Climate Change Cell, Department of Environment, Ministry of Environment and Forests (MoEF), Component 4b, Comprehensive Disaster Management Programme (CDMP), Ministry of Food and Disaster Management, Bangladesh (MoFDM). Available from http://www.climatechangeccell-bd.org/publications/ResearchDocs/CCGenderVG_Jan'09.pdf

This study reveals the gender specific vulnerability to climate change in Bangladesh. It explores women's differential vulnerability in relation to men under the same exposure to hydro-geophysical hazards likely to be perturbed under climate change. Women's vulnerability is context specific. It states clearly that the overall vulnerability of marginal people (such as poor, physically/mentally challenged, ethnic minority etc.) in any given hazardous geophysical context is high. However, among any such group of marginal people, vulnerability of women is of the highest order. This study indicates that women try to 'cope' with the altered hydro-geophysical condition the most. Their utmost attempt to survive through the bad times takes a lot of personal sacrifice and compassion as well as accepting psycho-physical burden. However, the anticipated intensity of changes in geophysical contexts under climate change appears to be so overwhelming in the backdrop of women's current vulnerability context that mere 'coping' will not be sufficient even to ensure survival coping. It also identifies that women's coping efforts are severely challenged by gender relationships and handicapped by power structure both within the household as well as within the community.

Building women's resilience demands women's empowerment in all aspects of life: physical and mental, social, economical, political, and cultural. Needs-based targeted programmes and practices which cater for the needs of the targeted audience are needed - women and the disadvantaged, should be employed to replace the current barriers to the vulnerability context. Awareness of anticipated risks should be raised and early warning systems established which could strengthen women's coping strategies.

44. Commission on the Status of Women (2008). *"Gender perspectives on climate change", Emerging issues, trends and new approaches to issues affecting the situation of women or equality between women and men*. 52nd session of the Commission on the Status of Women, New York. Available at <http://www.un.org/womenwatch/daw/csw/csw52/issuespapers/Gender%20and%20climate%20change%20paper%20final.pdf>

The Commission considers "Gender perspectives on climate change" as the emerging issue at its 52nd session through an interactive expert panel. It addresses the threat of climate change is a current global priority. It emphasizes that there is broad consensus that climate change is best addressed in the context of sustainable development. That is, its impacts on the environment and on economic and social development have to be effectively dealt with to prevent it from exacerbating both natural disasters and potentially conflicts over natural resources.

This discussion highlights the significance of gender perspectives in all aspects of climate change. It recognises that gender inequalities in access to resources, including credit, extension services, information and technology, must be taken into account in developing mitigation activities. It also points out that adaptation efforts should systematically and effectively address gender-specific impacts of climate change in the areas of energy, water, food security, agriculture and fisheries, biodiversity and ecosystem services, health, industry, human settlements, disaster management, and conflict and security.

This discussion also reveals that women make up a large number of the poor in communities that are highly dependent on local natural resources for their livelihood and are disproportionately vulnerable to and affected by climate change due to their limited access to and control over resources, technology, services, land rights, credit and insurance systems, and decision-making power. It also reveals that women are not only victims of climate change, but also effective agents of change in relation to both mitigation and adaptation because of

the role they play in their households and communities, and as stewards of natural resources. This is however meant to position them well for livelihood strategies adapted to changing environmental realities even though it is not the case in many rural areas in developing countries. It however, indicates that women tend to be underrepresented in decision-making on sustainable development, including on climate change, and this impedes their ability to contribute their unique and valuable perspectives and expertise on climate change. Thus, the discussion proposes that governments should ensure that financing mechanisms and technological developments mainstream gender perspectives into their national policies, action plans and other measures on sustainable development and climate change, through carrying out systematic gender analysis, collecting and utilizing sex-disaggregated data, establishing gender-sensitive indicators and benchmarks and developing practical tools to support increased attention to gender perspectives.

45. Dankelman, Irene (2008). *Enhancing Women's Reproductive Rights in an era of Climate Change. Gender, Climate Change and Human Security: lessons for population policies*. Paper presented at the EuroNGOs conference in Lyon, 2 October 2008. *Radboud University, Women's Environment and Development Organization (WEDO) and Women in Europe for a Common Future (WECF)*. Available from http://www.eurongos.org/Files/HTML/EuroNGOs/AGM/Paper_Lyon_Oct_2008_Irene_Dankelman.pdf

This report explores the lessons for population policies in relation to women's reproductive rights. It includes general analyses and information, case studies from Senegal, Ghana, and Bangladesh as well as policy recommendations. In this context, this report examines the valuable lessons that can be learned from the gender-specific documentation of the implications of natural disasters.

A recent study by the London School of Economics, the University of Essex and the Max-Planck Institute of Economics, reviewed the outcomes of natural disasters in a sample of 141 countries in which natural disasters occurred during the period 1981-2002 (Neumayer and Plümper, 2007). One of the main findings was that natural disasters lower the life expectancy of women more than that of men, and as the disaster intensifies, so too does this effect. It explains that, in general, women have proved effective in mobilizing the community to respond to both disaster preparedness and mitigation even though women have less access to basic assets and natural resources, such as shelter, food, fertile land, that are essential in disaster preparedness, mitigation and rehabilitation. It also adds that the multiple roles women play in the family such as food producers and food providers, as guardians of family health, care givers and economic actors, make them particularly vulnerable to environmental change, which is exacerbated by the impacts of climate change. It also reveals that a report written by UNFCCC in 2005 establishes that women also face indirect problems when natural disasters strike; they are often less informed, less mobile, more likely to be confined to the house and have less decision-making power. On the other hand, this report states that the hazards arising from climate change and natural disasters impact more seriously on men. It identifies that in the floods that swamped the US in June 2008 for example, at least 12 people were killed, of which 9 were men.

In short, this report highlights that in order to understand the impacts of climate change on communities and people; there is the need to differentiate between women and men. It adds that apart from gender differences, other social differentiators, including levels of poverty, should be taken into account policy and decision making. It argues that since women and men play different roles in mitigating climate change, in building resilience and in coping with and adapting to climatic changes, their respective roles and contributions in these areas need

to be enhanced and supported. Thus, it is clear that environmental change forms a major challenge for population policies and in order to secure women's (reproductive) rights in this era of climatic changes, a gender approach and alignment with women's reproductive needs and rights is essential.

46. Dankelman, Irene (2008). *Mainstreaming gender in climate change policies: urgencies, challenges and perspectives*. Paper presented at the Third Global Congress of Women in Politics and Governance on the theme of gender and climate change, organized by CAPWIP, The Philippines. Available from [http://www.capwip.org/CAPWIP%20Manila%20PP%20Irene%20D.%20\(1.pdf](http://www.capwip.org/CAPWIP%20Manila%20PP%20Irene%20D.%20(1.pdf)

This is a power point presentation. Climate change is not gender neutral - climate change is magnifying inequalities, and particularly, gender inequalities. The UNFCCC (Rio in 1992) and the Kyoto Protocol (1997) conventions were not gender sensitive. On other hand, it recognises that the COP negotiations in Montreal (2005) and Bali (2007) and other pending COP negotiations such as COP14 and 15, are and will be gender sensitive. Although women face specific vulnerabilities, they have specific capacities which can be utilised in addressing the causes and impacts of climate change. Gender relations play a significant role in influencing which resources women or men can access, in turn shaping sensitivity to climate change, and capacity to cope with the outcomes. Even though gender mainstreaming in climate change policies, mechanisms and actions can be beneficial to both men and women, and can enhance gender equality, at the same time gender participation is simply not enough. It is equally essential for both men and women to bring their knowledge, experiences and interests to the forefront of the climate change agenda. Most of the debates in this field mainly offer inadequate technical and economic solutions, rather than political and socio-economic solutions requiring changes in development policy and practice. Based on existing insights and literature, the analysis contained in this paper, concludes that it is essential for women (and men) to be involved in official processes, such as the multi-stakeholder dialogues in the World Summit on Sustainable Development, in addressing climate change policies, mechanisms and actions.

The power point ends with suggestions of steps towards an action plan:

- develop, present, adopt a Decision at COP 14/15 to enhance gender mainstreaming in climate change policies, mechanisms and actions;
- information and research (support participatory research to explore gender-climate change relationships; conduct gender impact analysis; make vulnerability assessments gender specific);
- institutional capacity (enhance institutional capacity to mainstream gender in climate change; develop gender strategy and action plan to mainstream gender in climate change institutions);
- enhance women's involvement (ensure: women participate in decision-making with respect to climate change; promote participatory approaches to climate change adaptation and mitigation; involve local women in decision-making at all levels; involve local women in climate change risk, assessment and monitoring, and all stages of afforestation and reforestation and conservation measures;
- women's roles and positions (enhance the roles and status of women, as participants and agents of change; strengthen women's livelihood opportunities, including ecological resilience; take women's vulnerabilities and capabilities into account in disaster preparedness and response plans;
- energy planning (integrate gender perspective in energy planning, decision-making and management; apply gender audits of energy policies and plans); CDM

should fund projects that make clean and renewable energy available for (poor) women;

- adaptation funds and other mechanisms (adaptation plans should be gender-sensitive and promote women's rights; market-based mechanisms (CDM etc) should be accessible to women/men and ensure equitable benefits;
- national reports, programmes and plans (NAPAs and National communications should be made gender-sensitive; develop gender-sensitive criteria for use by government organisations and institutions in reports, plans and mechanisms;
- legislative measures (construct legal regime that ensures women's legal rights in climate change policies and programs and women's security in case of climate change; ensure that government organisation policies and programs on human rights, women's rights (including CEDAW) and climate change are coherent and reinforce each other, incorporate CC in discussions on women's rights).

47. Dankelman, Irene, Alam, Khurshid, Ahmed, Wahida, Bashar, Gueye, Yacine, Diagne, Fatema, Naureen and Mensah-Kutin, Rose (2008). *Gender, Climate Change and Human Security. Lessons from Bangladesh, Ghana and Senegal*. The Women's Environment and Development Organization – WEDO (New York) with ABANTU for Development in Ghana, ActionAid Bangladesh and ENDA in Senegal. Available at http://www.gdnonline.org/resources/WEDO_Gender_CC_Human_Security.pdf

This report consists of a review of the literature on gender, climate change and human security and it gives examples of various case studies in Senegal, Ghana and Bangladesh. It presents a gendered analysis of how climate change impacts on human security. It also assesses whether adequate scope exists for women to participate in improved human security initiatives in the light of a changing climate. Based on this analysis, recommendations are given for enhancing the integration of a gender perspective in climate change and human security policies and programmes.

Whilst the study focuses on gender equality, it emphasizes the effects of climate change on women, the most disadvantaged and neglected social group in society. Women's contributions to climate change adaptation are examined, including relevant policies including National Adaptation Programmes of Action (NAPAs). Global policy frameworks and goals are reviewed, including the Hyogo Framework, the United Nations Framework Convention on Climate Change (UNFCCC) and the Millennium Development Goals (MDGs).

This report is targeted at government representatives of the Human Security Network, decision-makers and planners in the areas of human security, climate change and gender issues, as well as relevant civil society actors. Partner-organizations compiled case studies from their respective countries (Senegal, Ghana and Bangladesh). These case studies generally give an overview of the climate change situation in each country and draws out the implications for women's livelihood, security and gender equality. The situation of women in these three countries is also discussed in terms of how they manage to cope with the overall challenges of poverty and inequality, with specific reference to the consequences of climate change. Thus, each chapter in the report describes how climate change and human security are related by examining the gender aspects of natural disasters, the impacts of climate change on women, and women's strategies to strengthen human security when climatic changes occur. Based on these findings, an analytical framework on gender, climate change and human security is presented.

48. Dankelman, Irene (2002). "Climate change: learning from gender analysis and women's experiences of organising for sustainable development". *Gender & Development*. 10(2) 21 – 29. Available from http://pdfserve.informaworld.com/872626_666_741921472.pdf

This paper explores the actual and potential links between gender and climate change and the gender-specific implications of climate change. It also provides examples of women organizing for change on matters concerning sustainable development, specifically in constructing the World Summit on Sustainable Development. It shows how women's participation may translate into more sensitive results on the gender theme.

Climate change is not gender neutral. Climate change impacts do not only require major technological solutions, but political and socio-economic one. This has implications for development policy and practice. The article identifies that gender roles and relations interact with the causes and impacts of climate change in five key areas: - gender-specific resource-use and management patterns that can degrade the environment such as men's higher car and fuel purchasing from male-dominated industries - gender-specific effects of climate change such as the extra time women need to spend collecting water during droughts - gendered aspects of climate change mitigation and adaptation such as women's valuable indigenous knowledge and practice of environment management - gender and decision-making on climate change such as the limited role women are playing as producers in the energy sector and in energy policymaking - human capacity inequalities such as women's lower access to education, training and technology. The article documents that questions of globalisation, equity and the distribution of welfare and power underlie many of its manifestations and its impacts are not only severe, but also unevenly distributed. It highlights that there are some clear connections, both positive and negative, between gender and the environment. While there is a tendency to talk about gender aspects of climate change as if women are only victims, this article redresses this balance by highlighting the range of successful women-initiated actions. It concludes that it is essential for women to also be involved in official processes such as the multi-stakeholder dialogues in the World Summit on Sustainable Development (WSSD), and that cooperation between women in official delegations can be very helpful.

49. Denton, Fatima (2005). *Climate Change and Development Consultation on key researchable issues: Cross - Sectoral Issues, Section 3.2: Gender*. London: International Institute for Environment and Development. Available at <http://www.iied.org/pubs/pdfs/G00054.pdf>

[From the summary]

The discussion on gender and climate change still takes place in the context of advocacy and, due to information deficit, particularly from an empirical perspective, there is little certainty on how and the extent to which poor women would be affected by climate change or indeed climate variability. Also, gender relations have invariably suffered from low development priority and this relative neglect is reflected in the climate policy where funding reflects the old order of development where gender relations are permanently relegated to secondary level in the face of seemingly high priority issues. It is likely that gender relations and the learning curve necessary to move the debate from rhetoric to action will occupy a longer timeframe as gender relations particularly in association with climate change is lifted from relative obscurity and given some visibility.

Authoritative research based on scientific empiricism on how gender issues can affect climate policy development is needed to address analytical gaps that exist in the literature. Closer attention should therefore be paid to adaptation as a tool in reducing structural constraints and militating against the harmful effects of climate change. The role of policy to address gender imbalances and environmental management is equally important to set the tone not

just at the international level but at local and national level where implementation is often lacking. Gender related concerns have the potential to rock the very foundations of sustainable development and threaten the legitimacy of the climate regime. If policy makers and development analysts continue to ignore gender issues they do so at their peril.

50. Denton, Fatima (2004). "Gender and Climate Change: Giving the "Latecomer" a Head Start". *Institute of Development Studies (IDS) Bulletin*, Institute of Development Studies at the University of Sussex, 35(3):42-49. Available from <http://www.ids.ac.uk/ids/bookshop/index.html>

Gender issues have made a slow entry into the climate change debate. This is partly due to the fact that climate change has generally been perceived as a global phenomenon, with little attention being paid to differentiating between the potential impacts that women and men might face. For example, women tend to have less access to valuable resources such as land and credit, which reduces their capacity to adapt to the negative impacts of climate change. This paper focuses on three climate sensitive areas - agriculture, water and energy - and considers how adaptation strategies could be designed to help women and men in these sectors to mitigate the effects of climate change. Suggestions include the need for forest management projects that offer new skills to help improve crop species, soil quality and water conservation. Local community projects could also be a source of funds for women wishing to embark on specific activities such as sustainable harvesting of forestry products.

51. Denton, Fatima (2002). "Climate change vulnerability, impacts and adaptation: why does gender matter?" *Gender & Development*. 10(2): 10 — 20. Available from http://pdfserve.informaworld.com/328387_666_741921483.pdf

Gender-related inequalities are still persistent in the developing world. Although women account for almost 80 per cent of the agricultural sector in Africa, they remain vulnerable and poor and that seventy percent of the 1.3 billion people in the developing world living below the threshold of poverty are women. She also added that, it is essential that the consequences of climate change should not lead already marginalised sections of communities into further deprivation.

This article argues that key development issues have been overlooked and at worst obviously omitted from policy debates on climate change. It, however, identifies that the threats posed by global warming have failed to impress on policy-makers the importance of placing women at the heart of their vision of sustainable development. As a result of this, Denton, proposes that if climate change policy is about ensuring a sustainable future by combining development and environment issues, it must take into account the interests of all stakeholders. She also suggests that the Global Environment Facility and the Clean Development Mechanism of the Kyoto Protocol can play an important role in ensuring sustainable development, provided they are implemented in a way that does not disadvantage women and the poor.

52. Denton, Fatima (2000). "Gendered Impacts of Climate Change – A human security dimension". *Energia News*. 3(3):13 -14. Available from http://www.energia.org/resources/newsletter/pdf/EN102000_denton.pdf

[From Summary]

The point of this paper is not to provoke a polemical debate on the power relationships between men and women but simply to discuss vulnerability and resilience to the potential impacts of climate change, and place women among these vulnerable groups. Women's roles are complementary to men's and their ability to uphold the social cohesion of the family is far too important to be restricted to a gender power play scenario. Climate change analysis has so far been science-driven, presented in terms of greenhouse gases and emissions. While the scientific analyses remain crucial, social imperatives must be taken into account. Although there are no obvious direct linkages between climate change and women, its potential impacts in terms of socio-economic vulnerability and adaptation place women in a key position. The fact that there are few trained women environmentalists may accentuate the gender deficit in environmental, and particularly climate, policy.

This paper focuses on the human dimensions of climate change and looks at potential impacts of global warming on vulnerable groups, particularly on women. It places women at the centre of environmental stress and the ultimate climate change impacts. The topic of gender and climate change is new, and so many of the findings are theoretical rather than empirical. Climate variability is already causing unpredictable damage and making already vulnerable people, including women, more vulnerable. Current socio-economic and cultural constraints affect women in a disproportionate manner. Women often develop adaptive strategies, yet the nature and scale of environmental stress is such that it may overwhelm women's ability to contribute effectively to socioeconomic development. Women have a key role in development, and any potential environmental policy should take cognisance of women as key players particularly given their role as natural resource managers. Measures need to be taken today to ensure that the effects of climate change do not further impoverish women and further plunge them into a poverty and dependency abyss.

53. Duddy, Janice (2002). *Is Climate Change a Gender Issue?* New York: Association for Women's Rights in Development (AWID). Available from <http://www.awid.org/go.php?stid=862>

Many would say that global warming is the most serious environmental issue of the twenty first century. As a result of climate change, women have seen their workload increase in many activities which have traditionally been women's responsibilities. For instance, fishing has been made more difficult by the intrusion of salted water in fresh water systems. Fetching clean water and fuel has also become more difficult. In times of climate disasters, like hurricanes, floods and landslides, a lot of pressure is put on women whose responsibility is still that of keeping families together and feeding them. Up until now, a gender perspective has been mainly lacking from the international debate on climate change. But the different ways in which women and men treat the environment and are affected by its changes must be taken into account in order for effective and sustainable climate change programmes to be designed and implemented. The author presents the case of the Inuit people of Canada, and describes how women and men are differently affected by the devastation of global warming.

54. Enarson, Elaine; Fothergill, Alice; Peek, Lori (2006) 'Chapter 8: Gender and Disaster: Foundations and Directions' in 'The Handbook of Disaster Research'. Eds. Rodriguez, Havidan; Quarantelli, Enrico L.; Dynes, Russell R. New York: Springer 2006

Gendered disaster social science rests on the social fact of gender as a primary organizing principle of societies and the conviction that gender must be addressed if we are to claim knowledge about all people living in risky environments. This chapter discusses dominant

theoretical frameworks that have guided gender disaster research to date. A literature review on inter-related issues highlights published research on social consequences of natural disasters. Furthermore, international perspectives in the gender and disaster field are examined and knowledge gaps pointed out. Some new directions are proposed that should guide the future knowledge production in the field.

55. Enarson, Elaine (2000). *Gender and Natural Disasters*. IPCRR Working Paper no. 1. Geneva: International Labour Organization (ILO). Available from <http://www.ilo.org/public/english/employment/recon/crisis/download/criswp1.pdf>

This working paper presents an analysis of the gender dimensions of natural disasters including the gendered economic impacts in the form of: loss of assets and entitlements; increase in women's workload and care-giving functions, deterioration in working conditions, and women's rather slow recovery from economic losses. This report has four main topics: the social construction of vulnerability to "natural" disasters, particularly on the basis of gender relations; the specific impacts of disasters on women's paid and unpaid work; six core action issues arising from these patterns; and policy and research implications for using knowledge about gender, work and employment in natural disasters. Enarson identifies four general impacts that disasters have on women's work, and calls for more investigation of men's specific work experiences in disasters as;

- Women's economic insecurity increases, as their productive assets are destroyed, they often become sole earners, their household entitlements may decline, their small-businesses are hard-hit, they lose jobs and work time, and gender stereotypes limit their work opportunities.
- Women's workload increases dramatically, they often take on more waged or other forms of income-generating work; engage in a number of new forms of "disaster work," including emergency response and political organizing; and have expanded responsibilities as caregivers.
- Women's working conditions in the household and paid workplace deteriorates, for example through lack of child-care and increased work and family conflicts.
- Women recover more slowly than men from major economic losses, as they are less mobile than male workers, likely to return to paid work later, and often fail to receive equitable financial recovery assistance from the government and/or external donors.

