



RESPONDING TO CLIMATE CHANGE IN VIET NAM: **Opportunities for improving gender equality**

A policy discussion paper

HA NOI, DECEMBER 2009

Preface

The challenge of climate change has come to the development agenda with considerable force in recent years, and responding to this challenge has become a priority of many national governments and international development agencies.

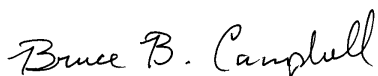
Viet Nam is one of the countries particularly affected by climate change. As a result, Government has formulated policy and development partners, civil society and individual households have already started to adapt their work and way of life to the challenges and opportunities posed by a changing climate.

The United Nations and Oxfam believe that lessons about good development practice must be applied to policies and actions that are currently being formulated and implemented to support adaptation to climate change impacts as well as mitigation of greenhouse gas emissions.

This discussion paper shows how addressing gender inequality will significantly improve the effectiveness of climate change policies and strategies at all levels of Government and civil society. In fact, failing to address social development as part of the response to climate change is likely to increase social and economic inequality between men and women and among other sectors of society.

The UN and Oxfam both contributed to this paper, and we jointly present it to Vietnamese and international policy makers and development practitioners.

We hope that this paper will support policy dialogues, as well as programming in Viet Nam, in order to turn climate change actions into opportunities for the empowerment of women and the enhancement of gender equality.



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In the two provinces, and the districts, communes, villages and households where we organised focus group discussions and did interviews we engaged with hundreds of women and men, girls and boys, as well as with male and female officials at all these levels. Their names are too many to mention here but most are listed in the field research report. We are very grateful for their contributions, without which this paper could not have been written.

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List of acronyms

ADB	Asian Development Bank
CBDRM	Community Based Disaster Risk Mitigation / Management
CCFSC	Central Committee for Flood and Storm Control
DRM	Disaster Risk Management
DFID	UK Department for International Development
DONRE	Department of Natural Resources and Environment
FAO	Food and Agriculture Organization
FGD	Focus group discussion
GDP	Gross Domestic Product
GHG	Greenhouse gas
IPCC	Inter-governmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
FF	Viet Nam Fatherland Front
FLSO	Viet Nam General Federation of Labour, Social Organizations
KP	Kyoto Protocol
MARD	Ministry of Agriculture and Rural Development
MDGs	Millennium Development Goals
MOC	Ministry of Construction
MOCST	Ministry of Culture, Sports and Tourism
MOD	Ministry of Defense
MOET	Ministry of Education and Training
MOFA	Ministry of Foreign Affairs
MOIC	Ministry of Information and Communication
MOIT	Ministry of Industry and Trade
MOH	Ministry of Health
MOLISA	Ministry of Labour, Invalids and Social Affairs
MONRE	Ministry of Natural Resources and Environment
MOPS	Ministry of Public Security,
MOST	Ministry of Science and Technology
MOT	Ministry of Transportation
MPI	Ministry of Planning and Investment
MCD	(Centre for) Marine life Conservation and Community Development
NGO	Non-governmental Organization
NTP-RCC	National Target Programme to Respond to Climate Change
PCG	Programme Coordination Group (on Gender, and others)
PCs	People Committees of provinces and Central-governed cities
PEP	Poverty and Environment Project (UNDP/MONRE)
S&R	Search & Rescue (committees)
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nation Framework Convention on Climate Change
UNIFEM	UN Development Fund for Women
VASS	Viet Nam Academy of Social Sciences
VHLSS	Viet Nam Household Living Standard Survey
WB	World Bank
WEDO	Women's Environment and Development Organization
WHO	World Health Organization
WU	Viet Nam Women's Union
YU	Ho Chi Minh Communist Youth Union

Executive summary

Viet Nam is among the countries worst affected by the adverse effects of climate change, especially in coastal and low-land regions. Already an average of one million Vietnamese are affected annually by disasters including flooding in the Mekong Delta region. Serious droughts also affect the central coast region, Mekong Delta and mountainous areas. Climate change is recognized by the Government of Viet Nam as a major challenge, and the National Target Programme to Respond to Climate Change (NTP-RCC) was approved in December 2008.

Viet Nam has a strong track record on promoting gender equality and women's empowerment, and legislative and policy frameworks are in place to address gender inequality and promote women's rights, including the Law on Gender Equality and the Law on Domestic Violence. However, traditional attitudes and practices which impede the realization of women's rights persist, and progress on some fronts, such as participation in decision-making, the position of ethnic minority women and girls, and women's access to economic resources, remains uneven.

Climate change impacts are different because of different vulnerabilities. The poor, women and children are among the most vulnerable to climate change effects, and climate change may in fact worsen gender inequalities, create extra work for women, and exacerbate vulnerability of women in poor households. Yet gender has to date been relatively neglected in research and policy analysis, as well as in international and national policy processes.

Internationally, policy analysis and responses to the challenge of climate change have been largely gender blind. While the Hyogo Framework for Action prioritises including a gender perspective in disaster risk management, the UNFCCC and the Kyoto Protocol fail to address gender equality and women's participation. Many stakeholders are lobbying for a more gender sensitive outcome at COP15 in Copenhagen in December 2009.

In Viet Nam, the NTP-RCC emphasizes gender equality as a guiding principle, but it is largely silent as to how this will be realized, with no specific targets or activities to address women's vulnerability or gender issues, in particular at the community level. At the same time natural disasters policies and others and that relate to climate change, and the responsible agencies, are not addressed in legislative and policy frameworks for gender, including the Law on Gender Equality.

This discussion paper therefore sets out to analyze gender–climate change relationships in Viet Nam, and to recommend policy actions that address climate change challenges and gender equality. The paper addresses gender dimensions and of climate change impacts as well as of greenhouse gas (GHG) emissions mitigation in Viet Nam, and recommends appropriate policy actions that will both address climate change and promote gender equality. It represents a collaborative effort by the UN and Oxfam in Viet Nam, with the involvement of a broad range of stakeholders.

The paper synthesizes findings from three sources: a desk review, commissioned by the UN conducted in 2008; international literature and additional national literature survey; and fieldwork in two provinces, conducted in 2009. This discussion paper focuses on policy conclusions and actions required to address the gendered impacts of climate change, and is accompanied by a report of the results of the fieldwork.

The paper is aiming to support implementation of the NTP-RCC, in ways that promote gender equality and women's empowerment. Due to constraints in time and resources, the focus of the paper is primarily on rural areas, and GHG mitigation is discussed chiefly in relation to biogas and the System of Rice Intensification (SRI).

A vulnerability and sustainable livelihoods framework is used to analyse links between gender and climate change. Vulnerability is defined as inability to cope with, resist or recover from shocks and stresses including climate change effects. Gender adds a specific dimension to vulnerability analysis. Power relations between the sexes, and gender roles in livelihood generation influence vulnerability and adaptive capacity of individuals, households and communities, because women have less influence in decision-making, less secure resource rights and are more likely to experience poverty.

The paper argues that climate change adaptation and mitigation must not only achieve climate change objectives such as reducing vulnerability and increasing resilience to climate change shocks and stresses, but must also contribute to achieving key development goals including gender equality. Development and climate change responses can only be equitable if they place women's empowerment and the tackling of gender inequality centre-stage. Opportunities to mitigate GHG must also be gender sensitive and avoid worsening gender inequalities.

Key trends in the vulnerability context in Viet Nam which will influence how climate change affects women and men, as well as gender relations, identified in the desk review and fieldwork are as follows.

Several factors are contributing to vulnerability to climate change. Social inequality is rising, especially between rural and urban areas and ethnic minorities and the Kinh majority. While resilience is greater across the board as a result of improved living standards, it is distributed unequally with implications for the ability of less resilient households to recover from shocks. 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.

Women in the study sites were taking on more agricultural tasks as a result of male out-migration and local non-farm employment. Women's productive role and contribution to households is being affected as a result of natural disasters and climate stresses, which impacts on their ability to maintain household subsistence. At the same time, women and female-headed households have less access to livelihood assets which would enable them to cope with major shocks and stresses. This, combined with women's limited participation and influence in decision-making in disaster risk management places them at a significant disadvantage. Men take the lead in most disaster risk management (DRM) activities, such as rapid response

teams, search and rescue and protecting crops and livestock, while 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.

Climate change impacts affect men and women differently. Human capital impacts include disproportionate affects on women's mental health due to their caring role 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 for example due to 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.

Financial impacts of climate change and natural disasters on women are likely to be exacerbated by women's increased responsibility for agricultural production, for example 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.

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 out-migration 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. 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 micro-credit 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 do gain an education in this remote area tend not to return, with implications for the future of these communities.

A key feature of the study was research with children and young people, which identified that they were aware of disaster preparedness and had an understanding of broader environmental issues. They were 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. 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. 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.

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:

1. 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.
2. Improve the research base on the gender and climate change links and ensure gender sensitive data is collected and analysed to inform decision making
3. 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.
4. Protect women's rights in particular during and after disasters that are enhanced by climate change.
5. Create livelihood opportunities for women and female headed households, including rural livelihood diversification and migration / resettlement, as a primary response to climate change stresses.
6. 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.

1. Introduction

1.1 Objectives and scope

The general purpose of this paper is to analyse gender – climate change relationships in Viet Nam, and to recommend policy actions that address climate change challenges and provide opportunities for improved gender equality.

The specific objectives are to

1. examine the international and national policy agenda with relevance to climate change and gender relations;
2. examine gender dimensions of vulnerability and resilience, as well as capacities for adaptation to climate change effects in rural Viet Nam;
3. examine the gender dimensions of some greenhouse gas mitigation actions that are appropriate for lower-income households in rural Viet Nam; and
4. make recommendations for policy actions that create opportunities for strengthening gender equality, whilst adapting to climate change effects and enhancing green house mitigation in Viet Nam.

The paper is targeted at national as well as international analysts and policy makers. It hopes to inform other climate change studies to assess gender aspects of climate change adaptation and green house gas (GHG) emissions mitigation. It also hopes promote the design of programmes and projects that aim to address climate change and at the same time improve social justice. The paper offers inputs into national public discussion and awareness raising campaigns on what different stakeholders in the country should and could do in this regard.

We make recommendations on immediate and longer term policy requirements and actions in response to climate change. These should help to create the best possible conditions for a long term future of almost certain climate change, but the focus is on policies and concrete actions that should be taken in the period until 2020.

The recommendations are based on desk research of international and Vietnamese data and publications on gender and climate change links. Many closely related publications on gender aspects of disaster risk reduction and rural livelihoods were analysed in a desk review that strongly informed this paper¹. The findings are also based on additional data collection in three rural communities in two provinces in central and northern Viet Nam and on an in-depth analysis of international and national policy developments. Recommendations attempt to support in particular the implementation of the National Target Programme on Responding to Climate Change (NTP-RCC) in ways that will generate opportunities for gender equality.

The scope of this paper is broad. Because of time limitations and lack of data the urban situation has been left out, in terms of gendered resilience to deal with climate change effects and women's opportunities to lead on green house gas emission actions such as improved energy efficiency in homes, industry and the public sector. The field work could not cover all rural livelihood zones in Viet Nam, with their different climate change impacts and adaptation options. However the secondary information has enabled a broad overview of those different rural situations. Regarding gender relations and women's opportunities to improve their status and income whilst also contributing to GHG mitigation we have looked in particular at two promising actions, on biogas and the System of Rice Intensification (SRI), partly in the field research and partly from secondary resources. The field data as well as the

literature accessed has been biased towards the lower income communities and groups in these communities, in line with objective 3 (see above).

1.2 Climate change and Viet Nam

Human-induced climate change is now widely considered as inevitable, involving long term shifts in biophysical zones and related livelihoods, as well as enhanced natural hazards and disasters. Climate change is a threat to human development and Viet Nam is among the countries worst hit, especially in the coastal and lowland regions². Climate change and its impacts are recognized by the Government of Viet Nam as a major challenge, and it approved the NTP-RCC in December 2008.

Already an average of one million Vietnamese are affected annually by climate related disasters, including flooding in the Mekong Delta region³. On average Viet Nam experiences five to six tropical storms in the coastal areas annually, river flooding in the deltas, and flash floods and landslides in the mountainous areas. In addition, serious droughts also affect the central coast region, Mekong Delta and also mountainous areas, and many low lying cities regularly suffer major floods from heavy local rainfall. These extremes are set to occur more frequently as a result of climate change, along with increased occurrence of heat waves and saline water intrusion into estuaries and groundwater that is enhanced by sea level rise. A recent study by the Asian Development Bank on the Economics of Climate Change in Southeast Asia⁴ confirms that Viet Nam is also economically one of the countries most vulnerable to the impacts of climate change. Such warnings were also reflected in the 2007 assessment report of the Intergovernmental Panel on Climate Change (IPCC) for example as regards enhanced migration pressures in the Mekong Delta as a result of sea level rise⁵.

According to research by international experts, Viet Nam contributes modestly to GHG emissions⁶ that cause climate change⁷. Viet Nam's greenhouse gas emissions are about 1.6 ton of carbon dioxide equivalent per capita (total projected is about 140 million tons a year)⁸. Compared to industrialised countries such as the United States with more than 20 tons per capita per year⁹, this is still very limited. Viet Nam is not bound by international GHG emissions limitations. However, with increasing economic development and population density, there is every reason to promote more energy efficient, affordable and sustainable methods and limit growth in GHG emissions, for example through sustainable agriculture and forest management, improvements in energy efficiency and use of renewable energy, which all have multiple benefits.

1.3 Gender equality in Viet Nam

Viet Nam has been recognized as the Southeast Asian country with the best record in eradicating the gender gap over the last 20 years, Minister of Labour, Invalids and Social Affairs (MOLISA), Nguyen Thi Kim Ngan has said. The position and status of Vietnamese women has improved since the 1950s, but traditional attitudes which support discrimination and gender inequality persist.¹⁰ Men still hold much of public life, while women are responsible for domestic tasks. Viet Nam now ranks 91st out of 157 countries in UNDP's Gender Development Index, and 50th out of 93 countries in the Gender Empowerment Measure¹¹, with high rates of adult literacy rates for men and women, and little difference between boys and girls in school enrolment. At national level, women comprise nearly 26 percent of National Assembly representatives, and 12.5 percent of Ministers and 9 percent of Vice-Ministers are women. At the local level, only one in five members of commune People's Councils are women.¹²

The Viet Nam Gender Assessment 2006¹³ and other recent overviews¹⁴ indicate several issues that require particular attention:

- a) the position of ethnic minority women and girls in accessing health, education and economic opportunities;
- b) the persistent gender stereotyping in textbooks, perpetuating gender inequalities;
- c) the need for greater recognition of women's roles in the agricultural sector;
- d) progress in the number of women in decision making has been slow and inconsistent (lack of improvement in women participation in decision making)
- e) labour (e.g. disproportionate burden of unpaid/low paid work for women; wage gap between men and women; women are the main and sometimes only worker in agriculture)
- f) there are still weaknesses in the legal framework, e.g. imbalanced retirement age, women's names on land use certificates still not fully achieved, etc..
- g) divorced and single female headed households are particularly affected by high and rising food and energy costs rise; and
- h) migration is continuing to increase, exposing women to exploitation, abuse and trafficking.

Those issues are still relevant, even though they need to be updated. Viet Nam's National Assembly Committee for Social Affairs concluded that since the approval of the Law on Gender Equality that was passed in 2006 and came into effect in 2007, positive changes have been seen in public awareness of the issue of gender equality. However, food and energy costs rose sharply in 2008, just before the global economic crisis hit, and divorced and single female headed households were particularly affected by that. The challenges are further compounded by consequences of climate change, for example in terms of migration of both men and women.

1.4 Gender and climate change in Viet Nam: desk review and field work

There is still limited information on the gender aspects of the causes and impacts of climate change, globally and in Viet Nam, as well as on the gender aspects of GHG mitigation and adaptation actions. However, there is substantial documentation of gender aspects of rural livelihoods, and to a lesser extent of (natural) disaster risk management, and there is some initial research on the impacts of climate change on livelihoods. This initial evidence suggests that climate change impacts as well as climate change responses are not gender neutral.

In order to assess the gender specific aspects of climate change vulnerability, climate change adaptation and GHG mitigation capacities, the UN in Viet Nam commissioned the *Desk Review on Gender and Climate Change in Viet Nam*¹⁵. The desk review shows that the poor, women and children are most vulnerable to climate change effects, and that climate change may worsen gender inequalities, create extra work for women, and exacerbate vulnerability of women in poor households. It also shows that different roles and responsibilities, and different decision-making powers of women and men are not recognised in the NTP-RCC, and that knowledge on climate change and gender is limited. It concludes that gendered vulnerability assessments are needed at sectoral, regional and community levels, and that there is a need for more detailed information, awareness and specific attention for the gender implications of climate change and of climate change responses in Viet Nam.

The desk review has focused on available data on impacts and adaptive actions, and its research recommendations are a good starting point for more in-depth analysis of the links between gender and climate change impacts in Viet Nam (see box below).

Box 1: Desk review of gender and climate change in Viet Nam: Recommendations for further research

- Identify the gendered impacts, adaptation strategies and priorities of women and men in different contexts - including men and women with rural livelihoods linked to agriculture, animal husbandry, forestry and fisheries/aquaculture, as well as livelihood strategies for men and women in urban settings
- Identify impacts of climate change on gender relations at the household level, including links between severe stress from natural disasters and violence against women and girls
- Identify the links between climate change, gender and migration
- Identify barriers to women's participation in decision making on responses to climate change at the household and community level
- Identify best practices for gender-sensitive responses to climate change-related disasters in rural and urban settings, including equal access to health services
- Identify best practices and appropriate case studies of how to involve women in development of national climate change policies and action plans.

Source: UN Viet Nam (2009) *Gender and Climate Change in Viet Nam - A Desk Review*

The present paper is based on the desk review as well as additional review of national and international publications, and on field research in three rural communities in Viet Nam. The field research on climate change impacts has been informed by the short and long term projections of climatic changes and the primary effects of that, including sea level rise, in order to arrive at practical recommendations for action in dialogues with local officials, women, men, girls and boys.

This climate change information has become available through 2009 from the Ministry of Natural Resources and Environment (MONRE) by 'downscaling' global climate models for the most obvious global climate change scenarios to the level of regions and provinces in Viet Nam. The results in terms of expected changes in drought, rainfall, temperature, etc. have been used as inputs into several focus group discussions (FGDs) with women and men, girls and boys, and officials at different levels during the fieldwork done for this paper. See Annex I for more information on the data sources and methodology, and Annex II for a summary of climate trends in Viet Nam.

The desk review did not consider the knowledge gaps of gender aspects of GHG emissions mitigation actions. However, women play specific roles in that and power relations determine whether addressing GHG mitigation improves gender equality or not. The present paper broadens the scope and accessed additional national and international data whilst generating some field data on some specific rural GHG mitigation actions.

1.5 Structure of the paper

In chapter 2 the analytical framework is presented that informed this paper strongly, including the fieldwork that was done. It is followed by the hypothesis and broad research questions.

Chapter 3 assesses the international and national policy context in which gender and climate change links are addressed.

Chapter 4 presents data from the desk review and field work in particular, focused on gendered impacts of climate change especially regarding rural livelihoods

In chapter 5 some findings from additional literature and field research are presented with a focus on some rural GHG mitigation options.

Conclusions and recommendations are provided in Chapter 6.

2. Framework for analysis and research questions

2.1 Definitions of vulnerability, poverty, resilience and adaptation

This section provides definitions of the main concepts used in this paper.

Vulnerability is determined by the ‘characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard (an extreme natural event or process)’ (Wisner ref). The IPCC refer to vulnerability in relation to a system: ‘the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes’ (ref). To capture more than social groupings and all climate change related stresses, the definition of vulnerability for climate change is defined as the *degree to which a person, household, social group, business, organisation, locality or a sector is unable to cope with, resist or recover from adverse effects of shocks and stresses, including climate variability and climate extremes that are enhanced by climate change*.¹⁶

The relative vulnerability of individuals and households to natural hazards and climate change is largely determined by their: livelihood resilience (e.g. access to and control over assets); 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 home, use safe site); social protection (forms of hazard preparedness provided by society more generally, e.g. building codes, GHG mitigation measures, shelters, preparedness); governance (i.e. power relations, social networks, institutional environment).

Individuals have capabilities and agency to act – they are not only victims. The inverse of vulnerability is **resilience** or the capacity to recover from shocks (such as storms, floods) and slow onset climate change (e.g. higher temperatures affecting rice productivity, increasingly unpredictable rainy seasons). The concept of resilience is also being applied to different levels – individuals, households, communities, organisations and entire socio-ecological systems. These levels are intimately inter-connected, because the ability of an individual to recover depends on the social and collective capacity at higher levels (households, communities, and beyond). There are also feedbacks which may amplify or deaden certain changes leading to unpredictable, non-linear (social and ecological) change when thresholds and tipping points are crossed; after which a return to an original situation should not be assumed. Such transformations lead to new or different development challenges.

Poverty and vulnerability to climate change effects are not the same – even though there are significant overlaps. Many low-lying coastal populations will be vulnerable to sea level rise, but these communities and people may not all be poor. Nevertheless, poor men and women will be the most affected by slow and rapid onset climate change, because they have fewer assets and resources to cope, and they tend to be more dependent on climate-sensitive resources, especially water supplies. Whilst poverty is usually a measure of socio-economic status, vulnerability/resilience concepts encourage exploration of and, importantly, estimation of what *may* happen to a particular population, group or individual in relation to specific risks and hazards¹⁷.

How different social groups are affected by climate change depends on three things:

- *exposure* to changes in their climate (varying in magnitude, character and rate) and influenced by geography. Those living in coastal areas, for example, may be more affected than those living further inland;
- *sensitivity* to meteorological changes, which is shaped by social factors – e.g. poor people are particularly dependant upon climate-sensitive resources such as water supplies and have few assets and resources to cope with changes;
- *adaptive capacity* – i.e. the ability of individuals, social groups, organisations, social-ecological systems to adjust to climate change, which relies on their access to and control of livelihood assets.

Prevailing gender inequalities in most societies of the world mean that women and women-headed households will have lesser access to and control of livelihood resources and are disproportionately represented in groups experiencing poverty – in general, they are thus much more likely to be affected by climate change than men.

Adaptation to climate change is of prime importance to Viet Nam, especially for the poorer and most vulnerable Vietnamese¹⁸. But not all adaptation responses will reduce the vulnerability of the poor, and some could even exacerbate poverty and inequality. It is essential that adaptation planning considers the poverty impacts of proposed actions and seeks to build the adaptive capacity and resilience of local communities and institutions.

Vulnerability and Adaptation (V&A) assessment is now being undertaken in Viet Nam, using downscaled data for climate change effects in different regions of the country and there is a greater emphasis on grassroots participation in this work. As a result there is some convergence in concepts and methods used in climate change adaptation and disaster risk reduction. In certain situations there will be limits to adaptation (e.g. where climatic hazards and stresses lead to a fundamental change in the feasibility of livelihood strategies) and permanent migration may be the only option left open to those with the resources and health to move.