There are six broad areas of concern which raise issues for disaster planners, employers, workers, and community groups. First, integrating gender analysis into capacity and vulnerability assessments at the local level is essential. Second, from mitigation to reconstruction, disaster projects must be gender-sensitive and equitable in their effects. Third, women need sustainable economic development assistance. Fourth, employers must increase emergency planning and be responsive to family concerns arising in the aftermath of these events. Governments, international and local bodies should also be sensitive to this. Fifth, women and women's community-based groups must be full and equal partners in all disaster planning and programming. Finally, crisis response and reconstruction must promote social justice, equity and sustainable development through women's empowerment. These issues arise in case studies of natural disasters throughout the developed and developing world. Illustrations are offered of positive steps forward toward more gender-fair practice.

From this report, three broad conclusions emerge: First, that both women and men have specific short-term needs and long-term interests in disasters; second, that women are key economic actors throughout the disaster cycle of preparedness, mitigation, relief, and reconstruction; and third, that women's economic vulnerability to future disasters is increased

by lack of attention to gender equity in disaster interventions. In effect, this report proposes that local, national and regional organisations should facilitate gender mainstreaming into disaster preparedness, mitigation, relief and the reconstruction of initiatives which must be inclusive and equitable. This means that the economic needs and resources of both women and men must be anticipated by planners and addressed proactively; and that reconstruction must foster conditions empowering women rather than undermining their capacities and increasing their vulnerability to subsequent disasters.

56. FAO (2010) 'Does gender make a difference in dealing with climate shifts? Research results from Andhra Pradesh, India'. Available at: <http://www.fao.org/climatechange/19120-1-0.pdf>

This three page briefing paper presents the findings of an eighteen month collaborative study on the gender aspects of ensuring food security in the context of climate variability and climate change. The research was undertaken by the FAO, in collaboration with Acharya N G Ranga Agricultural University and Samatha Gender Resource centre, as well as national and international researchers, with the support of the Swedish International Development cooperation agency (SIDA). The fieldwork was conducted with smallholder farmers reliant on rain-fed agriculture, in six rural farming communities in the drought-prone areas of Andhra Pradesh. The participatory research explored the gender dimensions of coping with both extreme drought events and long-term change and mapped adjustments to livelihoods and new food security coping strategies. Focus group discussions, a quantitative survey, institutional analysis and meteorological analysis were all conducted to further expand what it means to be vulnerable to climate change and to identify the gender-specific dimensions of risks and opportunities for coping.

Several tools were used in focus group discussions with women and men including: a water resources map comparing thirty years ago and now; seasonal calendar past and present of typical rainfall patterns and related farm activities and major livelihood opportunities, including migration, during present day time and averages during previous decades; web exercise on drought vulnerabilities and coping strategies to capture farmer perceptions on the causes and effects of a major past drought event, and the impacts and responses, especially with regard to food security; food security annual calendar to identify the availability and distribution of food in the household and in the community over the course of a year. A quantitative survey was also carried out with 200 male and female farmers (separately and together) to quantify the trends emerging from the focus group discussions. A meteorological analysis was also conducted for key indicators of the region to depict the climate variability and trends of the past 40 years to compare to farmer perceptions of change. Key persons from national and international institutions were interviewed.

The study finds that male and female farmers are facing multiple challenges (including deforestation, indebtedness, and chronic food insecurity) but farmer livelihoods are no longer based solely on agriculture. Both men and women farmers are observing weather changes over the past 30 years, but the impacts are viewed differently. Women report that the changes have affected health, and men are more likely to report impacts on farm production. There are gender differences in terms of who is impacted by extreme events (with higher numbers of women indicating that women are most affected by drought compared to the views of men). There are gender differences in preferred strategies for coping with long-term increases in climate variability, with men preferring migration and women choosing wage labour. Men and women have different strategies for coping with food scarcity. Whilst both women and men farmers lack access to information on weather alerts and cropping patterns, this lack of access is more acute for the former. Gender is also the greatest predictor of

institutional support – more than caste or size of land holding. Thus gender does make a difference to farmers' daily responses to climate shifts in South India and to policy-makers providing long-term institutional support and more understanding is need of gender differences in access to resources and in selecting coping strategies. Adaptation planning must be founded on men and women farmers' knowledge and experiences.

57. Food and Agriculture Organization (2007). *People - centred climate change adaptation: integrating gender issues - Awareness of climate change from a gendered perspective*. Rome: Food and Agriculture Organization of the United Nations. Available at <ftp://ftp.fao.org/docrep/fao/010/a1395e/a1395e00.pdf>

This brief explains the links between gender issues and climate change and recommends ways to integrate gender into climate change adaptation policies and activities. This brief notes that in the at-risk natural resource-dependent communities, men and women have distinct roles and responsibilities which give rise to differences in vulnerability and ability to cope with change. This brief, however, outlines some of the ways gender roles are linked to climate change adaptation. It proposes the following;

1. Due to a gender-based division of labour, men and women perform different jobs/tasks. Climate change will alter what they can do, exposing men and women to different risks and opportunities. Men may migrate for work while women may spend more time collecting fuel and water, for example.
2. Men and women have different access to resources, including physical resources like land, social resources like networks, and financial resources like income-generating work and credit. In times of change, they will have different options and 'safety nets' for coping with change.
3. Based on their distinct roles, women and men have different sets of knowledge and skills, such as knowing which seeds to plant during a dry spell or knowing how to dig a well. Recognizing their contributions will result in a wider range of options for preparing for and coping with change.
4. Participation in decision making and politics, and access to decision makers is not always equal for men and women and this may affect their participation and the representation of their ideas in short- and long-term decision making on climate change.

This brief also recommends that a gender perspective is mainstreamed into both the international and national policy design process which will offer a useful means to making women's as well as men's concerns and experiences an integral dimension of the design and implementation, monitoring and evaluation of policies and programmes. It, however, notes that gender analysis can be used to understand women's and men's different activities and responsibilities, and their access to resources and decision-making, making programmes more efficient and relevant. Finally, it recommends that for project activities to be successful, local and community activities must utilise participatory approaches to involve all members of the community in planning as well as understand local gender roles, including different vulnerabilities.

58. Hemmati, Minu and Röhr, Ulrike (2009). "Engendering the climate-change negotiations: experiences, challenges, and steps forward". *Gender & Development*. 17(1): 19 — 32. Available from http://pdfserve.informaworld.com/788937_908835237.pdf

This article shares insights and experiences from the international climate-change policy process, recounting the history of women's participation, demonstrating progress achieved, and hoping to inspire women and gender experts to get involved - at the local, national,

regional, and international levels. It explores the gaps in gender mainstreaming in all policies, programmes as well as policy-making processes relating to climate change. It identifies gaps in gender-sensitive data and knowledge about the links between gender justice and climate change and the lack of participation of women and gender experts in climate-related negotiations.

59. Homer, Caroline S.E., Hanna, Elizabeth and McMichael, Anthony, J (2009). "Climate change threatens the achievement of the millennium development goal for maternal health". *Midwifery*. 25 (3): 606–612. Available from <http://dx.doi.org/10.1016/j.midw.2009.09.003>

This article aims to highlight some of the main maternal health issues in relation to climate change and to show how climate change will, increasingly jeopardize efforts to improve maternal health and achieve the MDG goals, in particular, MDG5—improving maternal health. It establishes that professionals working in maternal health have a responsibility to understand the linkages and the effects of climate change on mothers and infants, and to support advocacy for change and investments to secure a better future for the mothers of the world. It highlights that even though considerable efforts are being made, however, they will be limited if the broader issues of climate change such as maternal health are not addressed locally, nationally and at a global level. Thus, this article points out that urgent mitigation actions which can avert further impacts of climate change depends largely on what global policies are adopted.

This article suggests that in the interim, many adaptive actions can be initiated almost immediately, including the introduction of various 'no-regrets' policies that confer local health benefits anyway, in addition to providing protection of the public's health against climate change. It cites some examples which include assisting the development and deployment of renewable energies in developing countries to reduce their dependence upon polluting fossil fuel use and health-damaging biomass combustion, and, in wealthy countries, enacting policies that promote the shift from cars to active transport options such as of cycling and walking.

60. Hansson, Sven-Ove (2007). *Gender issues in climate adaptation*. Stockholm: FOI, Swedish Defence Research Agency. Available from <http://www.foi.se/upload/projekt/Climatools/Rapporter/FOI-R--2351--SE.pdf>

This report is a study of the major gender issues in climate adaptation that are relevant for Sweden. It covers multidisciplinary research work carried out between the Swedish Defence Research Agency (FOI), the Royal Institute of Technology (KTH), Uppsala University and Umeå University with the aim of developing tools which can assist us in adapting to climate change.

This report summarises the major gender issues in climate adaptation, as seen in a Swedish perspective. It proposes that in order to identify the relevant gender issues, the focus should be on five mechanisms through which gender inequality can arise, that is, on differences in power, differences in income and economic resources, division of labour, cultural patterns and social roles, and biological differences. Thus, it maintains that much emphasis should be placed on analysing or investigating these mechanisms accurately through which gender inequality can arise. It notes that the vulnerability of women and men can differ due to differences in how they are affected by climate change and to differences in their adaptive capacities. Thus, it proposes that gender analysis should be an integral part of climate policy development.

It adds that five mechanisms mentioned earlier are largely overlapping and a good case can be made that the first of them has a fundamental role in relation to the others (including the last, since power relations determine whether or not biological differences give rise to differences in social living conditions). This study employs these mechanisms as points of entry for finding the gender effects of climate change and climate policies. In its preliminary proposal, it emphasizes that gender analysis in climate policies should be based on careful consideration of each of the five mechanisms. Thus, it outlined the following:

- i. Both the representation and the actual influence of women and men should be investigated in all public and private bodies where decisions on climate adaptation are made.
- ii. It should be an important part of policy analysis to investigate whether and in that case how people with fewer resources are disadvantaged in climate adaptation. This applies in particular to poor women, who tend to be doubly disadvantaged.
- iii. All climate effects and all mitigation and adaptation measures should be analysed in relation to the gendered division of labour.
- iv. In addition to the differences that depend on power relations, economics and the division of labour, the influence in climate policies of other culturally determined differences between women and men should also be investigated.
- v. In all deliberations on health issues in climate policies, it is essential to investigate the effects on both women's and men's bodies.

Based on the inventory of gender-related issues in climate adaptation, this report concludes that gender analysis is an integral part of climate policy development.

61. Hannan, Carolyn (2002). *Mainstreaming gender perspectives in environmental management and mitigation of disasters*. Division for the Advancement of Women (DAW) United Nations Paper presented at the Roundtable Panel and Discussion organized by The United Nations Division for the Advancement of Women and the NGO Committee on the Status of Women. Available at http://generoyambiente.org/admin/admin_biblioteca/documentos/presnat.PDF

This report explores how women are involved in disaster management and mitigation processes. The paper focuses on the gender mainstreaming strategy in relation to environmental management and mitigation of natural disasters and considers some of the changes that need to take place at the level of policies and strategies. Gender is a significant factor in the construction of social vulnerability in relation to risk of natural disasters, the differential impact of disasters and potential for developing adequate responses to hazards and disasters. It also identifies that the gender-based differences and inequalities interact with social class, race and ethnicity and age to put some women and girls in particularly vulnerable situations. On the other hand, it argues that women should not only be seen as victims. It asserts that women are agents of change, actors and contributors at all levels and fully understanding of the roles, contributions, knowledge of both women and men in relation to the natural resource base is an essential starting point in working with natural disasters, particularly in terms of risk assessment and management. Finally, this report proposes that emergency response and management must explicitly target women as well as men in all areas of support, based on the recognition that women's involvement is essential to adequate recovery and potential for sustainable development and reduction of natural disasters.

62. Islam, Rafiqul (2009) 'Climate Change-induced Disasters and Gender Dimensions: Perspective Bangladesh'. Peace and Conflict Monitor. Accessed at: http://www.gendercc.net/fileadmin/inhalte/literatur_dateien/4a042d249ef75.pdf

This seven page briefing argues that women are more vulnerable to climate disasters than men through their socially constructed roles and responsibilities, and their relatively poorer and more economically vulnerable position, especially in the developing world like Bangladesh. Gender inequalities with respect to security of human rights, political and economic status, land ownership, housing conditions, and exposure to violence, education and health (in particular reproductive and sexual health) -- make women more vulnerable before, during and after climate change-induced disasters. Therefore, access to land, improve livelihood, proper access to information and education, community development among women, self-dependence and women increased participation in decision making must be ensured in Bangladesh to face climate change and different disasters induced from climate change.

From the analysis the following are the major concerns for women's vulnerability due to climate induced natural and environmental changes:

- Post-disaster mortality, injury, and illness rates which are often (but not universally) higher for girls and women;
- Economic losses that disproportionately impact economically insecure women (e.g. agricultural losses of women farmers, the destruction of women's home-based businesses, limited access to post-disaster economic aid);
- Work load changes increase women's responsibilities in the domestic sphere, paid workplace, and community through the disaster cycle of preparation, relief, reconstruction, and mitigation;
- Increased rates of sexual and domestic violence against girls and women in disaster contexts because women lead their life in most insecure position during and after disasters.
- Destitute, low-income, and economically insecure women face the most adverse conditions because they lose their works and livelihood during and after disasters
- Women in subordinated racial/ethnic/cultural groups are placed in vulnerable situations having less scope and opportunities to face and mitigate the challenges.

Gender inequalities are the normal phenomenon in Bangladeshi society. Poverty, social and economic position has constructed this unequal and adverse situation in society for a long period of time. Climate-induced environmental changes and destruction perpetuate this existing vulnerability for women due to the lack of access to land, control over resources, ability to command and access paid labour, capacity, and strategies for income diversification. Therefore, proper policies are immediate and need to address the climate induced environmental changes and ensure gender equality.

The following recommendations are important considerations for reducing women's vulnerability from climate-induced disasters and environmental destruction:

- Legal and structural barriers need to be overturned in order to encourage and promote equitable access to land and resources, boost productivity, and manage environmental and soil conservation.
- Landlessness is forcing women to adopt other income-generation activities to complement their earnings. So, women's access to land is essential to improve their livelihood.
- For women who lack the education to filter through the different channels of bureaucracy to take advantage of credit facilities and employment prospects, communal resources may be all they have at their disposal so it is important to support

a comprehensive gendered research agenda to identify in specific contexts the immediate needs and long-term interests of disaster-vulnerable women;

- Generating sex-disaggregated data for community vulnerability and capacity assessments;
- Engaging women from vulnerable social groups as full and equal partners in community-based disaster planning and 'non-structural' mitigation initiatives;
- Developing gender and disaster materials for use in cross-training representatives from women's organizations and disaster organizations;
- Increasing awareness about gender bias in disaster practice, e.g. through training, planning guidelines, recruitment and retention of gender-aware staff, and mechanisms for professional accountability of gender issues;
- Supporting regular gender audits to identify factors increasing and decreasing gender bias in the culture, policy, and practice of institutions and organizations with disaster response missions;
- Government has initiated a national committee to face climate change induced disasters
- Gender equality can help women to understand and face the future challenges.

63. ISDR (2008) 'Gender perspectives: Integrating Disaster Risk Reduction into Climate Change Adaptation: Good Practices and Lessons learned'. Accessible at: http://unisdr.org/eng/about_isdr/isdr-publications/17-Gender_Perspectives_Integrating_DRR_CC/Gender_Perspectives_Integrating_DRR_CC_Good%20Practices.pdf

[From the foreword]

It is a well-known prediction that women in the developing world will suffer the most from the effects of climate change. What needs equal emphasis however, is the fact that women also represent an immense source of potential and power to combat the increased disaster risks that climate change will

bring. Women in developing countries are already on the front line of adapting to climate change, with increasing floods and droughts impacting upon their livelihoods. As pivotal managers of natural and environmental resources and key frontline implementers of development, women have the experience and knowledge to build the resilience of their communities to the intensifying natural hazards to come.

But without the full participation and contribution of women in decision-making and leadership, real community resilience to climate change and disasters simply cannot be achieved. In too many places, women are still marginalized from community discussions about development planning. Real community-based development must involve the knowledge and energy of women, men, boys and

girls. This publication points out the vital nexus between women's experiences of natural resource management, climate change adaptation and disaster risk reduction, and how they can come together to make whole communities strong and sustainable. It also provides inspirational case studies of grassroots women's leadership, and of ways to support and encourage women's full participation as citizens in risk reduction, climate change adaptation, development, and disaster preparedness. The case studies also point to practical tools for implementing gender equality and mainstreaming gender perspectives.

Despite the clear connection between climate change, disaster risk reduction, and gender-focused approaches to development, there still needs to be an increased awareness of this

important nexus. This study will provide a key entry-point to sustainable development, sharing concrete solutions, and inspiring more action.

The report contains the following papers and case studies:

Section 1: Women as natural and environmental resource managers

- Bolivia Democratizing knowledge for rural empowerment, by *InterCooperation, Bolivia*
- Mali Rural women develop sustainable alternatives to wood trade, by *Mali-Folkecenter Nyetaa, Mali*
- Sri Lanka Effective planning through social mobilization, *University of Peradeniya, Sri Lanka*
- Tunisia Women's knowledge for sustainable environmental management, by the *Association des Jeunes de Zammour (AJZ), Tunisia*
- The Pacific Women planning sustainable agriculture, by *The Development of Sustainable Agriculture in the Pacific programme (DSAP); Secretariat of the Pacific Community (SPC)*

Section 2: Women as leaders, decision-makers and full participants

- Brazil Efficient irrigation, energy, and citizenship for sustainable development by the *Rede de Desenvolvimento Humano-REDEH, Brazil*
- India Empowering women as community leaders in disaster risk reduction, by *ActionAid International*
- India Women organize as environmental activists, *Action for Disaster Reduction and Inclusive Development, (ADRID); Dasholi Gram Swaraj Mandal, India*
- Nepal Women and men working together against flood, by *CARE Nepal*
- South Africa Girls as leaders in community resilience by the *African Centre of Disaster Studies (ACDS) at North West University, South Africa*

Section 3: Gender sensitive tools for climate change adaptation and disaster risk reduction

- Mali Highlighting local coping strategies for drought by *Intercooperation, Switzerland*
- Nepal Bringing voices of poor women to the climate change debate, by *ActionAid International*
- Tajikistan and Africa Designing adaptation strategies for vulnerable women, by *CARE International*
- Europe Climate for change: gender equality in climate change policies, by *The Climate Alliance of European Cities*

64. Khamis, Marion, Plush, Tamara and Zelaya, Carmen Sepúlveda (2009). "Women's rights in climate change: using video as a tool for empowerment in Nepal". *Gender & Development*. 17(1):125 — 135. Available from <http://dx.doi.org/10.1080/13552070802697001>

This video was developed as part of an innovative ActionAid - supplied project in Nepal which saw women's empowerment make rapid progress via the use of video discussions about climate change. In this exploration of the project, the women were asked what they can learn from the use of such technology and consider the implications for international development agencies and their efforts to support women's rights.

In this video, the local women expressed that they need information, resources, and technical knowledge to help them adjust to climate-change impacts. This, however, established that,

women have clear needs, such as the desire to boost off-farm income. The women also indicated that this video process makes them feel involved in the research and action process unlike the other existing mediums. They also felt a deep a sense of empowerment and self-confidence in being actors, and not mere recipients.

The authors argue that since the videos were produced by the women in Nepali, they have the advantage of being easily accessible, culturally relevant, and personal to the community and local government officials. However, they identify an obvious challenge in that the final films are less suitable for advocacy at levels involving non-Nepali speakers and at both national and international levels. They were of the view that the women's concerns may also be focused at the micro-level, without making links to the changes needed at national or international level.

65. Kinoti, Kathambi (2008). *Natural Disaster Reduction: Lessons on Empowering Women*. Toronto: Association for Women's Rights in Development (AWID). Available from <http://www.awid.org/eng/Issues-and-Analysis/Library/Natural-Disaster-Reduction-Lessons-on-Empowering-Women2>

This paper identifies the need for gender sensitive strategies for disaster prevention, preparedness and mitigation drawing on lessons learnt from past disasters about the role of women. It highlights that even though many perceive women as passive victims of natural disasters, they play a major role in preventing and mitigating its effects. For this reason, this paper adds that past natural disaster experiences have highlighted the need for the equal participation of women as well as the incorporation of women's perspectives in all discussions around climate change, environmental management, disaster mitigation and recovery.

This paper establishes that whatever role women play in mitigating the effects of natural disasters, its consequences hits them the hardest. It indicates that it is estimated that in the 2004 tsunami three times as many women as men died. It states one of the reasons why more women perish is their decreased mobility since they often have not only themselves to take care of, but also children and the elderly. That is, due to socially constructed roles, most have never learned how to swim. This paper also talks about how the effects of natural disasters can increase women's already considerable economic and domestic responsibilities. It cites the Hurricane Mitch struck Central America in 1998 as an example of this. It explains that after this hurricane there was a reported doubling in the number of women solely maintaining their households, which in Nicaragua even one year after the hurricane translated into about forty percent of households. Again, this paper suggests that instituting early warning systems are critical to reducing the impact of floods, droughts, hurricanes, tsunamis and other disasters. It emphasizes that the ways in which warnings are relayed to typically disadvantage women and their ability to respond to the disasters is key to disaster mitigation and recovery. During an El Nino event in Hawaii in 1998, women were targeted with early warning information which included information about treating drinking water and this reduced the incidence of diarrhoeal disease. Effective early warning systems that impart timely information directly to women give them the power to substantially mitigate the effects of natural disasters. Finally, this paper mentions that increased incidence of sexual and domestic violence is yet another way in which women are affected in post-disaster situations. It states that after Hurricane Mitch there was an increase in domestic violence while it has been reported that after the Loma Prieta earthquake in the US state of California reported cases of sexual violence increased by about 300%. In sum, the illustrations given in this paper reinforces that fact that there is the need for deliberate and sustained involvement of particularly women in disaster management.