Adaptation to climate change requires action at all levels – not just by local communities, but by a wide range of stakeholders (e.g. local and national authorities, private sector businesses and civil society organisations). These groups have to try to meet short-term, immediate needs over coming years, but must also consider what will happen in the longer-term (and extend planning timescales accordingly) (Boyd et al, 2009).

2.2 Gender and climate change analytical framework

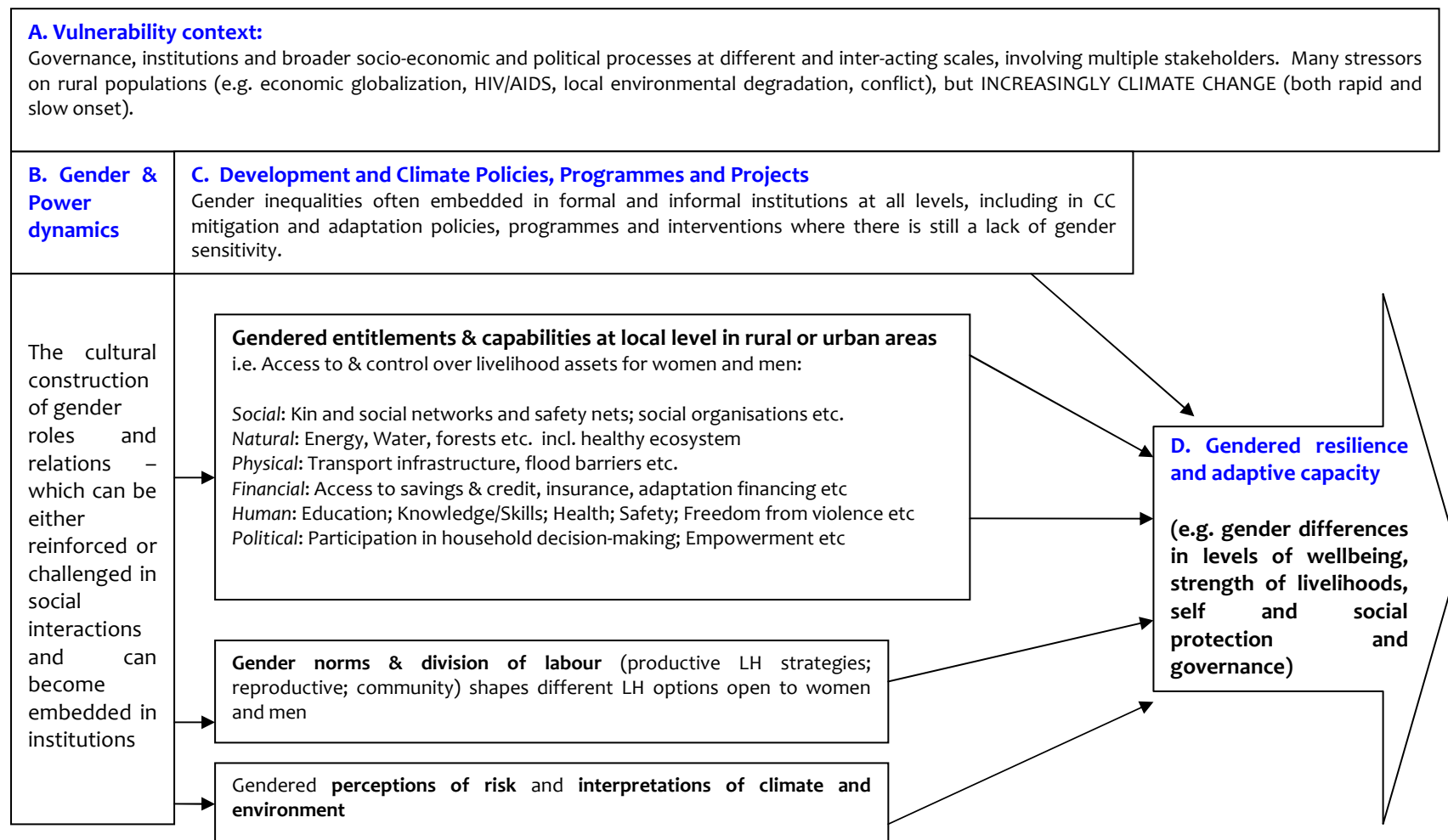
The analytical framework guiding this research draws upon sustainable livelihoods approaches (SLA), which includes the Sustainable Livelihoods Framework (SLF), resilience thinking, gender theory and anthropology. The SLF, when used with participatory research methodologies is useful to analyse complex rural and urban realities. SLA has been influential in international development in expanding understandings of poverty from income focused definitions to a more nuanced understanding of the diverse livelihood strategies undertaken by households, the full range of capital assets upon which households rely, and the vulnerability context, policies and institutions which shape actions by individuals and households. Gender analytical frameworks show how gendered power relations shape organisations and institutions (e.g. property rights, division of labour, livelihood opportunities) and mediate the outcomes of development processes.

The diagram below visualises the gender dimensions of climate change. At its core it emphasizes a gendered analysis of stakeholders, entitlements, capabilities, division of labour/livelihood opportunities and perceptions – these are the primary properties about which (research) questions may be asked. The diagram shows how gender and power relations at a local and wider levels shape the livelihood strategies available to women and men. It is important to keep in sight how stakeholder activities, macro-economic and political trends, a changing climate and natural resource endowment all contribute to the relative vulnerability/resilience of individuals, households and communities in a particular place. Even quite distant socio-economic and political processes can shape decisions at the local level and there are also instances in which the actions of many individuals or local alliances influence these wider processes (e.g. through public policy debates, resistance to new laws, collective land movements etc). These interactions co-produce development realities and regional trajectories/pathways in a specific location that are gendered. This is because women tend to have less influence in decision-making, less secure resource rights, and are more likely to be experiencing poverty (although there are other intersecting lines of social differentiation at work). Understanding of gender-climate change linkages is still very limited in policy circles.

Just as poverty and climate change vulnerability are not synonymous, so climate change adaptation and development are not the same. A continuum of development and adaptation activities can be imagined with the former focusing more on vulnerability and the latter on impact¹⁹. At one end is ‘traditional’ development which addresses the underlying drivers of vulnerability (e.g. literacy projects, livelihood diversification). In the middle is action to manage climate risks (e.g. climate proofing infrastructure, growing drought resistant crops, disaster risk management activities) and building of response capacity (e.g. technological and institutional improvements such as improving mapping, weather monitoring). At the other end is adaptation to human-induced climate change, which has not been seen in development to date (e.g. responses to glacial retreat, or sea-level rise). As the imperative to respond to climate change becomes ever clearer and climate change impacts are increasingly experienced around the world, traditional development activities which exclude consideration of climate change will become scarcer. There will be increasing work to manage climate risks and build response capacity. It is also likely, although often costly and requiring political will, that activities must be undertaken to confront human-induced climate change (e.g. managing bleached coral reefs, moving communities out of areas flooded by the sea etc): relative inaction on GHG emissions mitigation makes it more likely that costly investments will have to be made²⁰.

Both climate change adaptation and GHG mitigation opportunities must be sought that not only achieve climate change objectives (e.g. reducing GHGs, increasing community and country resilience to climate change shocks and stresses), but also achieve development goals (e.g. less inequality, better socio-economic conditions for poor women and men, more sustainable resource management). One example is community based mangrove rehabilitation in Viet Nam, which improves protection from storms, increases carbon sequestration, strengthens aquatic biodiversity, and provides a source for income to local men and women²¹. However, livelihoods can only become resilient in the face of climate change effects with enabling policy and regulation. There is increasing evidence from around the world of local communities observing changes in the climate, of endogenous adaptation and of governments and other actors beginning to adapt. However, much less is known from empirical evidence about the linkages between climate change adaptation, GHG mitigation and gender, and how to make climate change responses more gender-sensitive. Development and climate change responses can only be *equitable* if they place women’s empowerment and the tackling of gender inequality centre-stage.

Gender and climate change: analytical framework for Viet Nam



The 'vulnerability context' ([part A](#)), highlights the various trends affecting a specific livelihood situation with factors that are generally difficult to influence other than through policy measures and collective efforts at the global and national level. These contextual factors affect primarily the most disadvantaged men and women, and include climatic shocks and more gradually building up climatic stresses (e.g. greater unpredictability in rains), as well as pressures from market volatility, HIV/AIDs, localized environmental degradation.

Gender and power dynamics ([part B](#)) determine the relative vulnerability/resilience of women and men, households and social groups or communities to otherwise comparable shocks and stresses. These power dynamics and cultural values shape gender roles and the division of labour, differences in resource rights for women and men, and their varying capabilities. They also influence the ways in which women and men perceive risks and interpret their climate and environment. Moreover, other forms of social difference (e.g. age/class/ethnicity/spatial location) intersect with gender in determining outcomes. These roles and relations are not fixed, but are reinforced or contested in each and every social interaction and by every policy or development decision. Gender inequalities are usually embedded in both formal (state) and informal (customary) institutions, and development and climate policies, programmes and projects can constrain or empower individuals or groups.

So together, A (vulnerability context), B (gender and power dynamics) and C (development and climate change adaptation and GHG mitigation policies, programmes and projects) determine the relative resilience and adaptive capacity of individuals, households and beyond – part D of the framework.

The above analytical framework provides an overview of key aspects of climate change and gender linkages which need to be understood. It informs research hypotheses in different situations, helps identifying research questions and should help in analyzing data. The framework was indeed used to guide the field research as well as the broader analysis presented in this paper.

2.3 Opportunities for gender equality and GHG mitigation

Even though Viet Nam has contributed comparatively little to the historic build up of greenhouse gases (GHGs), it has made commitments to 'nationally appropriate mitigation actions' (NAMAs) and can benefit from international financing and technology transfer, and form mechanisms by which industrialised countries offset their international obligations for GHG emissions reduction via GHG mitigation actions in developing countries (e.g. through projects under the Clean Development Mechanism, CDM). Several GHG mitigation actions can be seen as opportunities for technological modernisation, which could be attractive to households, businesses and authorities if there are advantages apart from GHG mitigation (multiple benefits).

However, the introduction of new technologies is not gender neutral, as it often requires changes in institutional arrangements and commonly has different impacts on women and men. The impacts of GHG mitigation activities have not necessarily been equitable and could worsen gender inequalities without strong gender analysis and targeted, strategic action. There are well-documented risks and negative impacts for the rural poor, especially women, for example, of large-scale liquid bio-fuel developments for transportation (e.g. large-scale oil palm plantations) affecting access to resources on so-called 'marginal lands', upon which they rely for food, fuel, water, and medicines, by deforestation and dispossession²². Nevertheless, there are also promising GHG mitigation actions which have multiple benefits – i.e. they can potentially reduce GHG emissions, and may also improve the local environment and

strengthen gender equality. Examples include renewable energy innovations at the household and community level, such as biogas, and strengthening of land and forestry management. Some of these options have a direct link to the ongoing international climate negotiations, including 'reduced emissions from deforestation and forest degradation' (REDD), which could result in new financial flows to reward forest protection because of 'carbon sequestration' (i.e. positive impacts on atmospheric GHGs), with *potential* both global and local benefits. However, these benefits may not be fully realised, or worse the outcomes could be negative if such activities are gender-blind.

The above analytical framework with gendered entitlements to livelihoods assets and for example a stress on gendered norms and division of labour, and in support of understanding gendered capacities and resilience applies primarily to climate change impacts. However, the framework equally helps to understand the opportunities for generating co-benefits that are motivating women and men, communities and business to undertake mitigation actions – as they help improve income, the quality of assets or e.g. save labour.

2.4 Hypothesis and primary research questions

With reference to the study's objectives (Chapter 1) and the concepts and analytical framework presented above, its ***hypothesis*** is as follows:

Climate change impacts in Viet Nam are causing additional stresses that exacerbate gender inequalities, and existing climate change policies and actions are failing to create development opportunities that would improve the status, livelihood opportunities and resilience of women and girl children.

The analytical framework presented above provides a broad overview of how gender, development, and climate change are inter-connected in different situations. The research questions addressed in this paper are as follows:

1. What are the main national and international **policy developments** on the intersection of climate change and gender equality?
2. What are the important **livelihoods** of less affluent people in rural Viet Nam, and how are these and **gender relations** affected by climate change impacts and GHG mitigation opportunities?
3. What are typical gender factors in the **vulnerability context** of these livelihoods (trends and shocks, including climate-related ones, which affect gender realities)?
4. What are the **vulnerabilities, capacities and adaptation strategies** of less affluent groups of women and men, with relevance to past and current climate related stresses, and in future scenarios? What are the most promising opportunities for strengthening resilience and gender equality?
5. What are typical **opportunities for mitigation of GHG emissions** that are also economically and socially attractive to the less affluent men and women; and how can they develop into opportunities for strengthening gender equality?
6. Which **policies, programmes and (public) services are needed** over the coming years that would strengthen women's and girl children's participation in decision making on responses to climate change at the household and community level, strengthen their resilience for climate change impacts, and/or enhance livelihood opportunities related to GHG mitigation?

3. The policy context

3.1 International policy aspects

Agenda 21, the outcome document of the 1992 *UN Conference on Environment and Development* in Rio de Janeiro, offers a roadmap towards sustainable development. It is not a legally binding document, but Agenda 21 has inspired many national and local initiatives worldwide in the area of environment and sustainable development. Its Chapter 24 *Global Action for Women towards Sustainable Development*, calls upon governments to eliminate all obstacles to women's full involvement in sustainable development and to secure gender equality in all aspects of society.

The Johannesburg Plan of Action is the outcome document of the 2002 *World Summit on Sustainable Development*, and reaffirms: 'the need for mainstreaming gender perspectives in all policies and strategies, the elimination of all forms of discrimination against women and the improvement of the status, health and economic welfare of women and girls through full and equal access to land, economic opportunities, credit, education and health-care'²³.

However, the *UN Framework Convention on Climate Change* (UNFCCC) – one of the three conventions agreed in Rio de Janeiro - and its *Kyoto Protocol*, agreed in 1997, fail to recognize gender aspects of climate change and omit the issues of gender equality and women's participation. Women's caucuses since the UNFCCC's eleventh Conference of Parties in Montreal (2005) (COP-11) have strongly advocated for a gender approach in all the critical areas and related mechanisms: GHG mitigation, climate change adaptation, technology transfer and finance. There is a strong lobby by multiple stakeholders to ensure a gender sensitive outcome, particularly in the light of COP-15 in Copenhagen, December 2009, where the post-Kyoto regime and its mechanisms will be discussed. Especially active have been the *Global Climate and Gender Alliance* (GGCA) that combines the efforts of 25 UN organizations and agencies, networks and NGOs; the *Network of Women Ministers for Environment*; and the *Gender-Women for Climate Justice* network.

The General Debate of the *UN General Assembly* and the *High-Level Event on Climate Change* convened by the UN Secretary-General in September 2007 showed that climate change has risen to the top of the international policy agenda. On that occasion a 'Roundtable on Gender and Climate Change' was convened by the *Women's Environment and Development Organisation* (WEDO) and the *Council of Women World Leaders*. Consequently, the *International Women Leaders Global Security Summit* in New York, November 2007, acknowledged that climate change poses significant security risks, particularly for women, and that women have to be included in decision-making at all levels.

Similarly several international legal and policy frameworks underline the need for gender equality and gender mainstreaming in development and related policies and actions, including the following.

The 1979 *Convention on the Elimination of all Forms of Discrimination against Women* (CEDAW) is commonly referred to as the global bill of rights for women. It asserts that state Parties are bound to guarantee women and men equal opportunities in terms of civil, political, economic, social and cultural rights. Parties agree to incorporate the principle of equality of women and men in the national constitutions and/or other appropriate legislation. The Convention obliges parties to take 'all appropriate measures to eliminate discrimination against women in rural

areas in order to ensure, on a basis of equality of men and women, that they participate in and benefit from rural development', and 'in all community activities'. Important indicators are guarantees of equality and non-discrimination, prohibition of discrimination, legal protection of women, appropriate institutions and coordination, and (measures to limit) gender-based violence (GBV).

The outcome document of the 1995 *Fourth World Conference on Women*, the *Beijing Platform for Action* commits in its Strategic Objective K on 'Women and Environment' to securing the active involvement of women in environmental decision-making; integrating gender concerns and perspectives in policies and programmes for sustainable development; and strengthening or establishing mechanisms at the national, regional and international levels to assess the impact of development and environmental policies on women.

The 52nd session of the *Commission on the Status of Women* in 2008 identified gender perspectives on climate change as a key emerging issue. In the agreed Resolution 21 (jj) on Financing for Gender Equality and Empowerment of Women (E/CN.6/2008/L.8), governments are urged to: '*integrate a gender perspective in the design, implementation, monitoring and evaluation and reporting of national environmental policies, strengthen mechanisms and provide adequate resources to ensure women's full and equal participation in decision-making at all levels on environmental issues, in particular on strategies related to climate change and the lives of women and girls.*'

At the *Millennium Summit* in 2000, signatories committed themselves in the *Millennium Declaration* to promote equality between sexes and the empowerment of women as effective means to combat poverty, hunger and diseases, and to promote a truly sustainable development. Its *Millennium Development Goals* (MDGs) are of particular interest to gender equality in environmental security through the parallel goals of poverty eradication (MDG1), gender equality and women's empowerment (MDG3) and environmental sustainability (MDG7). Although the MDGs are often still operationalized separately, together they establish a platform of fundamental interrelated values on gender, poverty and environment.²⁴

The clearest mandate on gender and disasters, including climate-induced disasters, is reflected in the *Hyogo Framework for Action*, the outcome document of the *World Conference on Disaster Reduction* (2005). The framework states that: '*a gender perspective should be integrated into all disaster risk management policies, plans and decision-making processes, including those related to risk assessment, early warning, information management, and education and training.*'

The need for a gender specific approach towards climate change policies and actions, was also underlined in Special Issues of the Oxfam Journal 'Gender and Development' Journal (2003 and 2009) and in the Study on *Gender, Climate Change and Human Security* (2008) that WEDO and partners executed for the *Human Security Network* in 2008. The issue has also been raised in numerous conferences and international meetings²⁵ and there are more toolkits being made available (e.g. see the multi-agency Training Manual on gender and climate change produced in 2008).

3.2 National sustainable development policy

A recent report identified key policies, mechanisms and programmes in Viet Nam in relation to climate change. These instruments could also have relevance for and impact on gender equality in the country, and are summarised in the box below²⁶.

Box 2: Climate change related policies and programmes in Viet Nam

General climate change related policies and programmes

- Social Economic Development Strategy 2001-2010, and forthcoming for 2011-2020
- Strategic Orientation for Sustainable Development in Viet Nam (Viet Nam Agenda 21; approved in 2004)
- Viet Nam initial national communication under the UNFCCC (2003)
- National Target Programme to Respond to Climate Change (2008)

Adaptation related policies and programmes

- The Environmental Protection Law (1993; amended in 2005)
- National strategy on environmental protection to 2010 and vision to 2020 (2003)
- National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020 (2007)
- Land Law and policy
- The Water Resources Law (1998)

Mitigation related policies and programmes

- The Energy Law (2005)
- Decree for energy saving and efficiency (2003)
- NTP on energy efficiency (2006)
- Energy efficiency in public lighting (GEF-UNDP project; 2005-2009)
- Promoting energy conservation in small- and medium-scale enterprises (GEF-UNDP project; 2005-2009)
- Law on Forest Protection and Development (2005)
- Strategy on forestry development for 2006-2020 (2007)

Source: adapted from ADB (2009)

At a national conference on environment and sustainable development in 1990 a strategy on sustainable development for Viet Nam was approved and policies for the period 1991-2000 were developed. These already acknowledged the impacts of climate change and sea level rise. Viet Nam ratified the UNFCCC in 1994 and the Kyoto Protocol in 2002. The national Agenda 21 is called the *Strategic Orientation for Sustainable Development in Viet Nam*, and was approved in 2004.

The following challenges in relation to implementing Viet Nam's Agenda 21 and linked to climate change have been identified. Adaptation challenges include eradication of extreme poverty, and narrowing the gaps between rural and urban areas, women and men, and ethnic and other social groups (this is also known as the 'development gap')²⁷; strengthening of sustainable practices in agriculture and forestry; sustainable land and water management; and protection of marine, coastal and island environments. Green house gas mitigation challenges include improvements in energy efficiency and production and use of renewable energy, in

households and business; improvements in land and forest management (for sequestration of carbon); and strengthening of policy instruments including incorporation of environmental aspects in the system of national accounting.

The Ministry of Natural Resources and Environment (MONRE) and specifically its Department of Meteorology, Hydrology and Climate Change (DMHCC) is a focal point in the country on climate change, as it hosts the Standing Office for the UNFCCC and for the Kyoto Protocol²⁸. The National Steering Committee for implementing the UNFCCC and the Kyoto Protocol was established July 2007. This committee is responsible for national co-ordination of work on climate and climate change and the development of relevant policies and the encouragement of international co-operation. A network of hydro-meteorological stations has been established across Viet Nam.

In 2007 the Prime Minister tasked MONRE, in coordination with other ministries, to establish the *National Target Program to Respond to Climate Change* (NTP-RCC), which was approved in December 2008²⁹. The Standing Office of this Programme is also hosted by the DMHCC. The NTP-RCC is the main framework for the formulation of climate change activities to achieve sustainable development objectives, with a focus on the period until 2015. The NTP-RCC emphasizes gender equality as a guiding principle, along with sustainable development, a cross sectoral approach, and poverty reduction. The NTP-RCC stresses the need to conduct vulnerability assessments at sectoral, regional and community levels, and identifies the poor, women and children as among the groups most vulnerable to the impacts of climate change. Potential climate change impacts on women are presented in the context of Viet Nam's capacity to achieve the MDGs. These include: potential worsening gender inequality, additional workload, and vulnerability of women in households with relatively fewer assets and resources.³⁰

The number of women officials in the Ministry and provincial departments of Natural Resources and Environment is limited. There are very few female hydro-meteorologists, and women are also under represented in other sectors. This means that very few female officials were involved in the NTP-RCC formulation. The UN Desk Study on Gender and Climate Change also concludes that the overall system of governance is not well equipped for consulting men and women at different levels in policy formulation. Indeed, consultation with women during formulation of the NTP-RCC was limited³¹.

One of the shortcomings of the NTP-RCC is that there are no specific targets or activities identified which address women's vulnerability or gender issues in particular at the community level. One of the projects identified as priorities in NTP-RCC relate to gender issues, which is to be formulated and implemented through collaboration between MONRE and the Women's Union: 'To propagate and promote awareness on the role of women and gender issues in climate change responding activities'³². However, the action plans to be developed by other sectors/agencies are not specifically mandated to address gender equality³³.

All these policy instruments have consequences from a gender point of view.