66. Koos Neefjes, Vu Minh Hai, Valerie Nelson, Ingrid Dankelmann, Tran Van Anh, Ingrid Fitzgerald (2009) 'Responding to climate change in Viet Nam: Opportunities for improving gender equality. A policy discussion paper'. Ha Noi, December 2009, UN and Oxfam in Viet Nam. Available at: http://www.un.org.vn/index.php?option=com_docman&Itemid=266&lang=en

This paper, a collaborative effort by the UN and Oxfam in Viet Nam, and involving a broad range of stakeholders, explores the gender dimensions of climate change in Viet Nam (relating to climate change impacts and mitigation). It also includes recommendations on key policy actions to address climate change challenges and gender equality. The paper synthesizes findings from three sources: a desk review, commissioned by the UN and conducted in 2008; international literature and additional national literature survey; and fieldwork in two provinces, conducted in 2009. The policy reforms and actions needed to respond to the gender impacts of climate change are outlined, and it is accompanied by a report of the results of the fieldwork. A vulnerability and sustainable livelihoods framework is used to analyze links between gender and climate change. Gender adds a specific dimension to vulnerability analysis and requires analysis of power relations between the sexes, and gender roles in livelihoods because these influence the relative vulnerability and adaptive capacity of women and men. Because of the prevailing gender norms and power inequalities, women tend to have less influence in decision-making, less secure resource rights and are more likely to experience poverty. Viet Nam is among the countries worst affected by the adverse effects of climate change, especially in coastal and low-land regions.

The study analyses the vulnerability and resilience context:

- The government has a strong track record on promoting gender equality and women's empowerment, but traditional attitudes constrain the realisation of women's rights and progress remains uneven. Despite improvements in living standards on average, these improvements are distributed unequally. Social inequality is rising, especially between rural and urban areas and between ethnic minorities and the Kinh majority.
- Increased pressure on natural resources as a result of rising population and increased consumption, and increased exposure to climate change related stresses is evident in all three study sites.
- While awareness of gender equality has increased, in part as a result of interventions by the Viet Nam Women's Union and other organizations, this does not always translate to increased gender equality in practice, especially for ethnic minority women. Women's participation in household decision-making has increased slightly, though men continue to make the final decisions for example in relation to large expenses. Women's community participation has also increased, in particular in events which relate to women's traditional role such as festivals and social events; however, participation in local formal political and management structures remains low. This has implications for women's participation in planning and decision-making for climate change at the household and community level.
- Men are more likely to participate in search and rescue teams and in protecting crops and livestock during disasters, whilst women's participation tends to be confined to caring and domestic responsibilities such as communal cooking and looking after the sick and elderly.
- Men and women identify different measures in response to climate change, yet women's voices are not being heard in decision-making on natural resources, and disaster management, despite their central role and responsibilities.

The characteristics of more and less resilience households and individuals were explored in the field research as well as the differentiated impacts of exposure to climate change. Gendered impacts on different livelihood capital assets were found to be as follows:

- Gendered human capital impacts: e.g. disproportionate affects on women's mental health due to their caring roles and increased domestic violence during periods of stress related to natural disasters. In addition, women eat less in times of food shortage and suffer more health problems due to a lack of clean water and water shortages. Both men and women experience increased workloads, with men taking on more physical work during extreme events, and women working harder in preparing for disasters, although this pattern is changing in the face of seasonal male out-migration. In the field sites visited more men than women were reported as dying as a result of natural disasters, at least partly due to their role in search and rescue (S&R). However, women's deaths may occur over a longer time period as a result of prolonged stress, and other factors discussed above, and may go unreported due to the time lag.
- Gendered natural capital impacts: Women have greater responsibility for subsistence agricultural production compared to men because of gender norms. As climate change has an impact, women are forced to replant crops, and plant more subsidiary crops to supplement lost yields. Women are also primarily responsible for household water collection, which is especially arduous during natural disasters such as floods and droughts. Yet men typically control irrigation systems.
- Gendered impacts of migration: While temporary out-migration is a common coping strategy for households affected by natural disasters and other shocks, this option is primarily open to men, and to households with some level of labour capital and resilience. For women, male outmigration may open up opportunities to challenge traditional gender roles. However it also undoubtedly increases their workload, including coping with natural disasters, while for men, as husbands and fathers, separation has emotional costs, and many would prefer to stay home.
- Gendered financial impacts: Access to (larger scale) credit, another important coping mechanism in the face of shocks and crises, is more limited for women than for men, as women are less likely to have their names on land use certificates which are required to access (larger) loans. Women have generally good access to microcredit though, with e.g. support from the Women's Union, and also borrow from relatives, neighbours, and from money-lenders (the latter usually at high interest rates). While some banks are now requiring both men and women sign papers for new loans, other organizations typically continue to lend to male household heads. Knowledge of climate change and possible future impacts is still limited, even in more disaster prone communities. Even where villagers are aware of possible impacts they lack resources to respond and post-disaster coping and recovery activities tend to focus on restoring existing livelihood systems, rather than more transformative change which could increase household resilience. Only a few, better off households can diversify their income sources, by for example, borrowing to invest in farm machinery which can then be leant to others. Better off households are also able to relocate, or build houses which are stronger and more flood resistant. While education is seen as an escape route from poverty, girls leave school earlier than boys, and female illiteracy rates remain high, especially in the ethnic minority community of Avao. Young people who gain an education in this remote area tend not to return, with implications for the future of these communities.

Children and climate change: A key feature of the study is research with children and young people, which identified that they children in the study sites are aware of disaster preparedness and have an understanding of broader environmental issues. They are also able

to identify possible solutions, such as learning and investment in new technologies, investment in education, and awareness raising programmes. Girls identified that they would like domestic responsibilities to be more evenly shared, and were more likely to focus on small-scale technologies and social investment while boys focused more on technological and industrial shifts when envisaging future responses to climate change.

Mitigation of GHG emissions was not a focus of the fieldwork, but there were some observations, which are supported by the literature review.

- Bioenergy: While gender dimensions of GHG mitigation require further exploration in the context of Viet Nam, to date studies have identified positive benefits for women of measures such as biogas, which has the potential to reduce women's exposure to wood smoke and reduce time spent collecting fuel. Substituting biogas for wood fuel can also boost resilience of poor women and households who are dependent on declining common property resources.
- System of Rice Intensification (SRI). Similarly, SRI is being implemented in twenty-two provinces of Viet Nam and offers potential benefits in terms of climate change adaptation by making crops more resistant to drought and storm damage and helps reduce methane emissions (a GHG) from improved water management and land tillage practices. Women's workloads in some activities increase and in others decrease whilst income increases, leading to the conclusion that with targeted efforts (e.g. in terms of extension) gender equality can improve with technological innovations. However, as with other technological innovations, women's strategic interests must be monitored in order not to be overlooked. Much analysis is needed of potential positive and negative impacts of new technologies on gender relations to ensure women can realize the potential benefits and that gender inequalities are not exacerbated by the introduction of new technologies.

The paper concludes, amongst other things, that Government, civil society and local communities have already begun adapting to climate change, but the impacts will be felt unevenly because of socially differentiated vulnerabilities in society and also gender inequalities are already and are likely to be further exacerbated by climate change. Gender has been relatively neglected in research and policy analysis and in international and policy processes to date. An analysis is provided of national climate change responses in Vietnamese policy-making and the gender coverage therein.

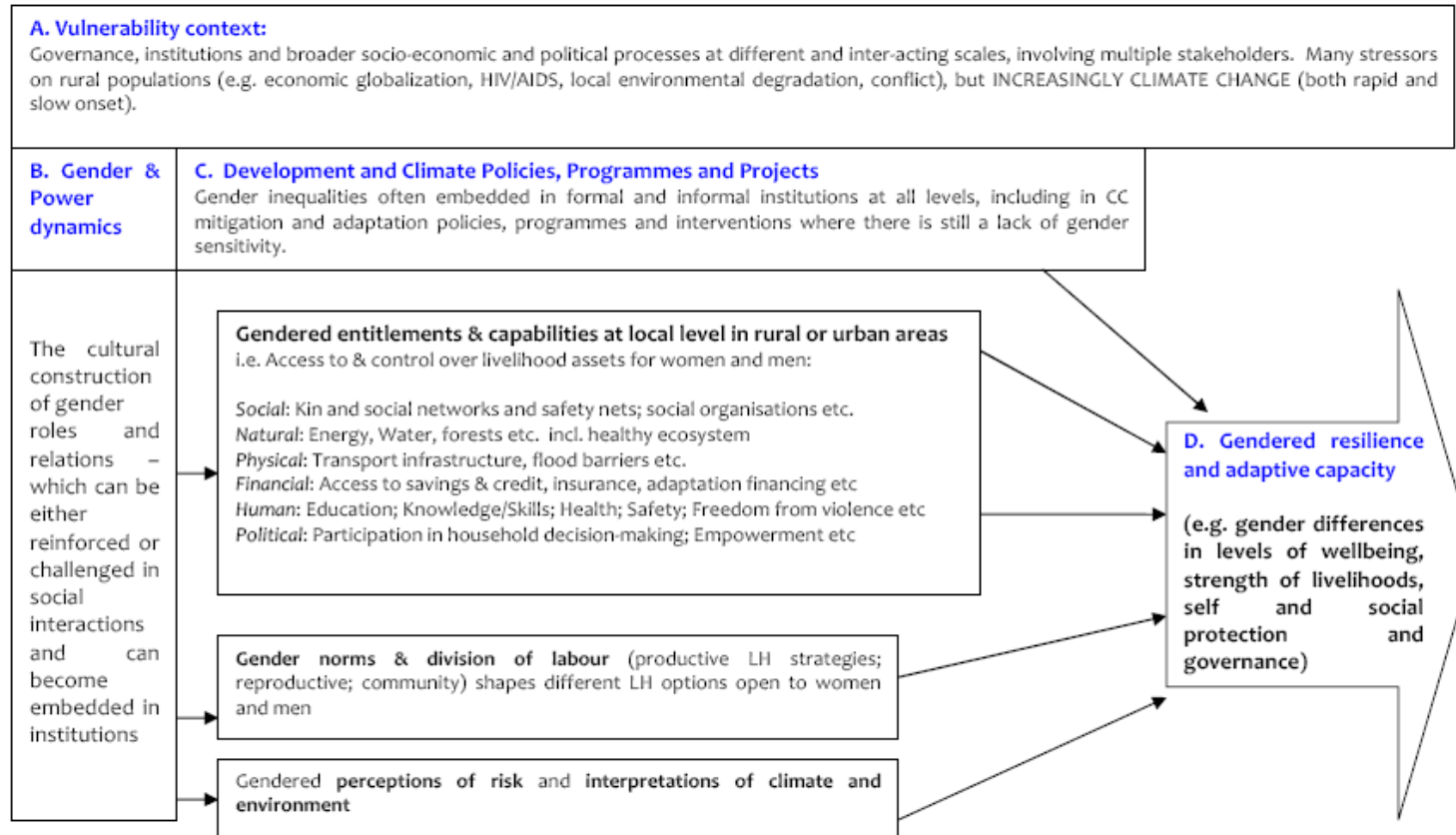
Recommendations made in the policy discussion paper are presented in direct connection with the main Tasks outlined in the NTP-RCC. They include the following:

- Raise awareness on both climate change and gender equality and promote women's education and education for all, with specific attention paid to and curricula on both gender equality and climate change action.
- Improve the research base on the gender and climate change links and ensure gender sensitive data is collected and analysed to inform decision making
- Ensure that gender-climate change links are mainstreamed in policy and programmes, and ensure women's participation in policy making and decision-making on climate change at all levels.
- Protect women's rights in particular during and after disasters that are enhanced by climate change.
- Create livelihood opportunities for women and female headed households, including rural livelihood diversification and migration / resettlement, as a primary response to climate change stresses.
- Promote gender equality in international climate change policy, including financing. It is hoped that this paper will promote awareness of the gender dimensions of climate

- change among key decision-makers and policy analysts both within Viet Nam and internationally, and will contribute to a more gender-sensitive approach to
- adaptation to climate change effects and mitigation of GHG emissions.

(Diagram P18, Neefjes et al, 2009)

Gender and climate change: analytical framework for Viet Nam



67. Lambrou, Yianna and Piana, Grazia (2006). *Gender: The Missing Component of the Response to Climate Change*. Rome: FAO. Available from

http://www.generoyambiente.org/admin/admin_biblioteca/documentos/pe1_051001d1_en.pdf

The gender aspects of climate change have generally been neglected in international climate policy. This report, produced by the Food and Agriculture Organisation of the United Nations (FAO), argues that gender, like poverty, is a transversal matter within climate change and needs to be recognised as such. It analyses the gender dimension of climate change and the policies enacted to mitigate and adapt to its impacts with the aim of developing gender-sensitive approaches with regards to mitigation measures, adaptation projects and national regimes.

According to the report, natural disasters and environmental damage associated with climate change are worse for vulnerable populations, including women and children. Particularly in developing countries, women generally have lower incomes than men, they often have limited control of resources, and they have less access to information and decision making authority. Their ability to mitigate and adapt to the impacts of climate change is thus lower than that of men. Focusing solely on women's vulnerability may be misleading however, since women often have particular skills, coping strategies and knowledge that can be used to minimise the impacts of environmental change. Any environmental policy should therefore recognise women as key players, particularly given their role as natural resource managers. At the Eleventh Conference of the Parties to the UN Framework Convention on Climate Change (COP 11), held in Montreal in December 2005, representatives of women's groups presented a short petition with some gender-specific recommendations to women environment ministers. This report concludes that it is crucial for women to continue to lobby national negotiators in the next stage of climate change negotiations, to press for the full integration of gender issues into the climate change agenda.

68. Lambrou, Yianna and Regina Lamb (2004) 'Gender Perspectives on the Conventions on Biodiversity, Climate Change and Desertification', Gender and Development Service, FAO Gender and Population Division. Accessible at: http://www.fao.org/sd/dim_pe1/docs/pe1_041002d1_en.doc

[summary from the website: http://www.fao.org/sd/dim_pe1/pe1_041002_en.htm]

The United Nations Convention on Biodiversity, the UN Framework Convention on Climate Change (UNFCCC), and the UN Convention to Combat Desertification (UNCCD), known as the Rio Conventions, are the three main international legally-binding agreements for sustainable development. They represent the legal outcome of the 1992 United Nations Conference on Environment and Development (UNCED).

The agreement signed by heads of state on that occasion, Agenda 21, which identifies the priority action for sustainable development, states clearly that empowerment of women and men is indispensable for sustainable development. However, throughout the convention texts and implementation mechanisms, the gender perspective of Agenda 21 seems to have been unevenly upheld. The aim of this paper is to reassert that a gender perspective is relevant in the case of these Conventions from two points of view:

- Successful implementation of each convention requires a solid understanding of gender-specific relationship to environmental resources of women and men, as well as an understanding of gender specific impacts of, and on, environmental degradation
- Successful implementation of each convention will depend on participation of affected populations, women and men. This equal participation of women, given prevailing practices worldwide, cannot be taken for granted.

The paper provides a gender-sensitive perspective on the three Rio Conventions on Biodiversity, Climate Change, and Desertification. First, the Rio conventions are placed in their historical context and their administrative and financial framework. Secondly, the main gender issues relevant to the three conventions are exposed. A comparative overview of the level of gender mainstreaming in each of the international instruments relating to the Rio Conventions at study here is given. The essay concludes with a review of a few key issues in convention implementation, in relationship with gender.

69. Leduc, Brigitte (2008). *Case Study: Gender and Climate Change in the Hindu Kush Himalayas of Nepal*. Background paper for the e-discussion from 5 to 25 October 2009 on 'Climate Change in the Himalayas: The Gender Perspective' organised by ICIMOD and APMN. Kathmandu: Technical Paper International Centre for Integrated Mountain Development (ICIMOD). Available from <http://www.wedo.org/wp-content/uploads/nepalcasestudy.pdf>

This study was developed as an input into its Gender and Climate Change Workshop in Dakar, Senegal, in June 2008, and in preparation for the launch of an advocacy pilot project to mainstream gender into climate change policy-making and activity implementation in developing countries. This paper explains how climate change is affecting women and why it is necessary to integrate a gender perspective into the design of national policies and mitigation and adaptation strategies. This study provides some information about climate change in Nepal and about the Government's efforts to address the issues arising. It also examines the conditions and status of women in Nepal, particularly in the mountains, and provides some examples of how climate change is affecting them and offers some conclusions and recommendations.

It establishes that climate change is affecting Nepal and its impacts will be increasingly felt and will necessitate changes in people's livelihoods and lifestyles. It highlights that even though Nepalese women play an important role in maintaining households and communities and in managing natural resources, their role is seldom recognised, and their perspectives, needs, and interests are not properly taken into account in development and environmental policies and strategies. It also adds that regardless what ethnic group, religion, caste, or class Nepalese women belong to, they face more discrimination than men. This means that the men usually have more opportunities than women in almost all sectors. Thus, women and men have different roles in the society, face different challenges, and demonstrate different reactions and methods for coping.

It identifies that the link between gender issues and climate change is an emerging topic for research and policymaking in Nepal, and documentation so far is quite limited. It states that the impacts of climate change on the population overall has not yet been the subject of serious studies and its main focus is usually related to vulnerability to natural disasters. However, this paper advocates for the need to build people's resilience to the multifaceted impacts of climate change in the country as well as considering women's and men's views and interests in research, program design, and policy-making. This, it indicates can be achieved by incorporating a gender perspective into research, development, disaster preparedness, and adaptation and mitigation strategies which recognise that women and men may face different problems, and pay specific attention to both women's and men's needs in order to reduce their vulnerability and improve their adaptation. Finally, this paper notes that once such a policy is developed and adopted, the main challenge for the Government will be implementation. It outlines that government may encounter some problems which entails restricted budget, limited technical capacities, lack of equipment, insufficient data, institutional setting problems and limited information networks which represent real challenges.

70. Masika, Rachel (Ed.) (2002). *Gender, Development and Climate Change*. Oxford: Oxfam. Available from http://www.oxfam.org.uk/resources/downloads/FOG_Climate_15.pdf

This book considers the gendered dimensions of climate change. It suggests that gender analysis has been widely overlooked in debates about climate change and its interactions with poverty. For those seeking to understand the impacts of global environmental change on human communities it is important to understand the gender differentiated impacts. Even though governments and communities increasingly recognize that the need to adapt and mitigate to climate change is urgent, the global agenda and negotiations are mainly focused on scientific and technological measures to tackle climate change, with less attention being given to the social implications of climate change for poor men and women. Whilst scientific approaches remain crucial, this editorial argues that political and socio-economic issues such as the differing roles, responsibilities and interests of men, women and their local communities must be taken into account.

Ranging in scope from high-level global decision-making to local communities, the contributors examine the potential impacts of environmental degradation and change on vulnerable groups. They highlight the different vulnerabilities, risks and coping strategies of poor women and men in the face of environmental degradation and increased livelihood insecurity. They show how good gender analysis at all levels of policy-making and implementation is essential in ensuring equitable outcomes for women and men, and is key to creating climate change policies that work for poor people as well as for the rich. This book proposes further research into the gender-differentiated impacts of climate threats and advocates for policies to shift to accommodate the equity and sustainability implications of climate change.

71. Masika, R (2002) 'Gender, Development and Climate Change'. Oxfam Publishing

[Abstract]

In the face of extreme weather events, desertification, and a rise in the sea levels, governments and communities increasingly recognize that the need to adapt and mitigate to climate change is urgent. the global agenda and negotiations focus on what governments, corporations, and institutions can do in the search for large-scale technological solutions. Yet women, men, and local communities all have roles, responsibilities, and interests that hold the potential either to harm or benefit the environment.

This book considers the gendered dimensions of climate change. It shows how gender analysis has been widely overlooked in debates about climate change and its interactions with poverty, and demonstrates its importance for those seeking to understand the impacts of global environmental change on human communities.

Ranging in scope from high-level global decision-making to local communities, the contributors examine the potential impacts of environmental degradation and change on vulnerable groups. They highlight the different vulnerabilities, risks and coping strategies of poor women and men in the face of environmental degradation and increased livelihood insecurity. They show how good gender analysis at all levels of policy-making and implementation is essential in ensuring equitable outcomes for women and men, and key to creating climate change policies that work for poor people as well as for the rich.

The book includes: Editorial, R Masika and the following chapters.

Climate change, vulnerability, impacts, and adaptation: why does gender matter?

Fatma Denton

Women organising for sustainable development: challenges and opportunities

Irene Dankelman

Protocols, treaties, and action: the climate change process through gender spectacles

Margaret Skutsch

Kyoto protocol negotiations: reflections on the role of women

Delia Villagrana

Gender and climate hazards in Bangladesh

Terry Cannon

Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations

Valerie Nelson

Gendering responses to El Nino in rural Peru

Rosa Rivero Reyes

The Noel Kempff Project in Bolivia: power and gender in climate mitigations

Emily Boyd

Reducing risk and vulnerability to changing climate in India: the capabilities approach

Marlene Roy and Henry David Venema

Promoting the role of women in sustainable energy development in Africa: networking and capacity building

Tieho Makhabane

Ecological security for the Alliance of Small Island States: a systems approach to capacity building

Mary Jo Larson

72. Mehta, Manjari. (2007). *Gender matters lessons for disaster risk reduction in South Asia*. Kathmandu: International Centre for Integrated Mountain Development (ICIMOD). Available from http://www.preventionweb.net/files/8040_GenderMattersLessonsforDRR.pdf

[From Summary]

Gender is an indicator of vulnerability. Women are disproportionately affected, particularly in the field of disaster preparedness and management (DP/M). The report sets out why gender analysis is essential in the field of DP/M, and continues in the second section to examine the gendered contexts of risk and vulnerability and the many dimensions from which they should be approached: economic, social, educational, cultural, physical, organisational, motivational, and political. The third section examines lessons from the field and how physiological vulnerabilities, socio-cultural and economic marginalisation, and gender stereotyping effect whether an individual is killed or manages to survive. It also discusses the extent to which women are more at risk than men and how they have less access to aid and rehabilitation. Reasons for this are seen in structures of decision-making and women's weak bargaining power within the household. Examples are given from the Bangladesh cyclone of 1991, the Asian tsunamis, and the impact of Hurricane Mitch in Central America in 1998. In 1991, in Bangladesh, many men failed to pass on to their wives the information about the cyclone delivered to them in the marketplace. In Central America women failed to evacuate themselves and their children because they were waiting for their partners to return and give them permission to leave their homes.

The third section also discusses how women's sanitary and health needs are addressed (or not) following disasters citing instances from the Pakistan, Kashmir earthquake of 2005. Also of concern in terms of women's vulnerability are issues such as economic vulnerability and being denied access to relief and compensation and cultural reasons for these; increase in their workloads; and gender-based violence following the trauma of disasters. The following section discusses that one approach to DP/M is developing community resilience and making women part of the solution. A gender perspective can help to make this possible by increasing understanding of how women can become keys to hazard prevention within the community and natural disasters can actually be built upon as opportunities for social change. Examples of how this works are taken from disaster preparedness and relief work in Bangladesh and the development of new institutional structures by a non-government organisation, Pattan, in Pakistan following the floods of 1992. Other examples of developing women's self-confidence and integrating recovery and relief work with economic self-sufficiency and long-term sustainable development are taken from Nepal and India. In conclusion, the section emphasizes that people's ability to cope with crises and recover from them include material, physical, and social resources as well as beliefs and attitudes. The fifth section examines how gender analysis in disaster preparedness and management can reveal how a community works and the various roles and structures followed by men and women within it. It then discusses what gender-sensitive outreach looks like and how to use it. The sixth section concludes the report by

summarising the discussions put forward and the challenges and opportunities for gender mainstreaming. It makes recommendations based on seven essential steps for imparting gender-sensitive disaster preparedness and management (DP/M). In addition to the main report, five short annexes complement the discussions with different aspects of and charts for gender-sensitive analysis in DP/M.

73. Mitchell, Tom, Tanner, Thomas and Lussier, Kattie (2007). We know what we need - South Asian women speak out on climate change adaptation. UK: ActionAid International and IDS. Available at [http://www.actionaid.org/assets/pdf/ActionAid%20IDS%20Report%20 We%20know%20 what%20we%20need.pdf](http://www.actionaid.org/assets/pdf/ActionAid%20IDS%20Report%20We%20know%20what%20we%20need.pdf)

Poor rural women in the Ganga River Basin of Bangladesh, India and Nepal are struggling to protect their lives, homes, assets and livelihoods from weather-related hazards caused by climate change. Nevertheless, women are not passive victims of climate change. Participatory research tools were used to explore the impact of changing monsoon and flooding patterns on their livelihoods; existing coping strategies; constraints to adaptation; and adaptation priorities (i.e. what the women themselves feel they need order to better adapt to the floods). Despite limited resources, information and support, evidence from this research proves that women in poor areas are already adapting to a changing climate and can clearly articulate what they need in order to secure and sustain their livelihoods more effectively. Their priorities include a safe place to live and store their harvest and livestock during the monsoon season; better access to services such as agricultural extension; training and information about adaptation strategies and livelihood alternatives; and access to resources to implement effective strategies and overcome constraints. This paper also makes recommendations for adaptation funding processes to proactively prioritise the needs of poor women. These include monitoring how women are targeted by, and benefit from, adaptation funds; and ensuring states provide an enabling environment for women's participation through legislation and institutional practices that guarantee women's rights are fulfilled.

74. Mwangi, Margaret (2009) 'Gender and Drought Hazards in the Rangelands of the Great Horn of Africa. Is Gender Equity the only Solution?' Accessed at: <http://www.highbeam.com/doc/1P3-1224936851.html>

This magazine article explores the gender dimensions of pastoralism and drought hazards in dryland areas of East Africa. Droughts are frequent and widespread in the Greater Horn of Africa and are the most injurious climatic hazard that devastates livelihoods. Today, about 200 million people live with this age old, but intensifying phenomenon hovering over all things living, especially women. Pastoralism is the predominant form of livelihood in the Greater Horn of Africa. Currently the region is recovering from a devastating drought that started 2004 and ended 2007 causing 15 million pastoralists to struggle with food shortages and starvation. In times of drought-induced migration women are responsible for the care and survival of those left behind. As women cannot own land and livestock or access employment, loans or any other entitlements in patriarchal pastoral societies, women - headed households are very vulnerable. Drought policies are silent about the vulnerabilities of women to climatic hazards. Pastoralist Women have become involved in local initiatives to diversify their livelihoods, e.g. practising some farming or harvesting rainwater. The survival of pastoralist societies hinges on women participating in all aspects of their communities equally and engaging them in decision-making regarding drought adaptation and resource management.

75. Neelormi, Sharmind (2009) 'Climate-change related migration from a gender perspective: patterns, challenges and opportunities for intervention'. Gender CC, Bangladesh, SBSTA Side Event, Bonn, 09 June 2009

This presentation explores migration and climate change relationships. Forced out-migration is fundamentally different than voluntary migration. The latter often takes place in quest of better

opportunities, not really driven by failed livelihoods and disparity. Climate Change and failed livelihoods: Livelihoods of the poorest are often rely heavily on natural resources and extremely sensitive to climate-driven phenomenon. Any change in natural variability above threshold put such livelihoods in deep hardship. A significant change moving above or below the thresholds of 'coping limit' causes failed livelihoods. When does 'forced outmigration' occur? It happens when livelihood insecurity becomes so high that inherent social capital cannot keep a person or household in their neighbourhood. Failed livelihoods result from climate variability, change and extreme conditions generally lead to forced outmigration. Forced out-migration will involve men, women and children. Women, however, may be differentially treated in the process of out-migration or gender relations will add an additional burden on women representing a household engaged in forced out-migration. Patterns of outmigration from hotspots to safer ground include seasonal and permanent outmigration, it can be within country and international and may be predominantly male or female or family outmigration. When men out-migrate women often have to assume an additional burden, including a financial burden, in maintaining the wellbeing of the household. When male heads of household out-migrate and the household loses contact with them, remaining household members can be more vulnerable to abuse. When families out-migrate, they often end up being in peri-urban areas. Urban social structure is different to rural social structures representing a rapid transformation. The household have higher costs to maintain the household and women are often forced to work usually as cheap labour, which can have negative health impacts on undernourished poor women particularly. Climate change induced forced displaces could be compensated somewhat if they are given 'preferential migrant status' in Annex-1 countries. Under the UNFCCC processes, this preferential status of potential out-migrants should reduce women's plight and given them a better opportunity to survive.

76. Neerlormi, Sharmind, Neelopal Adri, Ahsan Uddin Ahmed (undated) 'Gender perspectives of increased socio-economic risks of water-logging in Bangladesh due to climate change'.

[From the abstract]

Bangladesh is known as one of the most vulnerable countries across the globe under climate change.

Most of the adverse effects of climate change is anticipated to be in the form of extreme weather events, while water related hazards such as flood, drought, salinity ingress, river bank erosion, water logging, tidal bore are likely to be exacerbated, leading to large scale damages to crop, employment, livelihoods and national economy. The effects of climate change, manifested in the increase of extreme weather conditions, have gender-specific implications in terms of both vulnerability and adaptive capacity.

In the South West region of Bangladesh, water logging has emerged as a pressing concern at the backdrop of climate change. Gradual siltation on the riverbed of Kabodak, triggered by inadequate runoffs in the southern reach caused by coastal embankment project, is the main source of the problem.

There are areas where people are compelled to live in water logged condition for even nine months a year. Economic activities and agricultural activities have been greatly hampered in water logged situation. Loss of livelihoods due to submergence of land often forces male to go far away for weeks in search of alternative livelihoods. In their absence, women are easy victims to social vices. Livestock rearing can not be sustained for inadequacy of fodder, homestead vegetable production also becomes difficult and therefore, women cannot plan to upgrade their economic condition. Field-level research reveals that water logging severely affects women's health of affected community. Pregnant women can not continue movement in marooned and slippery conditions, they are forced to stay back inside the house and ultimately fall victim to unhygienic reproductive health condition. It is reported that there are increasing trends of gynaecological problems due to unhygienic water use. Schools become inoperative, which drastically reduces women's opportunity to become self-reliant. As a consequence of absence of land-based productive system, the poverty situation has become so dire that the social fabric is about to be torn apart. Unfortunately, water logging is likely to be accentuated under invigorated monsoon, influenced by climate change. Consequently, people's sufferings will only

be escalated. In a bid to enhance living condition of women in affected areas, the state must consider gender-specific measures to either build resilience of women or reduce their overall vulnerability by draining off stagnant water from the area – even if the cost of institutional adaptation is staggering. Cost of people's suffering must be weighed against cost of adaptation.

77. Nelson, V and T. Stathers (2009) 'Resilience, power, culture and climate: a case study from semi-arid Tanzania and new research directions', V. Nelson and T. Stathers.

Rapid changes to the climate are predicted over the next few years, and these present challenges for women's empowerment and gender equality on a completely new scale. There is little evidence or research to provide a reliable basis for gender-sensitive approaches to agricultural adaptation to climate change. This article explores the gender dimensions of climate change, in relation to participation in decision-making, divisions of labour, access to resources, and knowledge systems. It draws on insights from recent research on agricultural adaptation to climate change in Tanzania conducted by the Institute of Resource Assessment, University of Dar es Salaam, with support from the Natural Resources Institute, University of Greenwich. Situation analyses conducted in Dodoma region were analyzed using a 'gender lens' to identify the gender dimensions of climate change impacts and adaptation. In semi-arid regions of Tanzania farmers are already coping with climatic variability and on-going trends (e.g. endemic poverty, rapid population growth etc) which limits people's capacity to adapt. Agriculture will most likely be affected by climate change in a number of ways (e.g. reductions in crop yields, size of areas for crop production and grazing, increases in pests and diseases). Predictions for East Africa are uncertain, but crop production in Dodoma is thought to be likely to be negatively affected.

The study found that a high degree of consensus in local observations of climate change across social groupings and these observations are consistent with scientific projections. The increasing unpredictability of the rainfall season has led to more people having to use oxen ploughs. Whilst the position of women varies, many said they were struggling with increases in demands on their labour combined with increased need to hire oxen ploughs to which they have lesser access generally than men. Unpredictable rainfall, declining soil fertility and increased incidence of some pest and disease problems are leading to more frequent crop failure and increased yield variability. To secure sufficient food farmers have to cultivate larger areas of land and contributing to the increase in seasonal (mainly male) outmigration. Voluntary seasonal migration is not a new coping strategy in this region but it is increasing, straining family relationships and contributing to the spread of HIV – particularly affecting women's wellbeing and increasing the perception of young people that future rural livelihood opportunities are limited. Migration can lead to a challenging of constrictive social norms liberating women from oppressive social rules and increasing their independence, but it can also lead to higher work burdens – the latter being echoed in Dodoma. According to both women and men gender, age and health intersect as factors determining vulnerability, with children, women, elders, widows and widowers, orphans and the long-term sick being the poorest and most vulnerable to climate change because of their increasing inability to secure food in times of drought. Women with children are less likely to take up wage labour opportunities because of their childcare responsibilities and the cultural norms shaping these. Increased food shortages are reported to be affecting the health of women, because they eat fewer, poorer quality meals per day. Thus in many ways existing inequalities are already being compounded by increasing climate variability.

Farmers are changing the crops they are growing, with greater cultivation of drought-tolerant crops in response to government advice and market signals but also because of increased climate variability and faster maturing sorghum varieties are being taken up because of the shortness of the rainy season nowadays. Changes in crops can lead to shifts in control of income and labour requirements for female and male farmers. An increasingly frequent need to replant annual crops is widely reported, because of rainfall unpredictability and undermining crop yields and quality –with mixed gender impacts. Prolonged extreme events (e.g. longer droughts) can

lead to farmers having to sell off assets to get food. Collection of fuel wood and water tend to be seen as women's work but the availability of these resources (and the health of other ecosystem services) may be affected by climate change, especially where this is compounded by localized degradation. The specific impacts of climate change will depend on gendered entitlements to resources and gender norms.

The article then explains why future gender-sensitive climate-adaptation efforts should draw upon insights from 'resilience thinking', 'political ecology', and environmental anthropology – as a way of embedding analysis of power struggles and cultural norms in the context of the overall socio-ecological system.

78. Nelson, Valerie, Meadows, Kate, Cannon, Terry, Morton, John and Martin, Adrienne (2002). "Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations". *Gender & Development*. 10(2): 51 – 59. Available from http://pdfserve.informaworld.com/567890_666_741921482.pdf

This article outlines climate change predictions and explores the effects of long-term climate change on agriculture, ecological systems and gender relations, since these could be significant. It maintains that vulnerability to environmental degradation and natural hazards is articulated along social, poverty, and gender lines. It, however, argues that since gender is not sufficiently mainstreamed in many areas of development policy and practice, so the potential impacts of climate change on gender relations have not been studied, and remain invisible. Thus, it identifies predicted changes in natural hazard frequency and intensity as a result of climate change and explores the gendered effects of natural hazards. It concludes by highlighting the urgent need to integrate gender analyses into public policy-making and in adaptation responses to climate change.

79. Oxfam (2010). *Gender, Disaster Risk Reduction, and Climate Change Adaptation: A Learning Companion*. Oxfam Disaster Risk Reduction and Climate Change Adaptation Resources. Oxford: Oxfam GB. Available from <http://www.gdonline.org/resources/OxfamGender&ARR.pdf>

This Learning Companion aims to provide Oxfam programme staff with the basis for incorporating gender analysis and women's rights into Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) programming. Climate Change Adaptation and Disaster Risk Reduction are priorities for Oxfam GB, as are strengthening women's rights and gender equality. Oxfam believes that strengthening women's rights and gender equality are prerequisites for addressing poverty and suffering, and are also a question of justice and basic rights. This Companion is one of a series that covers key topics for programme staff. It, however, assumes that the reader already has an understanding of Adaptation and Risk Reduction and of Oxfam's approach to project cycle management, and that the reader understands the basic concepts of gender and poverty analysis. Thus, it recommends that the reader should read the Learning Companions 'An Introduction to Disaster Risk Reduction' and 'An Introduction to Climate Change Adaptation' first for definitions of DRR and CCA and other key terminology, as well as Oxfam's 'Disaster Risk Reduction Programme Policy' and 'Climate Change Adaptation Programme Policy Guidelines'.

Some key learning points outlined in this companion highlights the following:

- Poverty and inequality shape women's and men's vulnerability to disaster and the impacts of climate change, and their capacity to cope and recover in the post-disaster period.
- Since women and men are affected differently by disaster and climate change, their different vulnerabilities and capacities must be analysed, and their gender-specific concerns and priorities addressed.
- Women must be recognized for their resilience in the face of disaster, and for the roles they play as active agents of change in helping communities to recover and adapt, rather than just as victims.

- Mainstreaming gender in ARR programmes means ensuring that the different concerns and priorities of women and men fundamentally shape the whole project management cycle. The aim is that all programmes and policy work contribute to gender equality by transforming the balance of power between women and men.
- Ensuring women's equal participation, dignity, empowerment, and freedom from violence are key principles in programme design and implementation.
- Monitoring and evaluation using gender-sensitive indicators is important to assess whether changes in gendered power relations are occurring as a result of programme interventions.

80. Parbring, Bosse 'Men in the Arctic area hit by climate change' Accessed at: <http://www.nikk.uio.no/?module=Articles;action=Article.publicShow;ID=1016>

This web article (9th of December, 2009) reports on a meeting held in Copenhagen at the UN Climate Summit, which was convened by the Nordic Council of Ministers. Climate change is hitting women in the south hard, but men in the north are being forced to adapt as well, with the warmer climate making survival harder for Inuit hunters in Greenland. The changes are also challenging the role of men in society, as their skills and expertise are undermined creating social problems. Traditionally, women care for animals, make food from the meat and sew garments from hides, whilst men are hunters. Malin Jennings, founder of the Arctic ICCE (Indigenous Climate Change Ethnographies) has studied and lived with Inuit communities in Greenland. Because the ice freezes later and is thinner than before, hunting becomes more difficult (they cannot hunt on ice thinner than six centimetres) and they are finding it difficult to hunt walrus as a result – an important prey for them. Because the ice melts earlier than before this means that the hunters lose a month's hunting. Young people are now questioning any future as a hunter as it is becoming more difficult to feed a family by hunting alone. To remain as hunters, wives would have to take paid jobs, at least on a part-time basis and this could undermine their chances to learn and practice traditional skills which could ultimately be lost. When women can no longer sew clothes, they have to buy expensive clothes which are not as good in the cold – reducing the time that can be spent on the ice and making households poorer overall and more in need of income. A Saami journalist, Samuel Idivuoma, confirms this trend of the impact particularly on men in the Arctic from climate change: 'Climate change robs Arctic men of their self-esteem. They can't feed their families by hunting. They're no longer proud of themselves. For many men, self-esteem is bound up with being the strongest and best hunter. When that knowledge is no longer in demand, they lose their sense of pride. In Greenland, men are now living off benefits instead, but they have nothing to do – so they congregate in bars...which leads to alcoholism'. Men need to be involved in gender-equality work, including the gender aspects of climate change.

Rebecca Pearl, of the Global Gender and Climate Alliance (GGCA), an umbrella group for 38 NGOs and UN bodies, says there is growing acceptance of the adverse impacts on climate change on women compared to men (e.g. 90% of those who died in a flood in Bangladesh were women). Where women's rights are violated, they are also harder hit by climate change. But women can be seen as agents of change, not just victims, with valuable experiences of how to cope with climate change. The Greenbelt movement in Kenya supports women to plant trees, paying them for their work, counteracting climate change and its effects. Gender perspectives are being incorporated into international agreements but it has been conspicuous by its absence in climate negotiations. However, in 2009 there were 42 references to women and gender in the negotiating texts and now only a handful remain. Rebecca Pearl hoped there would be at least one reference to gender in the joint vision included in the final document.

81. Parikh, Jyoti (2007). *Gender and Climate Change Framework for Analysis, Policy & Action*. New Delhi: Integrated Research and Action for Development (IRADe). Available from http://data.undp.org.in/Gnder_CC.pdf

This paper by Parikh provides a framework to analyse gender and climate change concerns keeping in view the strengths and vulnerability of poor women in particular. Parikh, also attests to the fact that vulnerable groups such as the poor and most vulnerable, especially rural women will be faced with problems such as food insecurity, loss of livelihood, hardships due to

environmental degradation which also lead to displacement and a whole host of potentially devastating economic and social consequences.

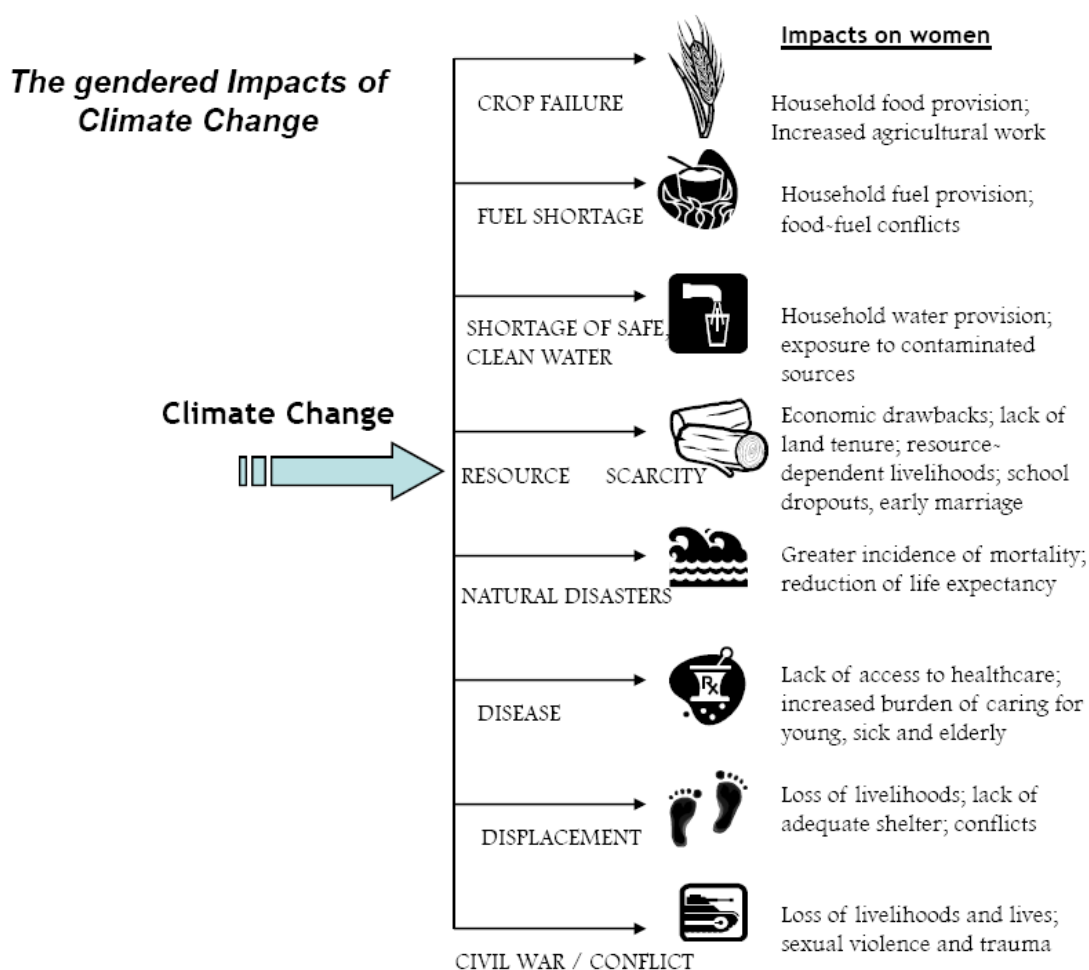
This study indicates that it is the poor women who are vulnerable and will bear the adaptation burden despite their insignificant contribution in households, communities and as stewards of natural resources which positions them well to develop strategies for adapting to changing environmental realities. To this end, it attempts to make a framework for such socioeconomic analysis. It addresses gender and climate change by three different themes: adaptation, mitigation and institutions, policies and governance needed for engagement of women to address their own problems from their own perspectives. Adaptation to climate change and gender is divided in two streams: Natural Resources management and Risks and vulnerability. The former includes agriculture, Forests and Himalayan Ecosystem, Water Resources and Coastal Zones. Risks and Vulnerability include Health, Extreme Events and Disaster, and Basic needs and Threats to Livelihood. Mitigation includes energy efficiency, renewable, Recycling and waste management and CDM projects. Engagement focuses on Capacity building and Knowledge management, Participation, research and development, Decision making and budget allocation and Monitoring. It reviews these themes as short, medium and long term strategies. It maintains that since climate change is a long term issue, there is the need to focus on long term goals first and then see how to get there step by step through medium and short term measures. It defines short term as 1 to 5 years, medium term 5 to 15 years and long term beyond 15 years.