3.3 Gender equality policies in Viet Nam

The Vietnamese Constitution guarantees equality and non-discrimination on the basis of sex and gender, including that women and men receive equal treatment and pay for equal work. In February 1982 Viet Nam ratified the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW)³⁴; however, the

Optional Protocol has yet to be ratified. Viet Nam's Plan of Action, developed following the Beijing Women's Conference in 1995 stresses the continuing need for policies and programs that will maintain and increase women's role in economic and social development.

Viet Nam's Socio-Economic Development Strategy to 2010 (SEDS), and the Socio-Economic Development Plan for 2006-2010 (SEDP), recognize gender equality as a priority.

In 2006 the Law on Gender Equality was passed, and came into force in 2007. The law was an initiative of the Vietnam Women's Union (VWU), a mass organization of which an estimated 50 percent of all women in the age over 18 are members, that aims to enhance the advancement of women and gender equality. The Law on Gender Equality sets out measures to ensure gender equality in the country, including: (a) measures to promote gender equality including temporary special measures; (b) mainstreaming gender equality in the legislative process, (c) information, education and communication, (d) responsibilities of State agencies, and (e) prohibited acts.³⁵ The Law further defines the ways in which Viet Nam intends to enhance gender equality, and the Directive on the Gender Equality Law includes some specific instructions to listed ministries and agencies. The Ministry of Natural Resources and Environment (MONRE) is not amongst those listed in the Law or the Directive, but it is implicitly included in decrees guiding implementation of the Law.³⁶

The Law on Preventing and Combating Domestic Violence was developed by the Social Affairs Committee of the National Assembly, recognizing that domestic violence is a serious issue and that existing measures were not sufficient to address the problem. The law was adopted in 2007, and covers physical violence, emotional abuse, forced sex, and destruction of family property.

In December 2007, the Ministry of Labour, Invalids and Social Affairs (MOLISA) was identified as the State management agency responsible for the implementation of gender equality goals. The new Gender Equality Department of the Ministry is responsible for implementation of the Law on Gender Equality, while the Family Department of the Ministry of Culture, Sport and Tourism is responsible for the Law on Preventing and Combating Domestic Violence. The Social Affairs Committee of the National Assembly is responsible for oversight of gender mainstreaming in the legislative process.

The National Strategy for the Advancement of Women in Viet Nam (2001-2010) and its related Plan of Action can assist in tracking down progress towards gender equality. The National Plan of Action is currently being reviewed, and a new National Strategy on Gender Equality 2010-2020 will soon be developed. The UN CEDAW Committee reviewed Viet Nam's progress towards gender equality in January 2007, and signalled the need to review whether existing documents and measures conform to gender equality standards.³⁷

For example, there are numerous laws, plans and strategies in Viet Nam that address equal rights to access of health-care services; but their implementation sometimes lags behind, for example in cases of gender based violence. The Law on Health mentions that family planning is a duty for all people who have the right to choose family planning methods.

The laws in Viet Nam do not limit women in accessing credit, loans and funds, but in reality women have limited access to larger scale loans, despite active support from organisations such as the Women's Union to access micro-credit. One of the most

important impediments for women in accessing larger scale loans is the lack of access to and control over collateral, especially land.³⁸

Article 14 of CEDAW provides that rural women are not to be discriminated against in the exercise and enjoyment of rights in all fields. Legal documents in Viet Nam guarantee property rights, but most are gender-blind. However, it is now also decreed that all documents registering family assets and land use rights must include the names of wives as well as husbands. In other words, there are no impediments in law to gender equality in registering Land-Use Certificates (LUCs). However, in reality, land is still registered often in the name of the husband as many existing LUCs are not converted yet and the policy is mainly applied to new LUCs. Similarly, although Vietnamese law guarantees equal inheritance rights, in practice, contravention of the law exists due to discriminatory customs and practices, as a result of which, for example, divorced women are often left with no land rights.

Thus, while legislative and policy frameworks are in place to promote gender equality and women's empowerment, implementation and monitoring remain key challenges. These include limitations in national capacity for reporting, gender analysis, data collection, monitoring, networking and sharing of research on gender equality. In addition, a lack of reliable data in particular continues to hinder policy making.

Throughout the country women continue to face deeply ingrained societal discrimination.³⁹ In particular, poor rural and urban women, and women from ethnic minorities and from mountainous and remote areas, face many challenges, including the impacts of climatic change and natural disasters on their livelihoods and lives.

4. Climate change, gender and rural livelihoods

In this chapter we present data from the desk review, some additional literature, and especially from field research in three communities. The detail of that field research is presented in a separate report and summarised here in several tables, structured broadly along the lines of the research questions / analytical framework.

4.1 The vulnerability context

Some key trends have been identified in the vulnerability context in Viet Nam that will influence how climate change affects women and men. These include trends in economic growth, rising inequality, improving household resilience for some, increasing pressure on ecological services, and exposure to climate stresses and hazards (see Table 1 for more details).

Table 1: The Vulnerability Context

Reduced poverty, economic growth and rising inequality

High economic growth and significant poverty reduction since the early 1990s, but social inequality is rising with market differences between poverty levels across provinces, and between rural and urban areas. Ethnic minorities are disproportionately affected by poverty. Remote, rural upland populations with many ethnic minorities see less economic growth (e.g. Avao in Dakrong district).

Household resilience increasing over the last ten years – for some

Most people are affected by climate-related stresses and disasters over the past decade, but general improvement in household resilience due to national socio-economic development processes, household efforts and government/civil society poverty programmes –, but benefits are not distributed equally across society. Less resilient households take longer to recover from shocks and stresses or may never recover at all.

Pressure on ecological services in Avao.

People rely on slash and burn cultivation on slopes and small-scale animal rearing. Increased population pressure is shortening slash and burn cycles, land fertility is not regenerating fully and erosion dangers (e.g. landslides), are growing. Forest fires become more frequent as drought periods increase. Localised environmental degradation leaves local inhabitants more vulnerable to the effects of climate change.

Climate change

Exposure: more climate-related stresses (heat waves, droughts, typhoons, more intense rainfall) are expected under medium and high scenarios of global GHG emissions in Viet Nam and this may undermine human development gains. E.g. rice production, a major source of income/subsistence, will be hit by increased, unseasonal flooding, saline water intrusion, increasing fresh water scarcity. Villagers observed that climate change is already happening, with unusual climate events identified across all three research locations.

- Hai Ba is in a particularly disaster prone, coastal and low-lying location and is relatively more exposed to climate change impacts than the other research locations. Villagers observed greater intensity and less predictability of annual typhoons, an unusual succession of floods and storms, more droughts, prolonged periods of unusual cold weather, periodic flash floods.
- Avao also experiences climate related hazards and stresses, although not to the same extent as Hai Ba. The following are increasing in frequency and intensity: annual typhoons, floods, droughts, prolonged/unusual cold weather, a series of storms and floods in late 2007, periodic flash floods.
- Dai Nghia experiences more stable climatic conditions compared to the other research locations, although even here there have been reports of severe hail, prolonged cold weather, serious floods, stronger storms.

Those living in low and flood prone areas and near springs are more at risk of flooding and those living far from water sources are more vulnerable in times of water scarcity. The

increasing *unpredictability* of the climate presents particular difficulties for poor households, because their unusual timing and greater intensity makes them more difficult to cope with/recover from.

Field research was undertaken in three different districts of Viet Nam, each presenting different vulnerability contexts:

- **Hai Ba**, Hai Lang district, Quang Tri Province is a coastal, rural area with a majority *Kinh* ethnic group population.
- **Avao**, in Dakrong district, Quang Tri Province, is a remote, rural, mountainous area with a large proportion of ethnic minorities, such as the *Pako* group. Poverty in Dakrong district is significantly higher than in the other field study districts.
- **Dai Nghia** village in My Duc district, formerly of Ha Tay Province (now part of Hanoi) is a lowland area.

Vulnerability to climate change is shaped not only by exposure, but most of all by *sensitivity* and *adaptive capacity*. Women and female headed households in the study locations rely more on natural resources because of their traditional roles in securing household subsistence, compared to men and male headed households and are more likely to remain in a rural location. In terms of adaptive capacity, men generally have greater mobility than women in these rural communities, greater opportunities to obtain employment off-farm and are more likely to be able to undertake seasonal outmigration to cities. Men also have greater access to and control over livelihood resources due to prevailing gender inequalities.

4.2 Gender and power dynamics

Patterns of gender and social relations mediate the impacts of climate change. The desk review and field research indicate that in several ways women's voice has increased over recent years, but that there is still a major gap. The desk review found that the NTP-RCC identifies gender equality as a guiding principle, but women's involvement in consultations was limited, and no gender targets were developed. Overall, public participation in policy-making at all levels is still limited. Especially ethnic minority women and girls have fewer health, education and economic opportunities. Varying levels of progress have been made on gender indicators (e.g. women's and men's relative participation in community activities, household decision-making, local political structures – see Table 2 below for more details), but gender discrimination is still widespread in formal and informal institutions.

Table 2: Gender and power dynamics in Viet Nam

Awareness of gender equality

Increasing in recent years because of some training (e.g. by the Women's Union), but not necessarily matched in practice, especially for ethnic minority women and girls who have lesser access to health, education and economic opportunities. There is also a lack of recognition of women's roles in agriculture.

Household decision-making

Women's participation in daily expenses has improved over the last decade in Hai Ba and Dai Nghia, but men make most of the final decisions on large expenses. In Avao men still make nearly all of the decisions, control most of the cash income and have much greater mobility than women.

Involvement in community social activities

Increasing involvement by women in community activities, (festivals, social events), but often premised on completion of traditional 'female' tasks (e.g. preparing food/cleaning) which risks

reinforcing stereotypes. The least progress has been made in Avao, where traditional gender norms are strongly entrenched.

Participation in local political and management structures

Participation in local formal political and management structures, such as membership of commune People's Councils, is low across the research sites, particularly in Avao, contributing to the lack of consideration of women's specific interests and concerns (e.g. women are a minority in community meeting votes).

Some of the reasons for this lack of participation include:

- *Existing work burden:* Because of unequal sharing of household and livelihood tasks (see table x below), it is often difficult for women to participate more in public life. In Avao, which has more entrenched divisions of labour than the other research locations, most husbands and mothers-in-law prevent women from attending meetings. The reasons given are twofold: a) potential impacts on household chores, b) the risk of new liaisons between women and other men.
- *Discrimination within legal or formal structures:* The Election Law in Viet Nam, sets a target of only 25 to 30% of People's Council representatives being women at the local level, rather than 50% and this minimum standard is often wrongly interpreted as a maximum.
- *Fewer opportunities for education and development for women:* Again unequal workloads and the pressures of what is seen as socially acceptable limits women's access to formal education (women tend to leave school earlier than their male counterparts and are less represented in large membership organisations).
- *Internal socialisation processes:* Women often have less confidence to speak out at meetings because of internal socialisation that they are of less value and their attendance at meetings is still very limited (often women only attend if men are unavailable). Higher turnout is only achieved by external organisations where invitations stipulate expected involvement levels by women.
- *Pressure from other members of the household:* Many women who achieve positions of authority (e.g. in the Women's Union) cannot sustain their involvement as they are pressured to return to household tasks and struggle with an excessive work burden. Women's participation in social activities is often explicitly resisted by male members of the household and mothers-in-law, who see women's roles as being within the home.

Table 3: Gender Roles commonly found across the field study research locations

Productive	In the productive sphere agricultural machinery has helped to reduce drudgery for both men and women, but primarily for men whose main responsibilities are finished early on in the agricultural season allowing them to then seek work elsewhere, earning income and adding to their status in the household. Women are more tied to the house and fields throughout the season (e.g. caring for crops until harvest time), doing work that is often valued less because it is part of household subsistence rather than the cash economy.
Reproductive	As well as bearing and raising children, they are primary carers for other household members and conduct most of the subsistence tasks (collecting fuel wood and water, cooking, etc).
Community	Women participate a great deal less than men in community events and decision-making.