82. Randriamaro, Zo (2008). *Strengthening the role of women in the fight against climate change*. New York: Women's Environment & Development Organization (WEDO). Available at <http://www.deat.gov.za/HotIssues/2008/WEC/docs/Strengthening%20the%20role%20of%20women%20in%20the%20fight%20Compatibility%20Mode.pdf>

A short power point presentation from WEDO, an international organization that advocates for women's equal participation in global policy making, this document explores key issues such as why is gender equality important for climate change adaptation? Why will climate change magnify existing gender inequalities? It is argued that climate change affects everyone but women tend to be more vulnerable to the impacts of climate change. The reason for this is that historically women have had restricted access to resources and information and have limited power in decision-making. Although, efforts are being made in recent times to address gender issues relating to climate change mitigation and adaptation, the challenges of securing gender equality in managing the impacts of climate change is still pervasive.

Because of their ascribed gender roles, women are also the best poised to curb the effects of climate change. And yet, in most countries, Governments' main tools for tackling climate change—mitigation measures to slow down global warming and adaptation measures to decrease the consequences—are not yet reaching the most affected populations, particularly women. To date, only four out of the fourteen National Adaptation Plans of Action that have been submitted to the global climate change convention specifically mention the importance of gender equality. At the global level, climate change mechanisms and negotiations-- including the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol--are narrowly focused on reductions of greenhouse gas emissions, rather than social impacts and gender equality issues are largely ignored.

A diagram is presented (p4, see below) which indicates the gendered impacts of climate change according to WEDO.



WEDO 2008

The findings of WEDO's pilot studies in Senegal, Ghana and Bangladesh are also summarized. These studies suggest that women do have a clear sense of what is needed to adapt better to climate change. Key factors shaping women's ability to adapt to climate change include women's access to assets, protection of their economic livelihood, access to services, political participation in decision-making, access to information and enhanced leadership. In general, women's access to assets is limited and their economic contribution continues to be overlooked in economic planning as well as in disaster assessment. As a result, they often do not get a fair share from the post disaster assistance. Women's participation in disaster-related decision-making is still limited, as well. In climate change adaptation, there is clear evidence of a direct link between gender relations and impacts of and adaptation to climate change. Women's voices and participation in decision-making structures and processes are still inadequate. Climate change debates, processes and mechanisms at national level often fail to sufficiently adopt a gender sensitive strategy, and there is little sensitive evidence of specific efforts to target women in adaptation activities funded by bilateral and multilateral programs. The unique opportunity to change traditional gender roles that is presented when a disaster occurs is often wasted. Women are often portrayed as victims of the climate crisis and without the ability to be involved in negotiations or strategic project planning. Many National Adaptation Programmes of Action (NAPAs) emphasize the vulnerability of women and the importance of gender equality in broad terms. However, few NAPAs describe how women are affected by climate change, much less how they might be identified as powerful actors and agents of change. Prioritized activities in many NAPAs fail to include women as contributors and target groups.

Key recommendations for strengthening the role of women in the fight against climate change:

- National level action is especially important and Governments and other stakeholders should ensure that gender equality is at the forefront of climate change initiatives by:
- Undertaking a gender analysis of national or local climate change policies, programs and/or budgets. For example, examine how national adaptation or other climate change plans include or exclude gender equality.
- Ensuring that women participate in decisions related to climate change and that they have access to capacity building. For example, enhance opportunities for participation, education, and training.
- Developing gender-sensitive indicators for governments to use in national reports to the UN Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Clean Development Mechanism (CDM).
- Creating practical tools that allow gender equality to be incorporated in climate change initiatives. For example, develop a mechanism for the CDM to fund projects that make renewable energy technologies more available to women.

83. Raworth, Kate (2008). *Coping with climate change: what works for women?* Oxford: Oxfam.

Available at

http://www.oxfam.org.uk/resources/policy/climate_change/downloads/climate_change_women.pdf)

This is a short piece from Oxfam, which calls for adaptation policies at every level to be gender-sensitive so that they address both women's and men's needs and interests. It points out that this approach will be effective in building community-wide resilience to climate change, reducing gender inequalities, and so also promoting development. Women may be particularly vulnerable to climate impacts, but they are also the key to adapting to the new climate reality because of their knowledge and use of natural resources. With women at the heart of adaptation, the whole community will become more resilient. The paper explores this by illustrating the following examples; women's use of fuel-efficient cooking stoves (also called Lorena stoves) in Uganda which saves time and trees, and builds resilience; in Bangladesh, women rear ducks because it offers a range of options for diversifying their incomes. Initial start up costs are low and the risks involved are low, because duck rearing is not labour intensive (ducks produce eggs and meat for food or cash), and – unlike chickens – they can swim, so survive floods.

Some key steps recommended include:

- The United Nations Framework Convention on Climate Change (UNFCCC) must invest in and promote gender-focused climate-change research, and promote gender-disaggregated indicators for national reporting to the UNFCCC.
- Adaptation finance from rich and high-emission countries (such as the UK) must be channelled through international adaptation funds that are directed to the most vulnerable communities in developing countries, and through gender-sensitive programmes.
- Every country's national adaptation strategy should be designed to take account of the different impacts of climate change, and of climate policies, on women and men, prioritizing those in the most vulnerable communities.
- Local government and NGOs must ensure that community-based initiatives for adapting to climate change involve women at the heart of planning and implementation, so that both women's and men's concerns – their roles and resources – are taken into account.
- Women and women's organizations must have the space to participate actively, visibly, and as leaders, in climate-change negotiations and institutions - internationally, nationally and locally.

84. Rodenberg, Birte (2009) 'Climate change adaptation from a Gender Perspective: A cross-cutting analysis of development policy instruments'. German Development Institute Accessed at: [http://www.die-gdi.de/CMS-Homepage/openwebcms3.nsf/%28ynDK_contentByKey%29/ANES-7ZLHXG/\\$FILE/DP%2024.2009.pdf](http://www.die-gdi.de/CMS-Homepage/openwebcms3.nsf/%28ynDK_contentByKey%29/ANES-7ZLHXG/$FILE/DP%2024.2009.pdf)

[From the summary]

"Climate change is a global phenomenon, but its consequences will impact differently on women and men. [However:] Linking gender and climate change should go beyond demonstrating the vulnerability of women and their need for focused and tailor-made capacity development. A lot of changes would need an allocation of resources and strong political will among decision makers to appreciate gender inequities in sufficient detail to begin to incorporate such considerations in designing policy interventions."

(Denton 2004, p. 48)

The study presents and discusses a number of approaches that employed in connection with selected adaptation measures and policy instruments, may lend themselves better than those currently in use to pursuing and implementing the goal of gender-just development. The Fourth Assessment Report presented by the Intergovernmental Panel on Climate Change (IPCC) underlines that it is above all the developing countries that will bear the brunt of climate change. Global warming will increase the frequency and intensity of extreme weather events and natural disasters, leading to changes in the quantity and distribution of precipitation. The fact that poor people are particularly dependent on environmental conditions and natural resources (precipitation patterns, availability of fertile land) is a clear indication of their vulnerability. It is, however, important to bear in mind that marginalisation and poverty risks are intensified, not caused, by climate change. It is not the impacts of climate change that bring poor people in the South face to face with a situation in which they lack clean water, medical care, and income. Rather, poverty and the limited means people in developing countries have to secure decent livelihoods or to escape from a situation of need for which they bear no blame are rooted in existing social, economic, and political structures of inequality.

This applies as well for the social inequality between men and women. Gender disparities are the form of social inequality most pervasive in the societies of the South; the reason is that existing systems of cultural or ethnic exclusion are intensified and reinforced by the economic and legal gender divide. In addition, women are for the most part harder hit than men by the impacts of climate change, because women are generally responsible for securing the survival of their families, and the resources they need for the purpose, including e. g. water and firewood, are growing increasingly scarce. And greater workloads, unequal chances of survival, and lack of participation in decision-making serve in turn to further deepen gender inequality.

Climate change has now come to be understood, in development policy, as a cross-cutting factor that poses a threat to human security and the implementation of the Millennium Development Goals (MDGs). In the international climate negotiations there is a growing realisation that poverty and inequality need to be combated in order to strengthen the abilities and capacities required to adapt to climate change in the developing world. Some arguments are rooted in efficiency thinking and others in rights-based approaches: the linkage between poverty reduction and adaptation to climate change is now widely accepted, and concrete needs for action and financial support from the donor community have been identified.

In ways similar what was observed in the course of the poverty debate, the climate debate has led to a broader understanding of vulnerability. Viewed in terms of a socio-political perspective of this kind, the concept vulnerability refers to a set of general characteristics that impair the ability of a social group to cope with external (climate) shocks, to respond effectively to them (resilience), or to adapt to a situation of persistent climate change. The less people are in possession of such capacities or social resources, including e. g. education, health, and social networks, the more likely they are to be affected by poverty or aggravated forms of poverty caused by climate change.

By comparison, the current discussion continues to accord too little attention to the gender perspective. International climate policy for many years largely turned a blind eye to sectoral and structural gender aspects. Since the Rio Declaration was adopted in 1992, as good as nothing has been done to integrate key concerns of women into the central framework

instruments of the climate regime; this goes for the widespread social discrimination of women and the special ways in which women are affected by climate change no less than for women's specific skills in making sustainable use of resources or in coping with crisis situations. And the actors of development policy have thus far also been slow to accept the need for gender analyses and to take up gender-specific aspects addressed in connection with the adaptation debate.

The climate regime's persistent, stubborn gender blindness is due to the following points:

For many years climate change was perceived mainly as a problem that concerned:

- Global changes to broad natural spaces, while little or no attention was paid to the socio-economic impacts at the local level – the level at which gender-specific disparities are most clearly observable.
- The debate on climate change was long dominated by a purely scientific perspective on geophysical causes and effects, one geared to identifying the impacts of anthropogenic emissions on climate change. Questions concerning the need to adapt to the inevitable fact of climate change were in this was relegated to the background and came to be overshadowed by technical-administrative approaches.
- Market based approaches like the Clean Development Mechanism (CDM), the emission-trading system adopted in the Kyoto Protocol have, for over a decade now, dominated international climate policy. It is highly questionable whether and in what ways women or local groups stand to benefit from the large-scale industrial projects typical for the CDM.
- The discourse on global equity has been restricted largely to the need to reconcile the interests of the countries mainly responsible for climate change, the industrialized nations of the North, and the countries mainly affected by the phenomenon, the nations of the South. However, the need for a gender-equitable social approach to the issue of climate equity is hardly discussed even by the governments of developing countries.

Climate change is not gender-neutral

In some central problem areas, the gender dimension of climate change can be elucidated with reference to UNDP's Human Development Report 2007/2008. While in the developing world women produce 60 to 80 percent of staple foods, they own no more than ten percent of the land cultivated. Especially in the countries of Sub-Saharan Africa, which are highly dependent on agriculture, changes in precipitation levels and protracted drought periods have led to rising workloads for women. The large measure of responsibility that women bear for food production on the one hand and their lack of control over and access to land, technology, and credit on the other confront women with huge challenges when drought or erratic precipitation patterns alter cultivation times, reduce crop yields, and undermine crop diversity. Time poverty due to the multiple roles with which women are burdened often makes it impossible for women to engage in the long-term investments needed e. g. to improve land quality. One effect of a deeply rooted inequality when it comes to rights of inheritance and titles to land and means of production is that women are often refused access to new land when it comes to cases of resettlement or claims for compensation in the wake of flood events or other natural disasters. This state of affairs is negatively reinforced by illiteracy and lack of access to information and training. A situation of limited decision-making power in family and community often poses an obstacle to women's ability to make adequate use of their knowledge, e. g. by engaging in crop diversification to ensure stable new harvests. For men as well, though, the loss of income security caused by climate change constitutes a burden and serves to shake the foundations of the traditional male breadwinner role. As a psychological and physical stress factor, this quite frequently leads to increased frustration and violence in the family. The high empirical correlation between natural disaster and armed conflict over scarce resources on the one hand and a rise in sexualised violence against women on the other points unmistakably to another scenario of climate change, one that indicates how urgent the need is for more attention to be paid to gender-specific threats.

Development-policy instruments from the perspective of a gender-just adaptation to climate change

The present study has investigated the poverty-oriented instruments used by the United Nations and by German development cooperation (DC), including e. g. the former's National Adaptation Programmes of Action (NAPAs) – which are provided for under the UN Climate Framework Convention (UNFCCC) – and the latter's priority area strategy papers and country concepts, with a view to identifying possible entry points for a mainstreaming of gender-oriented adaptation. To cite the most important findings:

a) Development-related guidelines and framework agreements: The only more recent UN document that establishes a linkage between gender equity and adaptation is the Report of the 52nd Session of the Commission on the Status of Women (CSW 2008). It recommends that the gender perspective be integrated at all levels of planning and decision-making, with the necessary resources being made available to ensure the full participation of women in all relevant processes. By comparison, none of the adaptation-related concept papers presented by the Organisation for Economic Cooperation and Development/Development Assistance Committee (OECD/DAC) and the EU contain any references whatever indicating that gender issues could have a role to play in climate policy – a blind spot of donor policy.

b) Generally speaking, the more recent poverty-oriented policy instruments of German DC do contain some important references to gender issues. The country concepts (Länderkonzepte), for instance, in many cases make reference either to disregard of women's rights or underline the particularly precarious economic situation of women. If the issue of climate change is addressed at all in these papers, which are constantly updated, the references are restricted to climate protection measures (mitigation), with no linkage being established between the two challenges – gender and climate change. The priority area strategy papers (Schwerpunktstrategiepapiere) do, though, give consideration to practical and strategic gender interests, including women's lack of access to natural resources or their underrepresentation in user groups. Gender inequality is, in part, identified as a core problem involved in the poverty situation in given countries, and women are specified as a target group. All the same, the gender-sensitive problem analyses contained in the strategy papers are not "translated" into a long-term sectoral strategy (policy evaporation). With one exception, they anchor environmentally relevant measures aimed at boosting gender equity only at the micro- or meso-level of social organisation, but without including the issue in the policy dialogue provided for at the macro-level. Here, analysis of the strategy papers on rural development and on water reveals that they reflect the conventional pitfalls that have beset political strategy papers produced by all donors, and had already been identified in connection with Poverty Reduction Strategy Papers (PRSPs).

c) National adaptation strategy papers (NAPAs): Despite the ambitious claims they raise in terms of a substantive gender-sensitive orientation, a screening of the first generation NAPAs shows them to be wanting in a number of respects. Scarcely one third of all of the papers submitted worldwide contain relevant references to gender as an important planning principle. While the papers often outline the special ways in which women are affected by the impacts of climate change, they for the most part depict women only as victims. Nor, generally speaking, do they accord sufficient attention to the stated need for a broad participatory process involving local groups of stakeholders. Non-governmental Organisations (NGOs) and gender experts see a major need for improvement in these papers so important for gender and adaptation.

d) Funding for adaptation: The debate on proliferation, underfunding, and availability of new multilateral funds, still in a very early stage, is in need of deep-reaching studies, from the gender perspective, on these funds' usefulness for and effects on women. Be that as it may, some first assessments indicate that, for instance, the new World Bank funds are typified more by gender blindness than gender awareness. Civil society experts are calling in particular for the introduction of mandatory monitoring instruments as a means of scrutinising the extent to which the funds reflect the principle of gender-sensitive distributive justice. These control instruments would include:

a) gender-specific indicators and gender analyses on the usefulness and impacts of funds and measures (gender impact assessments);

- b) inclusion of gender-responsive budgeting in national funding mechanisms designed to allocate and review the use of funds; and
- c) guarantee of equal access when it comes to negotiations on and efforts to implement mechanisms and programmes.

Central recommendations

The following recommendations are addressed to research institutes and official DC agencies. Their aim is to ensure that gender policy is given a strategic orientation in the issue field of adaptation and that quality assurance measures are in place; they are concerned less with the immediate practice of development-related technical and financial cooperation on the ground.

Research and advisory/consulting institutions

— ... should likewise follow an approach geared to “mainstreaming adaptation in development policy” and consistently key their research work to approaches involving a “double mainstreaming.” Bearing in mind the multilevel approach advocated in the adaptation discussion, future studies on adaptation to climate change should have a gender-sensitive orientation. This calls, in addition, for efforts to clearly unpack the changing social power relations at the micro-level and to give due consideration, at all levels, to gender-specific data and analyses.

- However, far from being restricted to the field of adaptation, the future approaches that research and advisory/consulting institutions take in addressing the gender issue should also contribute to developing a visible gender perspective in studies dealing with climate and forest protection (mitigation).

Official development cooperation agencies

— ... should continue to pursue their own dual-track gender approach with a view to providing gender-equitable support for adaptive capacities. Alongside a more consistent consideration of gender aspects in their strategic policy instruments, especially at the macro-level of bilateral development policy, i.e. in intergovernmental negotiations, they should step up their efforts to promote gender- or women’s empowerment projects, precisely in the field of adaptation to climate change. In doing so, they should take whatever steps are necessary to avoid old conceptual pitfalls and to ensure that women are directly involved in decision-making both in and on adaption measures, and not just when it comes to the implementation of these measures.

— As a member of the international community, the *Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung* (BMZ) should come out in favour of efforts to boost the financial capacities of gender-sensitive multilateral mechanisms, above all those of the UN and its specialised agencies. As a member of the UN, German should – in keeping with the call for a gender-equitable Official Development Assistance (ODA) – work for an increase in or actual allocation of all donor funds set to flow into efforts to implement the United Nations (UNFCCC) Climate Fund. The international community’s goal should be to have in place, by 2015, a quota stipulating that 20 % of all funds available will be used for MDG3- or gender-relevant projects carried out in the field of climate protection and adaptation.

— The donors that are members of the EU (mindful of the Gender Action Plan) and the DAC, including Germany, should work, more forcefully than they have in the past towards establishing a visible linkage between the two global challenges of gender and adaptation. Efforts should also be devoted to reviewing the central planning instruments of the EU’s DC, Country Strategy Papers and Regional Strategy papers, to determine whether and to what extent they do justice to the need for a double mainstreaming and where it may be possible to identify entry points for the issue com Agenda for Action on aid effectiveness, one of the reference themes in the talks on coordination of the division of labour in the European Union should be “gender and climate change.” Official DC agencies should explore possibilities of assuming a leadership role in establishing this linkage. In addition, the Gender Tip sheets accessible in the DAC GenderNet should include sheets on “Gender & Climate Change” or “Gender & Adaptation” (see www.oecd.org/dac/gender).

— Gender mainstreaming calls for expertise and for this reason the official DC agencies should be required to integrate, on a mandatory basis, the gender dimension of climate change into the advanced training measures they plan to conduct on the issue of “mainstreaming climate

adaptation." The only way to achieve a double mainstreaming is to ensure that the key messages from the development discourse on gender equality and strengthening the social and economic rights of women are given due consideration.

85. Rohr, U. (2009) 'Gender in Climate Change Mitigation and Adaptation: Fact Sheet N°1/2009', FES Berlin. Accessed at: http://www.gendercc.net/fileadmin/inhalte/literatur_dateien/49d356c48e54c.pdf

The level of participation by women in decisions affecting climate policy – climate change mitigation as well as adaptation to climate policy – and the implementation of these decisions at the local, national and international levels are very low. This marginalization of women leads to male perspectives generally being given greater attention in planning processes. This once again results in climate protection measures and measures aimed at adjusting to climate change often failing to take into account the practical and strategic needs of a large part of the population. Policy paper

86. Röhr, Ulrike (2006). Gender Issues and Climate Change. In *Tiempo, Bulletin on Climate Change, Issue 59*, University of East Anglia, International Institute for Environment and Development (IIED), Stockholm Environment Institute (SEI). Available from <http://www.tiempocyberclimate.org/portal/archive/pdf/tiempo59high.pdf>

How important is it to integrate a gender perspective into the climate change debate, both in the North and the South? Gender issues have not played a major role in climate protection discussions until very recently, but in the last couple of years there has been more of a conscious effort to address questions of gender. In the South, changes in the climate often impact on areas for which women have been traditionally responsible, such as nutrition, energy and water supplies. This could have long-term implications for gender relations, as women may end up spending more time on traditional reproductive tasks thus reinforcing traditional gender roles. In the North, a study in Europe revealed that women are more prepared than men to change their behaviour to prevent climate change as they place a higher importance on the risk that it may have on their lives. In some areas, they have adjusted their behaviour by reducing their energy consumption, using more public transport and changing their nutrition and shopping habits. Recommendations on how to integrate gender into the climate change debate include: invest more in research and the production of gender disaggregated data, integrate gender into climate protection negotiations and policy making, and encourage women's participation in decision making and negotiations.

87. Röhr, Ulrike (2004). *Gender Relations in International Climate Change Negotiations*. Genanet Available from http://www.genanet.de/fileadmin/downloads/themen/Themen_en/Gender_climate_policy_en_updated.pdf

Up until very recently gender issues have been absent from international climate change negotiations. This paper gives an historical overview of the participation of women and women's organisations in international conferences on climate protection. It explores how women's presence in these forums has enhanced the integration of gender issues into the climate change debate and policy-making processes. The paper observes that although men continue to dominate the debate, women have made a valuable contribution thanks to their networking and interpersonal skills, and to their ability to think and plan for the long term. Despite such progress, gender issues are still considered minor in climate change negotiations. Some entry points to advocate for the integration of a gender perspective in the debate include: produce gender analysis of adaptation to climate change and vulnerability to its impacts for more sustainable

mechanisms of risk management; carry out gender analysis of climate protection instruments; and apply gender budgeting to climate change funds. The author also suggests that international institutions pay more attention to changing individual behaviour to protect the climate and mitigate CO2 emissions rather than merely concentrating on emissions reduction/trading.

88. Roy, Marlene and Venema, Henry David (2002). "Reducing risk and vulnerability to climate change in India: the capabilities approach". *Gender & Development*. 10(2): 78 — 83. Available from http://www.oxfam.org.uk/resources/downloads/FOG_Climate_15.pdf#page=78

This paper argues that the ability of women to adapt to climate change pressures will be enhanced by using the 'capabilities approach' to direct development efforts. It states that by using this approach, women will improve their well-being, and act more readily as agents of change within their communities. This argument is supported by previous research on gender and livelihoods, and a study conducted in rural India. Examples are based on the experiences of poor, rural women in India, who are particularly vulnerable to climate change impacts.

According to Amartya Sen in this paper, there are five instrumental freedoms that, if present, and if women have access to them, will provide opportunities for women to act in their own self-interest and reduce their vulnerability. Access to these instrumental freedoms, namely political freedom, economic facilities, social opportunities, transparency guarantees, and protective security is necessary for women to gain a better quality of life and acquire the capabilities they need to act as their own agents of change (Sen, 1999). This paper, however notes that the ability of Sen's 'capabilities approach' to development to enable and empower poor rural women was dependent on cultural norms and rules that are manifested in a myriad of ways, including through roles and responsibilities within families, and through policies, practices, and legislation at community and state level. It specified that in India there are numerous formal and informal arrangements and institutions that shape the different capabilities of men and women. It cites one well-known example as the caste system, which is still prominent in many areas of rural India, and which greatly influences individuals' access to rights. Nussbaum (2000), on the other hand describes the capability approach as, 'an approach to the priorities of development that focuses not on preference-satisfaction but on what people are actually able to do and to be'. Central to this approach is the idea that freedom is more than citizens having rights 'on paper': it also requires that citizens have the resources to exercise those rights. Thus, the capabilities approach goes beyond asking about satisfaction of people's preferences to ask what women's opportunities and liberties actually are, as well as how the available resources work or do not work in enabling women to function. Most of this paper's discussions focus on some of the insights into the usefulness of Sen's approach in the state of Kerala in southern India which provides several aspects of Kerala's development path bears similarities to those advocated as part of the capabilities approach.

This paper concludes that by using the capabilities approach to direct land and environmental management changes in communities, the well-being of the rural poor can be improved. It attributes this to the fact that the capabilities approach has the potential to go a long way towards reducing their vulnerability to the risks of climate change. That is, the poor rural women, who are already among the most vulnerable, must be specially considered in such development efforts and their right to participate in decision-making must be promoted.

89. Seager, Joni (2009) 'Gendering Climate Change'. Summaries from *Women, Gender & Research*, nr. 3-4 2009, Accessed at: http://koensforskning.soc.ku.dk/kkf/tidligere_numre/2009/2009_34/

In this edited set of articles the contributions are as follows:

- Hilda Rømer Christensen, Michala Hvidt Breengaard and Helene Hjorth Oldrup:
Introduction

- Joni Seager: **Death by degrees: Taking a Feminist Hard Look at the 2° Climate Policy**
- Stacy Alaimo: **Insurgent Vulnerability and the Carbon Footprint of Gender. Death by degrees: Taking a Feminist Hard Look at the 2° Climate Policy**

International policy-makers are beginning to forge a consensus that a 2° rise in global temperature represents an acceptable level of danger to the planet. This is not based on climate science. This article explores how feminist analysis and perspectives on climate change can help to reveal the gendered political and ideological underpinnings of this approach to climate change.

- Nina Lykke: **Non-Innocent Intersections of Feminism and Environmentalism**

Gender and Climate Policies

- Carolyn Hannan: **Gender Mainstreaming Climate Change**
- Ulrike Röhr: **A View from the Side? Gendering the United Nations Climate Change Negotiations**

Masculinities, Technologies, Planning and Mobilities

- Ursula Bauer: **Gender Mainstreaming in Vienna. How the Gender Perspective Can Raise the Quality of Life in a Big City**
- Merritt Polk: **Gendering Climate Change through the Transport Sector**
- Caroline Crowley: **Gendered Identities and Agricultural Sustainability**
- Ursula Offenberger and Julia C. Nentwich: **Home Heating and the Co-construction of Gender, technology and Sustainability**

Consumption and Eco-feminism

- Kate Soper: **Beyond Consumerism: Reflections on Gender Politics, Pleasure and Sustainable Consumption**
- Sowmya Dechamma: **Ecofeminism and Its Discontents: The Indian Context**

Reviews included;

Vandana Shiva: **Soil not Oil. Climate Change, Peak Oil and Food Security.** (*Hanne Petersen*)

Stacy Alaimo and Susan Hekman (ed.): **Material Feminisms.** (*Anders Blok*)

Ariel Salleh (ed.): **Eco-Sufficiency and Global Justice. Women Write Political Ecology.** (*Inge Röpke*)

90. Skutsch, Margaret (2004), 'Mainstreaming Gender into the Climate Change Regime', *Buenos Aires, COP10 paper.* Available from <http://www.gencc.interconnection.org/Gender&CCCOP10.pdf>

The United Nations (UN) is formally committed to gender mainstreaming within all UN policies and programmes. Many people, however, find it difficult to understand why gender might be a factor in climate change or how it should be addressed. This paper summarises these issues as discussed at two gender focused side events during the 2004 tenth session of the Conference of the Parties to the U.N Framework Convention on Climate Change (COP-10). The first side event focused specifically on the issue of gender and adaptation to climate change, concluding that the current problem is not a lack of willingness to incorporate a gender perspective but a lack of knowledge or toolkits to do so. The second event looked more broadly at the need to incorporate gender into the full range of climate policy worldwide. Specific recommendations were made on the basis of these discussions, including: - undertake a gender analysis of all budget lines and financial instruments regarding climate change; - develop gender-sensitive indicators which could be incorporated into the U.N. Framework Convention on Climate Change (UN FCCC) and the Kyoto Protocol mechanisms and instruments; - carry out global and national studies on the gender-differentiated impacts of global climate change.

91. Skutsch, Margaret, M (2002). "Protocols, treaties, and action: the 'climate change process' viewed through gender spectacles". *Gender & Development*. 10(2): 30 — 39. Available from http://pdfserve.informaworld.com/707568_666_741921471.pdf

This paper starts by evaluating the extent to which gender considerations have been taken into account in international processes concerning the development of climate change policy. Finding that there has been very little attention to gender issues, neither in the protocols and treaties nor in the debates around them, the paper explores whether there are in fact any meaningful gender considerations in relation to (a) emissions of greenhouse gases, (b) vulnerability to climate change, and (c) participation in projects under climate funding. It concludes by suggesting some areas of attention in which the gender perspective could improve the effectiveness of climate interventions and also benefit women.

92. Smyth, Ines (2009). "Gender in Climate Change and Disaster Risk Reduction, Manila, October 2008". *Development in Practice*. 19(6):799 – 802. Available from <http://dx.doi.org/10.1080/09614520903027205>

The participants of the Third Global Congress of Women in Politics and Governance, on Gender in Climate Change Adaptation and Disaster Risk Reduction, gathered in Manila, Philippines, 19-22 October, 2008 to draft a declaration to advocate for the inclusion of gender considerations in the UNFCCC COP-14 (Poznan), COP-15 (Copenhagen), the Second Session of the Global Platform for Disaster Risk Reduction and beyond. Smyth's report which is developed from this draft, establishes the following;

- That, climate change and its negative impacts are one of the most urgent human security, ecological and development challenges of our time and therefore must be understood as a development issue with gender implications that cuts across all sectors (social, cultural, economic, and political) from the community to the global level; and concerted efforts are required by all stakeholders to ensure that climate change and disaster risk reduction measures are gender responsive, sensitive to indigenous knowledge systems and respect human rights.
- That, women are vital agents of change, holders of valuable knowledge and skills, and can be powerful leaders from community to global level in climate change mitigation, adaptation and in disaster risk reduction. On the other hand, it advocates for both men and women to equally participate in climate change and disaster risk reduction decision-making processes at all levels.

This report highlights the link between climate change adaptation and disaster risk reduction for which the HYOGO framework of action 2005-2015 provides a guide to better protect our societies and economies from current and future hazards. It also indicates the findings of the Intergovernmental Panel on Climate Change (IPCC) that climate change impacts will vary among regions, generations, ages, classes, income groups, occupations and gender, and that the most marginalized will be disproportionately affected.

93. Terry, Geraldine (Ed.) (2009). *Climate Change and Gender Justice*. Practical Action Publishing in association with Oxfam GB. Available from http://www.oxfam.org.uk/resources/downloads/wigad_climate/WIGAD_climate_change_gender_justice_book_pap.pdf

Climate change is often framed as a problem that needs mainly technical and economic solutions. "Climate Change and Gender Justice" considers how gender issues are entwined with people's vulnerability to the effects of climate change, and how gender identities and roles may affect women's and men's perceptions of the changes. The vivid case studies in this book show how women and men in developing countries are experiencing climate change and describe their efforts to adapt their ways of making a living to ensure survival, often against extraordinary odds. Contributors also examine how gender-equality concerns should be integrated into international negotiations and agreements on climate change mitigation and adaptation to ensure that new policies do not disadvantage poor women, but rather deliver them some benefits. Some of these articles have previously been published in the Oxfam Gender and Development Journal.

Chapters of this book are as follows:

- 'Introduction', G.Terry.
- 'Gender and climate hazards in Bangladesh', T. Cannon
- 'Reducing risk and vulnerability to climate change in India: the capabilities approach', M.Roy and H.D. Venema
- 'Gendering responses to El Nino in rural Peru', R.R.Reyes
- 'Engendering adaptation to climate variability in Gujarat, India', S. Ahmed and E. Fajber
- 'Resilience, power, culture and climate: a case study from semi-arid Tanzania, and new research directions', V. Nelson and T. Stathers.
- 'Gender, water, and climate change in Sonora, Mexico: implications for policies and programmes on agricultural income-generation', S. Buechler
- 'Building gendered approaches to adaptation in the Pacific, R. Lane and R.McNaught
- 'The Noel Kempff project in Bolivia: gender, power and decision-making in climate mitigation' E.Boyd
- 'Climate change and sustainable technology: re-linking poverty, gender and governance'. S.Wong
- 'The bio-fuel frenzy: what options for rural women? A case of rural development schizophrenia', N.Tandon.
- 'Women's rights and climate change using video as a tool for empowerment in Nepal' M.Khamis, T.Plush, C.Sepulveda Zelaya.
- 'Engendering the climate-change negotiations: experiences, challenges and steps forward'. M.Hemmati and U.Rohr.
- 'Conclusion'. G.Terry.

94. Terry, Geraldine (2009). "No climate justice without gender justice: an overview of the issues". *Gender & Development*. 17(1): 5 — 18. Available from http://pdfserve.informaworld.com/942336_908827558.pdf

This overview establishes that both climate change itself and related policies are likely to have wide-ranging effects on gender relations, especially in developing countries. In this overview, he highlights that poor women face many gender-specific barriers that limit their ability to cope with and adapt to a changing climate. To this end, he suggests that these barriers must be removed in the interests of both gender equity and adaptation efficiency. Terry proposed that, gender analysis should be integral to the appraisal of public policies designed to reduce carbon emissions. He also explains that based on the evidence available to date, gender issues have hardly figured in the international policy discourse, including the UN Framework Convention on Climate Change and its Kyoto Protocol even though, this may be changing. He attributes this change to feminist lobbying and the increasing involvement of gender specialists in this field. Finally, he noted that despite all the efforts involved in mainstreaming gender into climate change policies and programmes, there is still a lot at stake, the international post-2012 Kyoto Protocol agreement will have enormous implications for gender equality.

95. United Nations International Strategy for Disaster Reduction - UN/ISDR (2008). *Gender perspectives: integrating disaster risk reduction into climate change adaptation good practices and lessons learned. Highlighting the connection between climate change, disaster risk reduction, and gender-focused approaches to development*. Geneva: UN/ISDR. Available at [http://www.unisdr.org/eng/about_isdr/isdr-publications/17-Gender Perspectives Integrating DRR CC/Gender Perspectives Integrating DRR CC Good%20Practices.pdf](http://www.unisdr.org/eng/about_isdr/isdr-publications/17-Gender%20Perspectives%20Integrating%20DRR%20CC/Gender%20Perspectives%20Integrating%20DRR%20CC%20Good%20Practices.pdf)

This publication points out the vital nexus between women's experiences of natural resource management, climate change adaptation and disaster risk reduction, and how they can come together to contribute to the ongoing global effort to promote gender equality in socio-economic development. It seeks to highlight initiatives that have successfully used disaster risk reduction

as a tool to adapt to climate change and reduce risk and vulnerabilities in various parts of the world. It employs case studies of grassroots women's leadership in countries like Bolivia, Mali, Sri Lanka, Tunisia, Brazil, India, Nepal and South Africa which utilise such initiatives as practical tools to promote good practice for implementing gender equality and mainstreaming gender perspectives in policy and decision-making processes for disaster risk reduction and climate change adaptation strategies. This publication simply;

- Emphasizes women's knowledge and capacity as environmental and natural resource managers.
- Highlights the importance of land use and management, and alternative livelihood options in the context of climate change.
- Highlights women's participation in community decision making processes, showing the importance of building women's and girls' capacity in disaster risk reduction, and demonstrating their potential for leadership.
- Briefly showcase some specific tools used to mainstream gender into planning and policy development, to assess vulnerability, and to design adaptive strategies.

More importantly, this publication highlights that without the input of women who have many ascribed gender roles in households, communities, and as stewards of natural resources, risk reduction and climate change adaptation strategies will not be designed for the entire community. Thus, it advocates that for disaster risk reduction projects, policies and programmes can be meaningful and successful only if the interests of the whole community are taken into consideration.

96. UNDP (2009). *Resource Guide on Gender and Climate Change*. New York: UNDP. Available at http://www.un.org/womenwatch/downloads/Resource_Guide_English_FINAL.pdf

This *Resource Guide on Gender and Climate Change* presents principal conceptual and methodological advances on gender relations in the context of climate change, with the overall objective of providing guidelines for actors, practitioners and consumers in this relatively new programme area. It has been prepared through research, analyses and combinations of international frameworks, conceptual and methodological documents, and the compilation of case studies. The Guide identifies the main approaches that consultants employ in this field, and the views held by relevant organizations and experts. The authors argue it is necessary to include women's voices, needs and expertise in climate change policy and programming. Women's contributions can strengthen the effectiveness of climate change measures. As the world moves towards a new global agreement on climate change, it is critical that women contribute to the effort and that their perspectives are equally represented in the debate.

This Guide will facilitate an understanding of this socio-environmental problem as dealt with from an integrated point of view, one provided by a gender equality approach. However, its principal contribution will be to provide a more proactive agenda that will make it easier to understand the policies formulated. The document has two sections. The first section, which contains six chapters, deals with the principal gender considerations that must be taken into account in the face of climate change. The second section is the result of an effort to compile, systematize and analyze information gathered from different sources. The second chapter, comprising a list of international frameworks, gives a brief analysis of the principal instruments developed by the international community that provide a reference for integrating the gender approach into responses to climate change. Finally, this guide suggests that the two themes, gender and climate change, must be approached holistically, with recognition that climate change is not only a scientific problem, but also includes the important issues of equality and development.

97. UNFPA (2009) 'State of world population 2009: Facing a changing world: women, population and climate'.

This study presents the elements of climate change and explores the challenges posed by climate change to world populations and the under-represented variable of gender. Chapter 3 discusses the myths and realities relating to environmental migration, the drivers of migration and the

unequal impacts, and ways forward. Chapter 4 discusses how to build resilience and explores some of the social and cultural aspects of vulnerability and adaptation. The contested attribution of climate change as a causal factor in creating conflict is discussed as is the challenge of urbanization and rising seas and the rising food insecurity levels. Chapter 5 identifies strategies for mobilizing for change. It is noted that women are on the front lines of climate change, and that there are gender differences in the management of risk. Policy support for women in responding to climate change is demanded and an analysis is given of current representation of women in climate delegations to the UNFCCC etc. It is argued that women's participation in environment and development negotiations outside the climate sphere can be substantial and influential, with the growth in recent decades of global civil society and international networks of global activists working to protect the environment, secure women's rights and promote sustainable development.

Five steps are outlined in the concluding 6th chapter to bring world populations back from the brink.

1. Bring a better understanding of population dynamics, gender and reproductive health to climate change and environmental discussions at all levels;
2. Fully fund family planning services and contraceptive supplies within the framework of reproductive health and rights, and assure that low income is no barrier to access;
3. Prioritize research and data collection to improve the understanding of gender and population dynamics in climate change mitigation and adaptation;
4. Improve the sex-disaggregation of data related to migration flows that are influenced by environmental factors and prepare now for increases in population movements resulting from climate change;
5. Integrate gender considerations into global efforts to mitigate and adapt to climate change.

98. UNFPA and WEDO (2009). *A Resource Kit on Climate, Population and Gender – Climate Change Connections 1: Overview- Women at the Forefront*. Prepared by UNFPA and WEDO. Available at http://www.unfpa.org/webdav/site/global/shared/documents/publications/2009/climateconnections_1_overview.pdf

This overview establishes the linkages between gender equality and climate change. It argues that even though women play a paramount role in the management, conservation and use of natural resources, they still face unequal access to decision-making, formal financial systems, land ownership, reproductive health care, and education and information, undermining their well-being in addition to that of their families and communities. Despite this, this article states that their primary responsibility for growing food and collecting water and fuel wood has made them keenly aware of their environments and the devastating impacts of deforestation, desertification and other forms of environmental degradation. It also adds that since women's socio-economic status remains lower than men's, poor and disadvantaged women who live in either developed or developing countries are unequally affected by natural disasters and are over-represented in death tolls. This makes them disproportionately vulnerable to environmental changes. It suggests that women's vulnerability can obscure the fact that they are an untapped resource in efforts to cope with climate change and reduce the emissions that cause it.

On the other hand, it describes women as innovators, organizers, leaders, educators and caregivers who are uniquely positioned to help curb the harmful consequences of a changing climate. Thus, it suggests that incorporating a gender perspective into climate change policies, projects and funds is crucial in ensuring that women contribute to and benefit from equitable climate solutions. It also emphasizes that it is important to differentiate the numerous impacts of climate change on women. Understanding how climate change, sustainable development and population issues intersect and the specific impacts on women will help in the development of effective, gender-sensitive policies and programmes.

The overview outlines some key points for policy advocacy:

- Prevent challenging and costly adaptation through commitments to mitigation;
- Prioritize adaptation activities, particularly for vulnerable communities including women, children, the elderly, people with disabilities and indigenous peoples.
- Increase investments in mitigation and adaptation and base them on gender analysis. Investing in voluntary family planning and reproductive health access will empower women, lower fertility rates, improve maternal and child health and slow population growth—all of which will help mitigate climate change and build more resilient, adaptive communities.
- Incorporate gender and population issues into National Adaptation Programmes of Action and climate policies to effectively meet the goals.

99. UNFPA and WEDO (2009). *A Resource Kit on Climate, Population and Gender – Climate Change Connections 2: Policy that supports Gender Equality*. Prepared by UNFPA and WEDO. Available at http://www.unfpa.org/webdav/site/global/shared/documents/publications/2009/climateconnections_2_policy.pdf

This paper assesses national policy frameworks in relation to gender equality. It suggests national governments use the international framework to craft their own climate change policy. It addresses the fact that women are a majority of the world's poor and are more often responsible for household food production, family health and nutrition, and management of natural resources, sectors that are particularly sensitive to climate change. However, women should be seen as agents of change and not victims, who simply have unique knowledge and capabilities. Seeking and encouraging their leadership to address climate change and inform policy is one way to ensure that a gender perspective is included; without this, climate policies could fail to be effective.