4.3 Climate change stresses, livelihoods, disasters and gender

Although disasters present the most visible impacts of climate change, *slow onset climate change effects* such as recurrent droughts in different areas represent significant risks for rural populations in Viet Nam. An on-going trend is of the feminisation of agriculture, with women taking on more of men's traditional agricultural tasks (e.g. spraying pesticides, ploughing) and disaster preparation and recovery during periods of outmigration by male household members or where men take up local non-farming jobs. Women in female headed households may gain new status and skills when gender roles are shaken up, however, outmigration clearly places a strain on those left behind who have to complete the same agricultural tasks sometimes with lesser access to labour and associated skills. It is also possible that increased social conflict might occur when men return to households – although there is no evidence of this from the field data.

Climate change is already having serious impacts on agriculture with extreme climatic disasters and lesser, repeated climatic stresses – so women's productive roles and contributions to households are being affected. It is possible that if women's ability to secure household subsistence is undermined their status within the household is also undermined. In Avao men and women are traditionally jointly clearing land for cultivation by women, e.g. men set fire, and women clear the remnants and collect firewood. Men increasingly engage in non-farming income generation and also collect forest products. If they no longer clear fields women might ask for help from male relatives or do it entirely alone, in order to fulfil their traditional subsistence responsibilities.

Responses to climate-related disasters are also gendered. There are a number of reasons for this, including gender norms which mean that women and female headed households have less access to livelihood assets enabling them to cope with major shocks such as floods and storms, and less influence in decision-making in disaster risk management. For example:

- Women have fewer opportunities to participate in disaster risk management (DRM). Higher education levels and socialization processes mean that men tend to be more confident and articulate than women, and are given more opportunities to voice their opinions.
- Relief and clothes distribution does prioritize poor people (especially pregnant women, elderly people, children, disabled persons), but gender differences overall are hardly taken into account in any other way. Thus some *practical* needs of vulnerable groups are attended to, but their *strategic* interests in terms of disaster planning and priority responses are not being met.
- The field evidence demonstrates that men take the lead in most DRM activities, with DRM activities being extensions of their normal activities. Male DRM efforts are valued and recognized, whereas women's activities remain less visible. Although many DRM activities are seen as 'male' activities, in practice women are often undertaking many of these tasks, on top of their existing reproductive and productive tasks. Whilst women may do communal cooking and also care for the elderly and the sick after disasters, this valuable work is rarely recognized by local authorities.
- Gender norms mean that women often have greater capabilities in providing emotional and psychological support to others in post-disaster situations. This is perhaps because of their on-going traditional responsibilities and experience in caring for others. This role was found in the field research to be

of vital importance to local people, yet it is rarely recognized by local officials or in development literature.

Although there are clearly similarities across the research sites in terms of women's and men's roles in DRM, there is also some variation. In Hai Ba, despite greater experience with disasters and support from external agencies on DRM, the field research found that only men participate in many of the key activities (such as village rapid response teams, search and rescue, evacuation, burying dead animals, strengthening public infrastructure). In Dai Nghia, however, where there are relatively fewer climate-related disasters, both women and men participate in village emergency response teams (e.g. in evacuating rice grain to higher ground, whilst water is pumped out of fields by the co-operative pumping station)⁴⁰.

Table 4: Field research evidence of gender differentiation in roles during the different phases of disasters

Before: Men and women may have different tasks in preparing for climatic disasters. Men may focus on the paddy fields. Men and women may jointly decide on early harvest. Women often initiate home preparedness, e.g. they are usually responsible for stockpiling food and water for the disaster season, lifting lighter household belongings (e.g. clothes) to house mezzanine levels where safe from floods in flood prone areas. Men lift heavier food reserves and other household items, strengthen houses and animal shelters before the typhoon and flood season, evacuate draught animals, and safeguard production equipment on higher ground.

During: Both women and men may clean and restore fields, irrigation systems and wells, although men are more likely to clean public areas than the home and adjacent to areas, reflecting prevailing patterns of gendered space. Women have a larger role in ensuring wellbeing of children and the elderly during disasters.

After: In the recovery phase both women and men are involved in rebuilding livelihoods and homes. Men tend to do tasks needing more physical strength, and women focus on tending crops (e.g. weeding and watering). Whilst specific roles are ascribed to women and men, it is important to recognize that practice can be different – as illustrated by the fact that women do many typically-male DRM activities. In Quang Tri more men than women migrate seasonally, particularly after floods (picking coffee, for example), but many come back for cropping and also for repairs after (more) natural disasters. Those women who migrate go to further places and have less chance to go back.

The lack of representation by women in local and sub-regional formal decision-making structures (e.g. at provincial, commune or village level) means that women's interests are not being adequately considered in DRM, and the same is thus likely to be the case in relation to climate responses as a whole. The field research found that there were some differences in the kinds of measures that women and men identify when questioned about how to respond to disasters and climate change. Men identified large-scale structural measures (e.g. building dykes, reservoirs, raising roads), whereas women focused on improvements in health care, reforestation and development of alternative livelihood opportunities. In focus group discussions with girls and boys there were similar differences in the types of measures they identified as potential responses to climate change.

Table 5: Gender bias in Disaster Response Management

Key DRM organizations include: Committee for Flood and Storm Control (CFSC) or Search and Rescue (S&R) at provincial, commune or village levels. A gender analysis shows that there is gender bias at work in DRM:

- *Limited participation of women, especially in leadership roles in DRM organizations*

such as the CFSC.

- The culture of these DRM organizations is fairly *male dominated* and it is difficult for women to speak up and be heard.
- Male members tend to have more *access to relevant information* on DRM than female members.
- Local *authority officials (usually men)* tend to have greatest access to relevant information.

In Hai Ba the commune level CFSC and S&R are the most active in DRM. They are currently developing annual disaster response plans. However, the specific needs and capacities of women and men are not elaborated in plans except for instruction on locations of expectant mothers for evacuation in emergencies. In Dai Nghia: the same organizations were not mentioned much by interviewees or local authorities, and DRM activities have not received much attention in Avao and the same organizations are inactive.

The field research thus confirms the finding of the desk review that women tend to have much less say in decisions on natural resources and disaster management, **despite** their roles, responsibilities and experience.

4.4 Adaptive capacity and resilience

The field research identified key indicators of household adaptive capacity and resilience according to villagers. These indicators are not gender-differentiated but do give some clues as to the key types of assets and knowledge that increase or decrease resilience. Key indicators of household resilience identified by villagers include: availability of and access to household labour, support through social networks and kin relationships, ability to earn extra income and diversity of income sources, knowledge and experience of dealing with disasters, having savings to reinvest in agricultural activities and the general economic situation.

Whilst there has been progress on socio-economic indicators at a national level, there is rising inequality and still high levels of poverty in rural areas, especially in Avao. Whilst poverty and vulnerability are not synonymous this research shows that there is a significant overlap. Those with few livelihood resources and limited influence (key indicators of poverty) tend to be less resilient to climate change and other shocks and stresses.

Beyond geographical location (and associated differences in exposure to climate change) other intersecting factors determine relative resilience, e.g. stage of household life cycle, knowledge and experience of coping with disasters, self-protection ethos, social support through kin and community networks, strength of livelihoods (access to labour, access to savings and economic development, diversity of livelihood activities and income sources, access to and control over land, seasonal outmigration, access to information (see Annex III Household resilience indicators for more details). Many of the least resilient households include those with single mothers, widows, female-headed households with many small children, disabled family members, male members who drink excessive amounts of alcohol, or those with elderly members. It is thus clear that there are gender dimensions to household resilience.

Table 6: Key indicators of high and low household resilience as identified by villagers

Households of High resilience	Households of Low resilience
<ul style="list-style-type: none"> • Stable economic situation • savings • capital to invest 	<ul style="list-style-type: none"> • Unstable economic situation • rely primarily on farming • no capital to invest

<ul style="list-style-type: none"> • diverse sources of income • more land for cultivation • stronger houses on higher ground and less flood prone • more capable work force <p>Often includes households with strong teenagers able to work</p>	<ul style="list-style-type: none"> • small area of land • houses on low and flood prone land • lack labour force • usually on the poverty list <p>Often includes elderly people living alone, households with small children; single female headed households</p>
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4.5 Gender dimensions of climate change livelihood impacts

The field research explored how women and men are differently affected by climate change. The findings include a range of impacts which are gendered. Gendered human, financial, and natural capital impacts were identified during the research and are set out in this section.

Table 7: Human capital

Mental health	Women are psychologically strongly affected by disasters, because they are responsible for caring for family members, especially those who are sick, and because of increased social tensions.
Violence against women	Household violence, particularly against women, is reported to increase in times of (climatic) disasters. Women's groups in Dakrong district and Avao commune meetings explained that during stressful times: <i>"women complained more and men could not easily control their anger"</i> ; some mentioned that the hot weather made them angry more easily. In Hai Ba commune, this was also mentioned, but it seems a less common trend. Some women also referred to drinking habits of men, which leads to household violence. This problem was not raised by interviewees in Dai Nghia.
Household food allocation & health impacts	Women eat less in times of food shortage and become weaker in periods of prolonged stress. Both women and men legitimize this view with the rationale that men do more physical tasks and need more energy than women who are responsible for ensuring food for the family - thus entrenched notions of gender roles discriminate against women and cause unequal health impacts.
Health impacts on children and the elderly	Pre-existing patterns of gender discrimination mean both women and girls suffer more health impacts during and after natural disasters (desk review). Children and pregnant women are especially susceptible to water-borne diseases (e.g. diarrhoea, cholera) and the elderly are at particularly at risk from heat stress. The health of children and the elderly suffers (e.g. respiratory infection and diarrhoea) according to villagers and children are scared seeing their parents stressed with dealing with a disaster. Children's education can also be affected (e.g. damage to books and roads, children have to be evacuated).
Lack of water and health impacts	Improvements in health services over the last ten years. But women, especially pregnant and lactating women and babies, are particularly affected by water shortages (health impacts). Women reported increased reproductive tract infections (RTIs) during flood seasons – in Avao this led to greater pregnancies as women had to remove IUD birth control.
Workloads	Both women and men suffer increased workloads, although at differing phases of disasters/climate stresses. Men usually have more work during extreme events (e.g. protecting dykes and dams, harvesting flood crops, search and rescue, evacuation), whereas women's already heavy workload usually increases most just before the events (disaster preparedness, such as

	protecting seedlings and crops in the fields) and after (e.g. caring for children, the sick and elderly, cleaning the house and courtyard). These traditional roles are being challenged, however, with seasonal male outmigration.
Mortality and disasters	More women die than men from (direct and indirect) results of natural disasters (desk review). Surprisingly, the field research found that according to villagers more men died in Hai Lang district due to their involvement in comparatively risky activities such search and rescue and protection of fields. In much of the disasters literature it is received wisdom that more women were killed during disasters elsewhere, especially in flood prone areas, often because of gender norms which prevent them learning to swim and a lack of training facilities ⁴¹ . A key question is whether deaths amongst women, occurring over a long period of prolonged stress in post-disaster situations, are not being attributed to disasters because of the time lag.
Knowledge /awareness /skills	Men tends to get more opportunities to equip themselves with new skills and awareness to cope with disaster than women, from training or information sessions, participation in the CFSC system (down to village level), etc

Gendered climate change impacts on *human capital* assets include disproportionate impacts on women's mental health from disasters, increasing violence against women, inequalities in household food allocation, disproportionate health impacts on women, children and the elderly, increased workloads particularly for women, disproportionate numbers of men dying in disasters (at least partly because of their role in S&R).