The paper includes a box on women, migration and climate change. It is suggested that the scope of climate-related migration is not clear, but women feel both positive and negative effects. Gender equality can increase, as women who migrate can become more independent socially and financially. Women at home may rely on remittances from male household members, but they can also experience greater autonomy in the household. However, equality does not always improve. Migrant women are at higher risk of sexual exploitation and labour discrimination, or they may experience increased isolation due to cultural dependence on men. Women's burden at home may also increase. An example is given of soil erosion in the Tambacounda region of Senegal, which has caused 90 % of men to have migrated at least once, leaving many women and children to rehabilitate the land and produce food with fewer economic and human resources. No policy adequately addresses this issue. If migration patterns on a local, regional and national level are examined, and the growing numbers are likely to show a need for policy to do such things as promote rural economic development, facilitate movement, engage in proactive urban planning and address needs of both locals and migrants.

On population it is noted that advancing gender equality, eliminating violence against women and ensuring women's ability to control their fertility were acknowledged as cornerstones of population and development policies in the 1994 International Conference on Population and Development (ICPD) Programme of Action. As such, it remains an extremely relevant framework when considering climate change policies. Mitigation and adaptation measures should ensure that ICPD principles—including a human rights-based approach to reproductive health and rights rather than a focus on demographic targets—remain at the centre of climate change and population policies.

This paper advocates for gender to be integrated into existing development strategies, and mainstreamed into adaptation, mitigation and disaster risk management, along with additional

financial support. It adds that this will combat poverty and injustice by addressing inequities, building resilience and lowering long-term development costs. It identifies the four mechanisms for national action as;

- National Adaptation Programmes of Action (NAPAs): A medium for which least developed countries (LDCs) can identify, prioritise and fund their most immediate climate change adaptation needs through the United Nations Framework Convention on Climate Change (UNFCCC). Its guidelines states that NAPAs should be participatory and involve both women and men at the grassroots level, recognising that some climate change impacts are gender-specific.
- The Poverty Reduction Strategy (PRS) process, designed to be country-driven and participatory, makes countries eligible for debt relief under the HIPC (Heavily Indebted Poor Countries) initiative and for lending from the World Bank and IMF. But the PRS process has been criticized for lacking a clear institutional framework for civil society participation, which leads to the exclusion of women, indigenous groups and rural communities. Although it offers an opportunity to integrate climate change action into country strategies via the PRS paper (PRSP), only a few countries have done so.
- National communications: They are required for Parties to the UNFCCC because the communications quantify greenhouse gas emissions, assess vulnerabilities and report on the national situation, they can aid all governments in identifying where to incorporate gender issues into climate change action.
- National mitigation plans to reduce emissions: These should include activities determined by the sustainable development priorities and circumstances of each developing country. As of June 2009 there are no specific guidelines, so the process is ripe for incorporation of a gender perspective/analysis. Mitigation plans can include agriculture, sustainable forestry and resource use, which directly impact women's livelihoods and can provide 'co-benefits that improve agricultural productivity and resilience and thus contribute to food security, sustainable development and adaptation'.

Recommendations for policy makers include:

- i) Design global climate change agreements to: be flexible and responsive to varied national and regional needs; include new mechanisms for additional, adequate funding that explicitly addresses the most vulnerable populations and regions
- ii) Design and implement climate policies and actions at local, national and international levels to: include monitoring, evaluation and flexibility to allow policy adjustment when needed; uphold a participatory and community-based approach; institutionalize wide stakeholder involvement with mechanisms to ensure equitable participation of women throughout all stages of the process; draw on and value women's unique knowledge and coping mechanisms; develop gender-sensitive indicators to monitor and evaluate the processes of stakeholder inclusion and responses to their input; collect gender-disaggregated data to inform programme development; perform gender analysis to understand the different roles of women and men; develop climate change mitigation and adaptation programmes that use gender analysis to improve the welfare of women and girls—e.g., access to credit, capacity building and extension services, information dissemination, improved access to land and natural resources, sustainable energy and technology and access to reproductive health information and services; evaluate local and regional population dynamics—e.g., the variable impact of aging, household size and urbanization on climate change (and vice versa) when designing mitigation and adaptation programmes; incorporate climate change objectives into national plans develop, deploy and disseminate sustainable technology that is responsive to women and men;

- iii) Establish coherence among the institutions responsible for climate change, gender, human rights and health policy;
- iv) Build on global goals and commitments and the solid framework of good examples of UN gender language from existing policies and agreements; don't start from scratch.

100. UNFPA and WEDO (2009). *A Resource Kit on Climate, Population and Gender – Climate Change Connections 3: Common Ground-In Bangladesh, Ghana, Nepal, Senegal and Trinidad and Tobago*. Prepared by UNFPA and WEDO. Available at http://www.unfpa.org/webdav/site/global/shared/documents/publications/2009/climate_3_cases_studies.pdf)

This paper explores the linkages between gender and climate change. It maintains that climate change affects women in different ways across the globe, but common themes bridge their experiences. It examines multiple gender issues associated with the impacts of climate change and suggests important policy points and opportunities for intervention in five developing countries; Bangladesh, Ghana, Nepal, Senegal and Trinidad and Tobago. This study reveals that in each of these countries, women represent a large percentage of the poor, experience gender inequality and are faced with increasing vulnerabilities as the climate changes. These countries were selected based on regional diversity, vulnerability to climate change, least developed and developing country status and WEDO's strong existing partnerships. It also emphasizes that as national governments draft their policies to respond to their populations' needs, it is important that they recognise the different roles played by women and men in coping with, managing, off-setting and building resilience to climate change impacts. The development of South-South and South-North partnerships is important, and will in turn, encourage and promote advocacy activities, resource generation, knowledge sharing, training activities, capacity building projects and climate change responses initiated in the global South and will benefit women.

101. UNFPA and WEDO (2009). *A Resource Kit on Climate, Population and Gender – Climate Change Connections 4: Making NAPAs work for women*. Prepared by UNFPA and WEDO. Available at http://www.unfpa.org/webdav/site/global/shared/documents/publications/2009/climateconnections_4_napas.pdf

Around the world, governments are awakening to the idea that coping with climate change requires a rapid response if we are to avoid its worst consequences. Nowhere are the effects of climate change being felt as acutely as in the developing world, where it is already undermining development gains. And women, as the majority of the poor and the primary caretakers of families, are on the frontlines dealing with increased natural disasters and changes in their environment NAPAs are the mechanisms by which LDCs assess their urgent climate change adaptation needs and prioritize actions to meet them. They contain a list of ranked priority adaptation activities and projects, with short profiles of each to assist in the development of proposals for implementation

This paper notes that guidelines for NAPA preparation, put together by the LDC Expert Group, stress that the process should be participatory. It recommends that the team at the national level should be made up of a lead agency and representatives of stakeholders including government agencies and civil society. It indicates that women and men at the grassroots level should be involved because they can provide information on current coping strategies. They are also the most affected by climate change and hence could potentially benefit the most from NAPA activities.

This paper states that the guidelines also highlight the importance of gender equality, noting that climate change has different adverse impacts on women and men and in most cases disproportionately affects women. It also adds that other guiding elements include taking a

multidisciplinary approach; building on existing plans and programmes; mainstreaming NAPAs into development planning; taking a country-driven approach; emphasizing sound environmental management; and ensuring cost effectiveness and simplicity. Finally, it emphasizes that the Expert Group notes that the guidelines are not meant to be prescriptive, that is, procedures may be flexible based on individual country circumstances.

It is also noted within the study that population growth and urbanization is expected to occur mostly in developing countries that are already experiencing climate change impacts and have vulnerable populations, including women. NAPAs tend to focus on physical adaptation such as early warning systems, water systems and agricultural improvement, some of which relate to population. But adaptation can also be social, such as meeting demands for reproductive health services and ensuring education for girls, which empowers women to better negotiate the spacing and number of their pregnancies and increases gender equality. NAPA activities—and indeed all adaptation and mitigation activities—must build on methodologies and commitments already made toward sustainable development and gender equality goals.

102. UNFPA and WEDO (2009). *A Resource Kit on Climate, Population and Gender – Climate Change Connections 5: Financing that makes a difference*. Prepared by UNFPA and WEDO. Available at http://www.unfpa.org/webdav/site/global/shared/documents/publications/2009/climateconnections_5_finance.pdf

How much will it cost to adapt to and mitigate climate change in the coming years and who will pay for it? This paper establishes how the availability of financial resources can promote climate change adaptation and mitigation efforts, including in technology development and deployment and capacity building. This paper explains that in the face of climate change and natural disasters, governments and institutions have the responsibility to mobilize resources and ensure they are allocated to those who need them most often women. It establishes that most international funds do not have allocation guidelines so countries need to determine priorities and build flexibility into their financing plans so that changing needs can be met.

It identifies that women, indigenous peoples and other marginalized groups who live in developing countries usually have difficulty in accessing financing for climate change projects. It attributes this to the reason why a few people know about all the existing funds and submitting a proposal is usually a lengthy process that requires specialized technical knowledge. In addition, it states that a time lag between the start of a project and the availability of funds is common, preventing poor and vulnerable segments of the population from initiating projects. Thus, it acknowledges that many developing countries are both more vulnerable to and have less capacity to deal with climate change than developed countries. For this reason, it maintains that it expects developed country Parties to the Convention to financially assist developing countries in climate change adaptation and mitigation efforts, including in technology development and deployment and capacity building. It also adds that these mechanisms involve a range of actors and sectors (public/private and international/domestic) working to finance climate solutions. Although it states that many argue that rich countries should pay most of the costs of adaptation and that this funding should be in addition to the promised official development assistance (ODA) of 0.7 per cent of gross domestic product (GDP). It also advocates that developing countries can only cope with climate change, if they can access financial resources easily. Finally, it maintains that how these financial resources are allocated will determine, in part, how effective their adaptation and mitigation strategies are and again, recognising the differential impact of climate change on women and men is an important part of this.

103. UNFPA and WEDO (2009). *A Resource Kit on Climate, Population and Gender – Climate Change Connections 6: Educate and Advocate*. Prepared by UNFPA and WEDO. Available at http://www.unfpa.org/webdav/site/global/shared/documents/publications/2009/climateconnections_6_advocacy.pdf

This paper describes women as positive agents of change even though existing literature has revealed that they are victims because they are disproportionately affected by climate change impacts. This paper again highlights that women have been adapting to climate change long before scientists gave it a name or policy makers began to draft a response. It attributes this to the fact that they have a socioeconomic status which may entail feeding their families, raising and educating children and caring for their communities against all odds, and their innovations often improving the wider population's well-being. This paper also outlines that:

- Balanced participation of all relevant stakeholders, including women and men, is needed for effective planning and activity implementation.
- Incorporating and investing in women's capacity as change agents, innovators, educators, leaders and caretakers strengthens programmes and projects.
- Taking advantage of existing information networks means considering local and indigenous knowledge alongside scientific data.

It, on the other hand, indicates that the numerous other sectors apart from the environment for example, housing, tourism, agriculture, infrastructure, finance, commerce, health, water and labour can contribute to and are affected by climate change. This, it maintains can create a lot of potential for gaps in policy-making and implementation, but also offers more opportunities for advocacy around gender issues. It, however, suggests that adaptation plans, including National Adaptation Programmes of Action (NAPA), should be crafted and implemented to be responsive to both women and men to ensure optimum implementation. It concluded the following;

- In areas and sectors where women often play an important or central role, such as agriculture, water, forestry and management of other natural resources, actions must explicitly address gender.
- Disaster risk management and reduction strategies, including early-warning systems, should consider differentiated impacts and prioritize the needs of the most vulnerable populations, including women, in alignment with the Hyogo Framework for Action.
- Data should be gender-disaggregated for all actions and in all sectors related to climate change; they must be available to all stakeholders to make sure policies and programmes are effective and reaching targets.

Every project can have a gender perspective. Projects on health, migration/immigration, water, energy, land use, land tenure, urban planning, sustainable development, good governance, economic justice and employment all have gender and climate change as cross-cutting issues.

104. Van Anh, Tran Thi (2009) *Gender and Climate Change Impacts in Viet Nam - Results of a Desk Review*. Ha Noi: UNIFEM Viet Nam
Available at http://gdnonline.org/resources/UNIFEM_Vietnam_Gender_CC_FinalReport.pdf

Addressing gender-specific impacts of climate change in Viet Nam has been identified as a cross-sectoral issue in the UN's work with the Government of Viet Nam. This study aims to raise awareness and trigger discussion that would feed into ongoing policy work on climate change at the national and global levels, and also into programming. The study was commissioned by the UN Viet Nam Programme Coordination Group (PCG) on Gender, in the context of development of the action plans of the National Target Programme on Responding to Climate Change (NTP). The study presents gender dimensions of climate change impacts and responses based on international and Vietnamese literature, including current policy responses, and propose additional research. It constitutes desk-based analysis of available data on climate change, disaster risk reduction, and poverty reduction. The study examines gender and vulnerability to climate change in terms of access to resources, diversity of income sources and the social status of women and men in communities. The analytical framework focuses on climate change and its effects on three roles of women: the productive role (especially women's livelihoods including migration); the reproductive role (especially women's health and security); and community and

politics (particularly women's capacity and participation). The study analyses the specific and interrelated implications of the impacts of climate change on specific aspects of women's roles. This study includes an analysis of draft data on climate change and poverty from a UNDP project. A consultative meeting with experts in the field of climate change and gender equality provided inputs during the course of the research.

105. Wamukonya, Njeri and Skutch, Margaret (2002). "Is there a gender angle in the climate negotiations?" *Energy and Environment*. 13(1): 115-124. Available from http://www.gendercc.net/fileadmin/inhalte/Dokumente/UNFCCC_conferences/wamukonya_sku_tsch.pdf

This paper considers whether the interests of men and of women differ with regards to climate change and whether this has a South-North dimension. This paper simply attempts to establish whether gender issues need to be addressed in the climate change debate. Towards this goal, a number of different issues within the climate change debate, in particular the instruments proposed are analysed. These include responsibility for emission of greenhouse gases (GHGs), studies on vulnerability to the effects of climate change, mitigation of emissions, capacity building for participation in flexible mechanisms and adaptation to climate change.

This paper argues that there are many gender angles related to the climate change convention and the instruments, within which some are more strategic than others. It points out that while there is little to be gained by looking at the responsibility for emissions on a gendered basis, there would be much benefit in ensuring that, in mitigation activities, women's involvement is specially catered for but mainly based on their placement within the social ladder, as the poor rather than as women per se. It maintains that in the definition of rules and programmes for CDM, as a largest proportion of the poor, women's participation should be actively sought and technologies targeted towards this very important section of the population. It notes that capacity building programmes should be associated with this and should take into account the poor, hence women and their roles in emission reduction and sustainable development, and thus capacitate them to take part effectively. Finally, it suggests that the vulnerability studies and projects for adaptation approaches which target poor population groups in general should follow best practice in this field and utilise existing methodologies which already recognise and incorporate a gender approach.

106. Wamukonya, Njeri and Rukato, Hesphina (2001). *Climate Change Implications for Southern Africa: A Gendered Perspective*. South Africa: Southern Africa Gender and Energy Network (SAGEN). Available from http://www.generoyambiente.org/admin/admin_biblioteca/documentos/wamukonyarukato.pdf

Wamukonya and Rukato assert that South Africa's ability to adapt to climate change depends on the availability of both financial and human resources. They also suggest that its geographic location and political situation could affect the country's capacity to respond to the impacts of climate change. Therefore, this document analyses the implications of climate change for South Africa, from a gender perspective.

107. WEDO (2007). *Changing the Climate: Why Women's Perspectives Matter*. New York: WEDO. Available at <http://www.undp.org/cu/crmi/docs/wedo-ccwomen-in-2007-en.pdf>

This brief also acknowledges that the effects of climate change is multifaceted; social, political, and economic as well as environmental and affects everyone. It describes women as the most vulnerable and the best poised to curb the effects of climate change even though they remain invisible in these efforts. It further points out that women still have unequal access to information and capital and less power to make decisions. This comes to play during natural disasters when

often more women die than men because they aren't warned, can't swim or can't leave the house alone. Often the not, they usually have fewer assets than men to recover from natural disasters, and they often don't own land that can be sold to secure income in an emergency. In addition, they make up the majority of the world's agricultural labourers and rely heavily on fertile land and regular rainfall.

Notwithstanding all these, the brief notes that current policies, mechanisms and actions to tackle the effects of climate change are inadequate and do not offer much solution to the most affected populations, particularly women. They are often not gender sensitive since women are perceived as victims and not as positive agents of adaptation to climate change. The brief, however, states that it is essential to recognise women as key agents of environmental transformation. It explains that their responsibilities in households, communities and as stewards of natural resources positions them well to develop strategies for adapting to changing environmental realities. These examples illustrate what the brief meant by women being key agents in the adaptation of climate change; from time and again, some communities fared better during natural disasters when women played a leadership role in early warning systems and reconstruction. Women tend to share information related to community well being, chose less polluting energy sources, and adapted more easily to environmental changes when their family's survival is at stake. To this end, it suggests that government agencies and other stakeholders should ensure that gender equality is at the forefront of climate change initiatives by;

- Undertaking a gender analysis of national or local climate change policies, programs and/or budgets.
- Ensuring that women participate in decisions related to climate change and that they have access to capacity building.
- Developing gender-sensitive indicators for governments to use in national reports to the UN Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Clean Development Mechanism (CDM).
- Creating practical tools that allow gender equality to be incorporated in climate change initiatives.

108. Women's environmental network (2010) 'Gender and the Climate Change Agenda: The impacts of climate change on women and public policy'. Accessed at: <http://www.wen.org.uk/wp-content/uploads/Gender-and-the-climate-change-agenda-21.pdf>

[From the executive summary]

The 1997 Kyoto Protocol committed industrialized countries to reduce their greenhouse gas emissions in recognition of the threat posed by climate change. December 2009 saw the 15th Session of the Conference of the Parties (COP) to the Climate Change Convention. Considerable progress towards an agreement should have been made at December's conference if new greenhouse gas emissions targets are to be in place when the initial Kyoto commitments expire in 2012. Since Kyoto, the idea of climate change as not simply an environmental issue, but one of social justice, has been given increasing recognition. However, the way in which climate change affects groups that face discrimination and under-representation, such as women, ethnic minorities and indigenous people, has not received sufficient attention. This report by Women's Environmental Network examines the distinct impacts of climate change on women in both developed and developing countries, women's contribution to climate change, and their involvement in decision making about tackling climate change. It finds that, because of their increased likelihood of living in poverty, and their gendered social roles, women are more likely than men to:

- die in climate change-related disasters, and suffer from increased workload, loss of income, health problems, and violence and harassment in the aftermath of such events;
- be displaced, or encounter problems when other (usually male) family members migrate for economic reasons;

- experience increased burden of water and fuel collection, and resulting health problems, due to increased incidence of drought or other changes in climate;
- feel the effects of rising food prices most acutely, and be the first to suffer during food shortages;
- suffer exacerbated health inequalities;
- suffer from violence, including sexual violence, in resource conflicts;
- be expected to, and need to, adapt to the effects of climate change, increasing their workload;
- suffer as a result of intended solutions to the problem of climate change, such as forestry projects and biofuel production.

In addition, climate change is making it less likely that the Millennium Development Goals, including improving gender equality, will be met. In summary, climate change is exacerbating existing gender inequality, and will continue to do so unless addressed with gender-sensitive approaches.

The report also finds that, on average, women tend to contribute less to climate change. This is because of their poverty - lower consumption roughly equates with lower greenhouse gas emissions - and their social roles - for example, women are less likely to fly for business reasons, and less likely to hold a driving license or own a vehicle. It is also observed that women are more inclined towards pro-environmental behaviour, such as recycling and energy efficiency, taking part in citizen actions, and are more likely to favour policies that reduce greenhouse gas emissions, such as limiting airport expansion, or taxing activities with a large climate change impact.

This report highlights the way in which the industries that are contributing most to climate change continue to be dominated by men in the most senior roles. It also finds evidence that the majority of those who continue to deny that climate change is a reality, or a problem that requires attention, are male.

Finally, the report considers women's involvement in decision-making about climate change. It finds that women are poorly represented in both official delegations and in business and civil society groups at the international level, although those women that have been involved have been reported to have made considerable contributions to the outcomes of the negotiations. Similarly, in most countries, both developed and developing, women are under-represented at national level, both in government and the private sector. However, women are often very active in pro-environmental initiatives at the community level, and domestically their influence can be significant, through their own behaviour, household management, and their role as educators of other family members.

In the light of this information, the report concludes that remedial action is required on three fronts:

- **Gender-sensitive strategies to mitigate climate change:** the more radical the cuts in emissions in the next few years, the better chance there is of limiting the negative effects of climate change on women.
- **Addressing gender inequality:** until gender inequality is addressed, women will continue to suffer climate injustice.
- **Gender-sensitive strategies for adapting to climate change:** it is vital that adaptation strategies adequately take account of women's considerations.

We argue that one of the most effective ways of ensuring that all three of the above priorities are met is increasing the representation of women in decision-making bodies, particularly at the national and international levels. Other strategies include a gender audit of stakeholders, and inclusive mainstreaming policies and resources for women-centred solutions.

109. Women's Environment and Development Organization WEDO (2008) 'What it means for women' in 'Forced Migration review'. Issue 31, October 2008. Refugee Studies Centre.