Table 8: Financial and economic capital

Crop and income damage	Several households already close to the poverty line before a disaster fell back into poverty due to economic losses incurred. Widespread loss of income and/or reduced crops yields in disasters. Crop losses undermine related business activities, making restoration of production more difficult. Both women and men have to look for alternative sources of income.
Migration and income earning opportunities	Intensification of natural disasters as a result of climate change is leading to greater migration in Viet Nam (Desk review). Women who migrate often earn less than men. Women are also often left behind when other family members migrate, and may be especially affected, as they take over male responsibilities without equal access to resources (e.g. land). Men have more opportunities to migrate temporarily /travel further from home or find non-farm income opportunities near home. Women are more confined to the domestic sphere and village life (especially in Avao). The types of labour women and men can take up are also gendered (men work more in construction, women as domestic helpers or exchanging labour with other households). Both women and men do wage labour, e.g. coffee harvesting, and clearing irrigation channels, but it is not clear if they are paid equally. Temporary out-migration is likely to be more common as irregular climate stresses triggered by climate change occur. In Quang Tri province, men migrate south or to the cities to earn extra income, especially in off-farming seasons and after disasters, but many would prefer to stay at home. Only those with capable labour or mid-level resilience migrate, indicating that a certain level of resources is necessary to undertake this livelihood or coping strategy. During the floods of 1999 in Quang Tri, men who had left home to work elsewhere were only able to return home to help with disaster recovery when most of the emergency response and early recovery activities had been completed by women. In Dai Nghia, 70 to 80% of those working in the fields are women and men take off-farm jobs in cities or in the local vicinity. A key indicator of household resilience is that of remittances being sent by relatives abroad or children working in cities.

Credit	<p>Having savings is a key indicator of household resilience according to villagers. Informal savings and credit groups have increased in number in the last ten years, including women's groups. However, wives often have to borrow money from relatives, neighbours or money lenders often at high interest rates in times of shortage. After a disaster many households lose their homes and livelihoods, although some level of financial or in-kind support is often available from local authorities and humanitarian and private sector organisations. Women often access (subsidized) loans through the Women's Union programmes for livelihood activities or for their children's higher education, without collateral such as land. However, for larger loans LUCs are needed as collateral, which is constrained for women because land certificates are not yet all in both husband's and wife's names. New banking regulations require that both husbands and wives agree terms and sign papers for new loans and in Hai Ba this has led to improved negotiation between husbands and wives regarding credit. Other kinds of gender differentiation exist in terms of access to credit. Many women fear they cannot repay loans, as men sometimes spend the money on alcohol. Loans from the Farmers' Association and Veterans' Association are often lent to male household heads.</p>
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Gendered impacts in relation to *financial and economic capital assets* of climate change were also identified. Damage to crops affects household income and both women and men reportedly have higher workloads as they have to seek waged labour to make ends meet. Elsewhere in the world increased unpredictability of rains means villagers are forced to replant crops⁴², creating more work especially for women. Given that there is a trend of feminisation of agriculture as (mainly male) seasonal outmigration increases, it is clear that women will be most affected by negative slow-onset effects of climate change on farming, as well as the impacts of extreme events. The field research found that women are forced to replant rice crops and plant more subsidiary crops to supplement lost yields. The structural impact of these climatic stresses on gender relations requires more exploration: e.g. How will women's ability to secure household food security be affected and with what impact on their status within the household?

Temporary outmigration and local non-farm labour as strategies to deal with increasing climate-related disasters are likely to increase, and in many cases this is primarily male household members – whilst young women also migrate from certain areas with employment in for example garment industry. International experience indicates that migration has gendered social impacts in both the population staying behind and amongst migrants. This may be positive, when women are able to challenge traditional roles and increase their status in the community, but is often negative when women's workloads increase and yet their access to key livelihood assets remains limited. Quite often male household members are away working when disasters strike and women are forced to conduct most of the DRM activities.

The impacts of migration are not only felt by women. Men in Quang Tri province stated that they would prefer to stay at home. Separation clearly has emotional costs for husbands and fathers, as well as for female members of the household, which are rarely mentioned in development studies. Remittances can play an important part in maintaining household resilience for poor households, but the field research also found that only those who already have capable labour or mid-level resilience are able to migrate. This then begs the question of what strategies are open to the very poorest of the poor.

Access to savings and credit is essential in recovery processes after disasters, and women get access to (subsidised) micro-credit through support by for example the Women's Union. However, in some situations women can gain access to credit but they fear not being able to repay loans especially since husbands may use the money for alcohol. Furthermore, larger scale loans are difficult because many women are still excluded from land certificates and cannot use land as collateral for loans from banks, although in the land regulations require both husbands and wives names to be on certificates (notably: the joint-land titling policy, 2004). Progress on implementation of this policy is slow and customs and practices regarding male control of land resources does not necessarily change because of this.

Gendered impacts on *natural capital assets* of climate change include a loss of belongings, animals and crops during floods. The timing of climate-related disasters in relation to the seasonal agricultural calendar also plays a role in determining how quickly (agricultural) recovery can occur. Gender inequalities permeate access to and control of water resources for irrigation and domestic use. Access to better quality land can be a function of access to labour – in Avao where land is 'owned' through clearance, access to labour is critical and yet women tend to have less access to labour than men. Women are traditionally responsible for household water collection which is especially arduous during floods and droughts particularly in mountainous regions, and this drudgery is likely to increase as climate change impacts are felt in the future unless adaptations can be taken to improve the situation.

Table 9: Natural Capital

Loss of belongings and animals is common	Loss of crops and animals (e.g. washed away by floods, lack of feed/drink during drought periods) and this is most difficult for households of low resilience. Both women and men have to work harder to save their crops and animals during and after disasters. Other household members take part in planting more crops and raising animals, but women have increased workloads due to the need to replant rice fields, and more planting of subsidiary crops (e.g. sweet potatoes and peanuts in Hai Ba, cassava in Avao and soya bean in Dai Nghia) to supplement the lost yields ⁴³ . The timing of a disaster or increased climate variability affects the impact - depending on planting seasons, the agricultural recovery activities may have to wait for some time, adding more pressure on household food supplies. The gender division of labour sees husbands traditionally being responsible for buying seeds and seedlings, with wives being responsible for their care. However, in Dai Nghia women are more involved in all agricultural activities.
Access to and control over land:	Women tend to have weaker resource tenure security than men. Traditionally, men have signed land use certificates, and this has prevented women from gaining access to (larger scale) credit and from developing their own livelihoods. When a husband is injured or killed during a disaster, the wife may lose her land to relatives. However, changes to government policy in the shape of the new Government Land Policy, now states that the names of both wives and husbands should be on land certificates. In Dai Nghia most of the families were not given land use certificates for living areas but were given them for cultivated land, and they are all in the husbands' name. More resilient households have access to higher quantities of land. In Avao, households with more able bodied workers can clear more land and have better plots of hilly land than those with lesser access to labour. Land has not yet been allocated officially in Avao, and under customary laws land is owned only by men.
Access to and control over water resources:	Gender relations play a key role in shaping women's and men's roles in water collection and management. Women are responsible for collecting water for household use, and this responsibility is most arduous during floods or droughts. The burden on women is heaviest in mountainous areas, such as

Avao, where collection is arduous and only the most resilient households with savings can install irrigation water pipes to water rice seedbeds. In both Hai Ba and Dai Nghia men control the local co-operatives that run the irrigation systems.

Gender differentiation intersects with ethnic differences according to the field research. Cultural values and household power dynamics appear to vary between the different ethnic groups in the three research locations, with implications for gender relations. In Avao those households who can invest in irrigation water pipes can cultivate two wetland rice crops and are thus more resilient than those who cannot. Many of these households have *Kinh* persons as spouses, within which women have relatively more influence over decisions than in the *Pako* ethnic group.

4.6 Future scenarios, adaptation to climate change and gender

The field research explored possible future scenarios with villagers in each location and the adaptation strategies they are undertaking.

It is clear that *knowledge of climate change* and its possible impacts is extremely limited, even in more disaster prone areas. This lack of awareness limits adaptation activities.

There are constraints to adaptation, even where villagers observe climatic changes, because they *lack the resources* to undertake relevant activities. Post-disaster recovery activities tend to focus on renewal of existing activities (e.g. restoring agricultural production and income generation activities) rather than more transformative changes which might enable households to increase their resilience to future disasters and slow onset climate change. This is unsurprising given poverty levels in each research area. Only a few confident households can borrow money to invest in farming machines to provide services to others.

Villagers in the field research noted the increasing unreliability of the traditional seasonal calendar which makes agricultural decision-making even harder. However, some changes are being made out of necessity. Changes in the *timing of crop planting* (earlier or later) *and harvesting* (of rice) before the typhoon and flood season, especially in Hai Ba, to adapt to increased climate variability were observed. Drought or flood resilient seed varieties have been introduced by Agricultural Extension Centres in Hai Ba.

More subsidiary crops are being planted, according to villagers. More information is needed as to how the changes in cropping (of varieties, times of planting, crop damage) is affecting women and men differently (e.g. in building up or undermining their specialized knowledge, changing workloads, altering status within the household) and how this might change in the future as slow onset climate changes are felt more keenly (e.g. changes in temperature affecting crop productivity). Gender bias in extension and meteorological information services is well known in most parts of the world. The field study did not discuss this issue directly, and more information is needed.

Low-carbon, urban, wealthy futures despite climate change



Education is seen as a critical escape route from poverty by villagers in the research location (in Hai Ba, for example, most children do finish school and there is quite a high rate of university enrolment, but this is less so the case in other locations and girls leave school earlier than boys). Female illiteracy rates remain high, especially in Avao, because of cultural factors preventing their access to education, distances to schools, low quality teaching materials and language barriers (in Avao *Kinh* is the primary language of tuition, whereas most of the population are from the *Pako* ethnic group), and despite increased investment in education in remote areas in recent years. None of the children return to live in the commune post-graduation, (changing the shape of many households) which has implications for those who remain behind, especially women who often have to take on new responsibilities and work. The sending back of remittances is a key part of many resilient household livelihoods, but a continuous exit of young people could, however, undermine rural futures.

There is no evidence of new school buildings in Avao being designed to withstand floods or typhoon, yet Avao has suffered from disasters in the past. *Climate-proofing of new infrastructure* is thus an urgent priority.

Focus group discussions with *teenagers* in the three research locations indicate that whilst they too observe changes in the climate, they are also in some places (mainly Hai Ba) aware of disaster preparedness measures being taken in their homes and communities and in some cases (Hai Ba and Dakrong) there is good knowledge of wider environmental issues. The interviewees did not seem overwhelmed by the expected changes ahead and identified potential adaptations that could be undertaken (e.g. learning new technologies, investment in education through better credit from banking organizations and public investment, media awareness programmes, government sponsorship or research on green energy). Gender issues were not raised in detail, although girls did state they would like housework to be shared by men in the house so that they could do extra-curricular activities. In envisaging future scenarios boys focused more on technological and industrial shifts, whilst girls focused on small-scale technologies and social investment (e.g. in parks and public transport). More work is required to explore with young boys and girls in Viet Nam their aspirations for the future and the implications of different potential development pathways for themselves.