This magazine article is extracted from 'Gender, Climate Change and Human Security' published in 2008, by WEDO. It argues that the disparities between women and men are magnified by climate change. Examples of local adaptation strategies are outlined such as: moving to safer places: higher locations, temporary shelters, increasing the plinth level of their houses or homesteads, and migration; saving their assets: trying to store seeds and moving livestock to higher places; dietary adaptations: skipping meals or eating non-traditional foods; preserving food to be used in lean times; using alternative energy-related technologies; adapting agricultural practices: e.g. switching to crops, and/or varieties that are flood- or drought-resistant, multiple cropping and inter-cropping practices, alternative irrigation facilities, changing to more easily marketable crop varieties or to other animals; earning income as labourers, borrowing money from money lenders, saving part of their earnings, or selling livestock; organizing and collective action: e.g. setting up of group savings or systems of group labour. Environmental issues, including policies, laws and programmes, are being treated as gender neutral but there is clear evidence of a link between gender relations and impacts of and adaptation to climate change and women's participation in decision-making structures and processes is still inadequate. Climate change debates, processes and mechanisms at national level often fail to sufficiently adopt a gender-sensitive strategy and there is little evidence of specific efforts to target women in adaptation activities funded by bilateral and multilateral programmes. Many NAPAs emphasize the vulnerability of women and the importance of gender in broad terms, but few describe how women are affected by climate change, much less how they might be identified as powerful actors and agents of change. Prioritized activities in many NAPAs fail to include women as contributors and target groups. The Millennium Development Goals (MDGs) and Poverty Reduction Strategies (PRSPs) could serve as important reference documents to mainstream gender aspects into climate change policies. Civil society groups can play an important role in supporting marginalized groups and in addressing equity considerations. Greater inclusion of women and inclusion of a gender-specific approach in climate change adaptation and decision-making may reverse the inequitable distribution of climate change impacts. And greater inclusion could improve adaptive decision-making itself, reducing the negative impacts on the entire community, thus enhancing human security.

110. Women's Major Group (2006). Engendering the energy and climate change debate. UN-CSD Fourteenth Session. Discussion papers submitted by major groups. Available at http://www.genanet.de/fileadmin/downloads/themen/Themen_en/CSD14_WMG_discussion_paper_final.pdf

This report is prepared with joint contributions from the International Network on Gender and Sustainable Energy (ENERGIA), the Women's Environmental Network (LIFE), WECF, the International Union for Conservation of Nature (IUCN) and WEDO, in consultation with women's organizations throughout the world, within the framework of CSD-14. This paper provides background information and lessons learned concerning the gender aspects of energy for sustainable development and climate change, with the expectation that this material will be taken into account in the discussions during CSD-14 and in the recommendations made at CSD-15.

There is a need to refocus the thinking and the debate on energy for sustainable development and climate change to include a human rights perspective. It highlights that integrating a rights based approach to access to sustainable and affordable energy is an approach that will recognise and take into account women's specific needs and women's human rights. It argues that current economic models based primarily on privatisation strategies do not include accountability in terms of meeting people's basic needs. It proposes that women must be recognised as agents of change who have a significant role to play in creating sustainable models for energy consumption and production, and in responsible climate change mitigation and adaptation efforts. Thus, empowering women through capacity building and technical training will increase their capacity to effectively participate in energy policy-making and decision-making bodies

111. Wong, Sam (2009). "Climate change and sustainable technology: re-linking poverty, gender, and governance". *Gender & Development*. 17(1):95 — 108. Available from http://pdfserve.informaworld.com/818952_908818009.pdf

This article examines the role of sustainable technology in tackling climate change in developing countries. Drawing on solar home systems in Bangladesh as an example, it argues that increasing women's visibility in technology committees is not necessarily effective in challenging gender stereotypes. Crafting new rules may fail to confront power inequalities. Sustainable technology can exert additional workloads on women. This article proposes a gender-sensitive framework for technological interventions, suggesting that extra resources are needed to strengthen institutions at the post-project stage, and that developing alternative livelihood strategies with poor people is crucial to reduce their reliance on local elites for survival.

GENDER & CC FINANCE

112. Schalatek, Liane (2009). *Gender and Climate Finance: Double Mainstreaming for Sustainable Development*. Washington: Heinrich Böll Foundation . Available at: [http://www.boell.org/downloads/DoubleMainstreaming_Final\(1\).pdf](http://www.boell.org/downloads/DoubleMainstreaming_Final(1).pdf)

Gender differentiated impacts and capabilities are considered in relation to ongoing climate finance discussions and in relation to climate funding. Women and men have different adaptive and mitigation capabilities, and so the financing instruments and mechanisms committed to climate change activities in mitigation and adaption need to take these gender-differentiated impacts into account in fund design and implementation as well as concrete project financing. It also identifies that the existing environmental financing mechanisms have provided only limited benefits for the Least Development Countries (LDCs) and the poorest and most disadvantaged within those countries. It adds that women are generally least considered by modern environmental financing mechanisms. The reasons which were discussed in this report are manifold and range from a lack of access to capital and markets, to women's unrecognized and uncompensated care contributions, to lacking legal protection and ownership rights to cultural and societal biases against women's engagement in learning, political participation and decision-making processes.

This report argues that even though there is a proliferation of several dozen new instruments for climate financing initiatives which range from bilateral and national funds to multilateral ones with a multitude of actors, none of these new financing initiatives has been engendered. It advocates for gender guidelines and criteria to be an integral part of operating procedures and project outlines and not an afterthought. It maintains that the experiences of mainstreaming gender in development efforts can be instructive, and tools developed in this context can likewise be adapted and utilized for making climate financing instruments more gender equitable. These include, but are not limited to gender sensitive indicators; gender analysis of project and program designs; gender-inclusive consultation, implementation, monitoring and evaluation; possible gender finance quotas or set-asides via gender responsive budgeting processes applied to project funding; as well as mandatory gender audits of funds spent . In a nutshell, this report indicates that the single most important tool in advancing fair and gender-equitable climate finance mechanisms and apparently still the most elusive is a political commitment on every level to take gender seriously in combating climate change.

GENDER, CC, MIGRATION

113 Kolmannskog, Vikram Odedra (2008). *Future floods of refugees: A comment on climate change, conflict and forced migration*. Oslo: Norwegian Refugee Council. Available from http://www.nrc.no/arch/_img/9268480.pdf

[From Summary]

Many of the forced migrants are likely to be internally displaced. Disaster displacement is recognised in the 1998 Guiding Principles on Internal Displacement. Those displaced due to more gradual environmental degradation could be considered displaced due to slow-onset disasters, (the lack of) development or as a separate displaced category covered by the descriptive and non-exhaustive definition of the Guiding Principles. Many migrants face challenges and have needs similar to conflict-induced displaced persons, but protection and assistance will largely depend on whether or not international organisations include them in their mandates. While there is often political will, money and media coverage when sudden disasters hit, those who move primarily due to gradual environmental degradation are often less visible. The degree of force in the migration may be considered differently at the different stages of gradual environmental degradation. Particularly for this group, there may be operational and normative protection gaps, internally and internationally, because they risk being considered economic or voluntary migrants. Existing law and protection possibilities should be further investigated to identify and address potential protection gaps. An approach similar to the one taken with regard to IDPs, with the creation of the Guiding Principles, could be considered. Many of the forced migrants may be included in already existing categories of protected persons, but they may need to be made more visible and recognised within the categories. For the internally displaced persons in general there is still a severe protection deficit that must be better addressed. If it is better to prevent than to cure, one should also try to deal with the root causes of forced migration and conflict. Adaptation to climate change in developing countries must be made a top priority along with mitigation. Alongside more typical information and infrastructure measures, addressing general factors of forced migration and conflict can contribute to vulnerability reduction and adaptation. A broad approach to climate change adaptation is needed. Hopefully, climate change will foster a new and stronger sense of solidarity. It provides an opportunity for cooperation in addressing global issues such as conflict and displacement. The term "climate refugees" is misleading, but climate change is one of several root causes behind forced migration. More research is needed in this field, and preventive measures such as climate change adaptation can reduce the risk of displacement, according to a new report by NRC.

GENDER & CLIMATE CHANGE MITIGATION

114 Lambrou, Yianna and Piana, Grazia (2006). *Gender: The Missing Component of the Response to Climate Change*. Rome: FAO. (Available from http://www.generoyambiente.org/admin/admin_biblioteca/documentos/pe1_051001d1_en.pdf)

The gender aspects of climate change have generally been neglected in international climate policy. This report, produced by the Food and Agriculture Organisation of the United Nations (FAO), argues that gender, like poverty, is a transversal matter within climate change and needs to be recognised as such. It analyses the gender dimension of climate change and the policies enacted to mitigate and adapt to its impacts with the aim of developing gender-sensitive approaches with regards to mitigation measures, adaptation projects and national regimes.

According to this report, natural disasters and environmental damage associated with climate change are worse for vulnerable populations, including women and children. Particularly in developing countries, women generally have lower incomes than men, they often have limited control of resources, and they have less access to information and decision making authority. Their ability to mitigate and adapt to the impacts of climate change is thus lower than that of men. Focusing solely on women's vulnerability may be misleading however, since women often have particular skills, coping strategies and knowledge that can be used to minimise the impacts of environmental change. Any environmental policy should therefore recognise women as key players, particularly given their role as natural resource managers. At the Eleventh Conference of the Parties to the UN Framework Convention on Climate Change (COP 11), held in Montreal in December 2005, representatives of women's groups presented a short petition with some gender-specific recommendations to women environment ministers. It concludes that it is crucial

for women to continue to lobby national negotiators in the next stage of climate change negotiations, to press for the full integration of gender issues into the climate change agenda.

GENDER & CC FINANCE

115 Schalatek, Liane (2009). Gender and Climate Finance: Double Mainstreaming for Sustainable Development. Washington: Heinrich Böll Foundation.
([http://www.boell.org/downloads/DoubleMainstreaming_Final\(1\).pdf](http://www.boell.org/downloads/DoubleMainstreaming_Final(1).pdf))

Schalatek's paper addresses gender differentiated impacts and capabilities in ongoing climate finance discussions and in fund establishment. It, in general, stipulates that as women and men have different adaptive and mitigation capabilities, the financing instruments and mechanisms committed to climate change activities in mitigation and adaptation need to take these gender-differentiated impacts into account in funds design and implementation, as well as concrete project financing. It also identifies that the existing environmental financing mechanisms have provided only limited benefits for the Least Development Countries (LDCs) and the poorest and most disadvantaged within those countries. It adds that women are generally least considered by modern environmental financing mechanisms. The reasons which were discussed in this report are manifold and range from a lack of access to capital and markets, to women's unrecognized and uncompensated care contributions, to lacking legal protection and ownership rights to cultural and societal biases against women's engagement in learning, political participation and decision-making processes.

This report argues that, even though, there is a proliferation of several dozen new instruments for climate financing initiatives which range from bilateral and national funds to multilateral ones with a multitude of actors, none of these new financing initiatives has been engendered. It advocates for gender guidelines and criteria to be an integral part of operating procedures and project outlines and not an afterthought. It maintains that the experiences of mainstreaming gender in development efforts can be instructive, and tools developed in this context can likewise be adapted and utilized for making climate financing instruments more gender equitable. These include, but are not limited to gender sensitive indicators; gender analysis of project and program designs; gender-inclusive consultation, implementation, monitoring and evaluation; possible gender finance quotas or set-asides via gender responsive budgeting processes applied to project funding; as well as mandatory gender audits of funds spent. In a nutshell, this report indicates that the single most important tool in advancing fair and gender-equitable climate finance mechanisms and apparently still the most illusive is a political commitment on every level to take gender seriously in combating climate change.

CLIMATE CHANGE AND THE ELDERLY

116 Beales, Sylvia (2009). *Witness to climate change: Learning from older people's experience* London: HelpAge International. (Available from <http://www.helpage.org/Resources/Briefings#A1q1>)

This paper looks at older people's experience of climate change, their awareness of it and how it makes them vulnerable. It highlights older people's exclusion from climate change debates, identifies opportunities for influencing policy-making at the national level and makes recommendations for including older people's perspectives in discussions and adaptation strategies.

According to this paper, older people have told HelpAge that they face increased insecurity brought about by damage to their property, land, livestock, crops and livelihood. Despite not using the language of climate change, it opines that they are eloquent about what is happening to the environment around them and have unique insights into tackling climate change in their communities and have asked to be included in national and community based debates on climate change. As a result, HelpAge International in paper calls on policy makers to implement a

package of “age-friendly” measures to enable older people to be included in adaptation measures within the “post-Copenhagen” agenda. These include:

- Investing in age-friendly health systems, social protection and support for older farmers.
- Researching traditional knowledge on climate change, studying indigenous, drought-resistant crops, and developing land and agriculture policies that take into account climate change.
- Including issues of older people in any policy dialogues taking place during and after the Copenhagen Summit.
- Making climate change messages more accessible to older people.

This paper adds that;

1. UN Member States should include older people in the definition of “vulnerable groups” both in the successor agreement to the Kyoto Protocol and in the guidelines for the Adaptation Fund, the main instrument providing funding for adaptation interventions at the national level.
2. Financing for climate change adaptation must be additional to existing pledges for development aid.
3. All climate change programmes, including National Adaptation Programmes of Action (NAPAs) and any global facility emerging from the negotiations, should be designed to build up older people’s resilience. Attention must be given to:
 - consulting with older people on programme design and finance
 - strengthening health systems to respond to the health requirements of ageing populations, whose health needs will be exacerbated by harsher climatic and environmental conditions
 - putting in place and extending existing social protection programmes that reach older people and their dependants
 - supporting older farmers in crop diversification, livestock, land retention and land use.
4. Funding mechanisms linked to the implementation of NAPAs should be transparent and clear on how older people can access funding and be supported as a vulnerable group.
5. All data and priorities for adaptation strategies and vulnerability assessments should be broken down by age and sex.
6. Governments and civil society coalitions should invite older people’s groups to take on an equal and active role in relevant national forums, financing bodies and decision-making processes on climate change.
7. Older people should be included as key stakeholders in disaster risk reduction and climate change adaptation and capacity-building programmes.
8. Multidisciplinary research should be undertaken on:
 - The interrelation between climate and other external drivers – such as food or energy availability and the impact on older people and other vulnerable groups
 - The health implications – and related policy implications – of a changing climate for an increasingly ageing population in the poorest countries
 - The impact of climate change on older people’s livelihoods.

117. Day, Will, Pirie, Antoinette and Roys, Chris (2007). *Strong and Fragile: Learning from Older People in Emergencies*. London: HelpAge International. Available from [http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA7CPE6X/\\$file/HELPAGE_nov2007.pdf?openelement](http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA7CPE6X/$file/HELPAGE_nov2007.pdf?openelement)

This report was prepared at the request of the Inter-Agency Standing Committee (IASC) Working Group. It explores the humanitarian community’s current policies and practice in responding to the needs of older people affected by disaster. It identifies ways by which older people can be seen as an asset in such circumstances as much as an underserved group with a particular set of unmet needs. A summary of this report was presented, along with the recommendations contained in this Executive Summary, to the 69th Working Group meeting of the IASC, which met in Rome on November 5th 2007. The overall finding of this report is that there are several aspects of current humanitarian practice that do not adequately meet the needs of vulnerable older people. The report makes a number of practical recommendations that are intended to help those assessing, designing, implementing and funding relief programmes to better

understand the needs of affected populations and therefore to meet their particular needs. Although the humanitarian community does include older people in its current definition of vulnerability, it is often as an afterthought 'and the elderly' always at the end of the sentence, and almost always at the end of the list of priorities. To this end this report highlights the following;

- As a consequence of large scale and increasing economic migration by men of working age, we should expect to see rural areas, and particularly remote ones, with a population disproportionately composed of older people, women and children. Some of that movement may be temporary, but the continuing growth of cities and urban economies, and the impact of climate change on agriculture are leading to significant and permanent shifts.
- The erosion of traditional family and community support mechanisms is leading to greater destitution in the older population, and older people's reduced capacity to cope with the upheavals caused by disaster and displacement. With rising rates of HIV and AIDS infection globally (not entirely unrelated to migration), we should expect to see an increase in grandparent headed families.
- In the absence of any form of statutory welfare support, increasing numbers of older people will need to earn an income, however modest, to be able to maintain themselves and any dependents. This has important implications for the design of any food or cash for work schemes, and return programme design. If older people are able to earn an income (however modest) it might reinforce and encourage traditional support.
- These trends combined will demand that humanitarian agencies respond in a more focused way to the needs of older people, and especially the oldest old and the most vulnerable. Older people have special needs, in terms of health, mobility and their productive economic capacity.
- Older people are a great resource for the community, from childcare to leadership. A more sophisticated understanding of older people's needs and capacities will lead to innovative humanitarian programming. This is an imperative for the humanitarian community as we seek to improve provision of care and ensure equal rights for all in emergencies.

118. Filiberto, David, Wells, Nancy, Wethington, Elaine, Pillemer, Karl and Wysocki, Mark (n.d). *Climate Change, Vulnerability and Health Effects: Implications for the Older Population*. (Available from <http://www.cals.cornell.edu/cals/devsoc/outreach/environment-and-community/upload/HealthEffects.pdf>)

This working paper aims to provide a brief overview of the subject and identifies areas for a research agenda on the topic. The paper touches on several major themes, including a brief review of the scientific consensus on the impact of climate change on the environment, known health risks to older persons from environmental threats, and how the impact of climate change may affect older people's health over the coming decades. It, however, makes key recommendations which emerge from the review focus on the need to address the potential adverse health effects on the older population and its heightened vulnerability to climate change. Its logical research questions focuses on investigating the mechanism of effects on older people's health, exploring how they will cope with or adjust to the new environmental conditions, how they can best be educated about risk, and what kinds of interventions (e.g. home modifications) may protect them against threats (such as extreme heat).

119. HelpAge International (2007). *Older people's associations in community disaster risk reduction - A resource book on good practice*. London: HelpAge International. (Available at [http://www.reliefweb.int/rw/lib.nsf/db900sid/MCOT-7MEK4W/\\$file/helpage_dec2007.pdf?openelement](http://www.reliefweb.int/rw/lib.nsf/db900sid/MCOT-7MEK4W/$file/helpage_dec2007.pdf?openelement))

This resource book aims to strengthen the capacity of organisations working with older people in planning and implementing age-sensitive responses to disasters. The resource book draws on the practical experiences of HAI, network partners and older people's associations (OPAs) in preparing for and responding to disasters. It is produced for managers of government and non-government development/humanitarian organisations in the Asia/Pacific region, including: HAI network partners organisations with humanitarian programmes local level government departments and/or ministries non-governmental organisations/community organisations

working at grassroots level mass organisations. The contents draw on the experience of working with OPAs in several countries, including Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Sri Lanka, Thailand and Vietnam via a variety of development programmes at community level. It indicates that experience shows that older people gain increased visibility and greater recognition within their communities after becoming members of an OPA. This book also mentions two key observations about older people in situations of disasters are: older people have specific needs, related to health, nutrition and access to essential services, that are seldom given due consideration in disaster response programmes older people have specific capabilities which are rarely utilised in preparedness, relief and rehabilitation programmes. It highlights that they can and do play important roles within their communities in times of disasters when provided with the opportunities to do so. Thus, building community capacity through OPAs enhances the resilience of a community in the event of a disaster. The lessons learnt as maintained by this book suggests that there are many ways in which older men and women can contribute in planning and coordinating community responses to disasters.

120. HelpAge International (2000). *Older People in Disasters and Humanitarian Crises: Guidelines for Best Practice*. London: HelpAge International. (Available from [http://www.reliefweb.int/rw/lib.nsf/db900sid/LGEL5DHAPR/\\$file/HelpAge_olderpeople.pdf?openelement](http://www.reliefweb.int/rw/lib.nsf/db900sid/LGEL5DHAPR/$file/HelpAge_olderpeople.pdf?openelement)).

HAI's *Older People in Disasters and Humanitarian Crises: Guidelines for Best Practice* was produced with the aim of helping relief agencies meet the special needs of older people in emergencies. They outline key approaches and actions to help the humanitarian community reduce the vulnerability associated with ageing, as well ways of enhancing the capacities and contribution of older people in emergencies. In addition, wider issues relating to older people in humanitarian crises are explored, ranging from globally agreed principles of social and civil practice and global demographic changes, to the physical impact of the ageing process, common images and assumptions held about older people, the key problems they face, and the gender dimensions of their needs. In sum, they are based on wide-ranging research from Asia, Africa, Europe and the Americas and several years of global disaster experience.

121. Lapadatova, Galina and Nan, Yixing (2009). *International Day of Older Persons Workshop: Confronting Emerging Challenges: Climate Change and Aging: Providing Effective Social Services*. New York: Global Action on Aging. (Available from <http://www.globalaging.org/agingwatch/events/IDOP/climate.htm>)

[From Summary]

The remarks from the various speakers at the workshop concludes that older people should know that they have different, however, important roles to play in society. For example, they can serve as models for the young generations teaching them how to make the world and their livelihoods more sustainable. They may also contribute to the reduction of emissions. Being old does not mean that you are being "useless" or a burden for others. The world is not dominated by the younger ones. Everyone has a role to play in their society. Young people should know that the place they live in would not have been the same without their parents and grandparents' effort. Giving respect and more care to the older people is more of a "pay back" for their life long contributions.

In Trinidad and Tobago, the Division of Aging at Ministry of Social Development organizes regular events for young and older people to work together. At their popular cooking workshops, older people teach the young how to prepare traditional ways. No microwaves. No convenient tools. They teach young people to make foods with their own hands. The speaker believes that such activities not only help young people cultivate a sense of connectedness with older people but also provides the young people with useful information for sustainable development.

We are all in this together. Governments, NGO's, private companies, ordinary citizens should

come together to address climate change and include older persons as people at risk in the development of strategies.