Table 10: Potential future scenarios identified by villagers in the three research locations

Hai Ba: Despite substantial livelihood diversity and household resilience, these communities will be severely affected by climate change impacts. Significant impact from climate change impacts, such as sea level rise, which will negatively affect the neighbouring communes of Hai Ba (e.g. the latter could lose markets for steamed rice papers involving men who trade them and women who make them). Some Hai Ba villagers may have to relocate their homes and livelihood activities to new, more secure, areas – but this is likely to require resources and will be easier for better off households (thus it is likely that women will be disproportionately affected). In flood-prone areas, a mezzanine level in a house is important for food and asset storage, for safety of household members, but resources are needed to build stronger houses with mezzanines. Newly married couples building houses are being encouraged to raise the foundations and include mezzanines.

Avao: Shifting cultivation cycles are shortening due to increased population pressure and land fertility is being undermined, leading to increased soil erosion and heightened risks of landslides following heavy rains. More frequent forest fires likely due to prolonged droughts expected from climate change. A potential alternative to rice farming is cultivation of Acacia trees for use in pulp and paper industries or to obtain investment as a carbon sink, but villagers lack capital and knowledge of markets.

Dai Nghia: Villagers have observed unusual climate events (hailstorms, floods, longer periods of very cold or hot temperatures), but limited experience of responding to disasters and climate stresses compared to Hai Ba, and no clear strategies for change. Most said they did not know what to do if faced with higher frequency and intensity events, saying the impacts are unavoidable and it would be necessary to wait and plant in the following season if a current crop was affected.

5. Opportunities for mitigation of GHG emissions

Rural areas throughout the world are major emitters of Greenhouse Gas (GHG) emissions. Deforestation, forest degradation, wetland rice cultivation and livestock keeping in Viet Nam all lead to GHG emissions (e.g. release of carbon from felled trees, shrubs and soils of forests; methane from organic material in wet rice field soils or anaerobic decomposition of animal manure, increasing numbers of cows and buffaloes which emit methane). Per capita historic and current contributions are low for Viet Nam, so mitigation activities can only ethically and practically be promoted where they also bring about real economic benefits and ideally when they contribute to tackling the underlying drivers of vulnerability and hence promote climate change resilience.

Poor rural households need energy for electricity and shaft/motive power to do cooking and entrepreneurial activities, to have lighting, for irrigation, to obtain drinking water, and for milling, storage, and transport. Because of the energy needs of poor rural households, especially women, investments which provide energy can be of great value. In particular, electrification of grain mills in rural areas is the single most effective energy intervention in rural areas for freeing up women's time⁴⁴. Climate change imperatives are creating potential new sources of finance for energy poverty projects, which would be given the go-ahead primarily as a means to combat climate change and to reduce GHG emissions.

Following are two examples of 'Nationally Appropriate Mitigation Actions' (NAMAs that have several social, economic and environmental benefits.

5.1 Small-scale biofuel

Small-scale biofuel development can be effective in relation to rural development objectives⁴⁵. With appropriate support, such schemes can improve access to energy services and enhance local livelihoods for rural people, without negative impacts on food production and the environment. However, related studies rarely stress gender analysis and therefore there is often a blind spot as to the distribution of costs and benefits and the ways in which these new technologies are changing gender relations and power. Small-scale schemes are usually participatory in nature and so are more likely to be adapted to local contexts, but are not exempt from the usual challenges faced by other productive interventions in rural areas (e.g. the need for initial financial support, technological hurdles, and inadequate stakeholder capacities)⁴⁶. As with other development interventions, gender issues are also present and yet under-analyzed⁴⁷.

Because small-scale biofuel projects are fairly experimental, involving new activities to produce plant oil, (such as gathering unused nuts and seeds, changes in the uses of existing crops, or planting new crops altogether) there are still questions about whether feedstock volumes will be sufficient to sustain and expand the initiatives, and marketing and distribution challenges also exist (e.g. transporting goods out of remote villages, linking to national and international markets)⁴⁸. Large-scale plantations for liquid biofuels for transportation are attractive to some investors and to some governments seeking foreign exchange, but they are very high risk in terms of their likely (direct and indirect) social and environmental negative impacts on poor people, especially women in poorer, rural areas. It is very unlikely that biofuel sustainability certification initiatives will be able to tackle many of the indirect impacts of such schemes⁴⁹.

In Dai Nghia, **biogas** digesters⁵⁰ are being piloted (biogas is a biofuel). Nationally, 65,000 household level biogas digesters in 38 provinces have been constructed (2003-9). This is potentially a mitigation activity which has economic benefits. Positive benefits of biogas in Viet Nam have been identified by an FAO-PISCES (2009) study of a project which reduced the smoke women were exposed to from wood fires, improving their health and quality of life and by a study by Teune (2009) (see table x). *Potential* gender dimensions of biogas are also outlined in the table, although more empirical research is needed to establish whether these gender issues are arising.

Table 11: Potential gender dimensions of biogas

Biogas Potential Costs and benefits	Gender dimensions
A clean renewable energy source for cooking and lighting.	Reduction in workloads for women and children in cooking and fuel collection. Reductions in time spent cleaning cooking pots and attending to the stove can be achieved by women through biogas use. School work at home possible; benefits especially girls' education.
Energy cost savings	Particular benefits for women who tend to be responsible for household energy provision;
The biogas digesters' residue, bio-slurry, is a valuable organic fertilizer, providing cost savings on fertilizers and improvements in soil quality;	Bio-slurry can improve soil fertility, which has positive effects on crop production, in which women often invest more time, especially because of their primary role in securing food for the household.
Reduction in use and reliance on fossil fuels.	Possible increases in resilience as the household is less open to vagaries of fuel prices, providing greater security to women who are responsible for securing household energy for domestic purposes.
Pollution is reduced in areas of high livestock development, by use of animal and human waste in a closed structure. Improved yard sanitation and indoor air quality (reduced eye and lung diseases) can be achieved. Environmental and health benefits from reductions in water pollution from farming.	Health benefits particularly felt by women and girls who tend to be in the kitchen most because of prevailing gender roles.
By substituting fuel wood, biogas production reduces deforestation which has indirect positive effects on the local environment and all people.	Many poorer rural households and women are particularly reliant on common property resources for their livelihoods (e.g. fuel wood, medicines, wild edible plants). Deforestation can be particularly negative for women and can undermine women's status in the household if they are less able to secure household subsistence as usual.
Better sanitation through a connection to toilet, the elimination of pathogens in the fermentation process and fewer flies.	As women are often responsible for cleaning (and maintaining) toilets, health improvements will occur. If school sanitation would also be improved: positive consequences for girls' enrolment.
Rural job creation/business development (e.g. 100s of construction teams and after sales services teams trained by SNV).	Men particularly benefit as the jobs created are taken up by male artisans and masons
Potential CDM revenues	Gender impact depends upon how CDM

	schemes are implemented, although women are not well represented in existing decision-making processes
Potential reduction in Greenhouse Gas Emissions, but total energy consumption may go up	A global impact – women are likely to be more affected by climate change than men because of prevailing gender inequalities and women's subordination

Sources: Teune (2009); Field research

By making available cheap energy, consumption by poor households can increase whilst GHG emissions growth can be limited through the use of biogas. Thus energy poverty may be reduced whilst the promotion of renewable energy enables a shift to cleaner development pathways. Energy is critical for production and well being, meaning that human development is supported by its availability. Even where rural Vietnamese biogas users increase their total energy consumption, they are relatively 'low emitters', now and in the foreseeable future.

However, more analysis is needed of how new technologies (or old technologies that are being promoted for new reasons) are changing gender relations to be sure that potential benefits are realised by women. This would include meeting both practical needs in line with women's priorities (e.g. reductions in time and effort spent on fuel wood collection), but also strategic interests (e.g. better health, changes in decision-making influence). New technologies are inserted into existing power relationships and often require changes to institutional arrangements⁵¹. Because of prevailing gender relations, tackling energy poverty (e.g. through biogas production) can particularly benefit women, but it should not be assumed that the changes instituted are all positive: women's time saved by biogas digesters and SRI does not necessarily reduce their overall workloads, because they often take on other work in the hours saved. There generally is a need for participatory technology assessments.

Other forms of decentralized, small-scale bio-energy schemes, such as jatropha multi-platforms⁵², can provide disadvantaged rural inhabitants with a range of benefits. For example, they can provide greater access to energy for income generating activities, opportunities to sell energy to others, lighting which can sometimes provide greater access to educational opportunities, TV/radio and allow working into the evening, and a reduction in workloads (e.g. powering mills). These impacts are often thought to be of benefit to women, because it is their work that is substituted by the new source of bio-energy. But, it is necessary to assess on a case-by-case basis if benefits are accruing and to whom, taking into account differences along lines of gender, age, ethnicity etc. Critically, the extent to which the participation of women in bio-energy decision-making is being facilitated must be taken into account. Otherwise there is a risk that new technologies will only exacerbate gender inequalities, giving women more work, rather than less, and will fail to challenge the prevailing social norms which limit women's empowerment⁵³.

The physical location of a new technology has to take into account *gendered space* – the kitchen and the home is usually seen as female space. Rural kitchens in Viet Nam are often dark, poorly lit, and hot, and this is because women's work is not valued⁵⁴. A reduction of indoor air pollution can particularly benefit women's health, because gender norms and gendered space mean that the kitchen is usually a space where women are exposed to smoke.

The field research in Dai Nghia provides limited insights into local views on biogas (many positive observations and a few negatives ones, e.g. on construction costs

and bad odours). But more information is needed on whether individual household or community scale biogas equipment is more efficient – and what the gender implications are of the different sizes of technology.

Changes to women's and men's relative work burden and responsibilities are likely to flow from small-scale bio-energy projects, as with any rural development projects. The examples given above have the potential to achieve GHG emissions reductions, wider environmental sustainability benefits, economic benefits and improvements in livelihood resilience – but greater gender sensitivity is needed.

5.2 System of Rice Intensification

The System of Rice Intensification (SRI) methodology has been developed and promoted in many countries and in twenty-two provinces of Viet Nam as a way of boosting rice production, income and sustainability and it can also reduce GHG emissions compared to conventional cultivation practices. SRI reduces the use of inputs such as seed, water, fertilizer, herbicides and pesticides, and therefore reduces costs. SRI works by promoting the growth of healthier, more resilient rice plants with stronger root structures, and by fostering soil organic material and soil fertility.

SRI benefits small farmers because it can help them achieve economic viability without compromising environmental sustainability. SRI farmers in Viet Nam have achieved⁵⁵:

- 70% to 75% reduction in seed costs
- Water savings of 40% to 50%
- Pesticide, herbicide savings of 50% - 100%
- Yield increases of 13% to 30%
- Extra net profit increase of 8% - 32%

SRI leads to greater resistance to pests and diseases, and can also make crops more resistant to stresses like drought and storm damage. Production of rice in Viet Nam is likely to be seriously affected by climate change, because most of it is grown in lowland areas, which are susceptible to sea-level rise, as well as more frequent or more intense droughts, cyclones, heat waves. Reduced planting rate and reduced seed reserve allow faster replanting and recovery. SRI can reduce GHG emissions as rice fields are inundated with water intermittently during the growing season, so there is less anaerobic decomposition of organic material and methane gas production is reduced⁵⁶. In addition, reduced use of urea fertilizer can reduce release of nitrous oxide, which is also a GHG.

Some critics of SRI have questioned the claims regarding increased yields and note the reliance on mechanised or manual weeding may limit widespread replication. However, overall, the benefits of SRI appear to be recognized by many farmers including higher yields and reductions in production costs, and therefore increased income. Many interviewees in Dai Nghia reported advantages of SRI, including that the rice has stronger stems and copes better with climatic hazards such as strong winds and drought. However, not all farmers have applied the method as fully as promoted, because of the increased labour costs for weeding (although there are labour savings at e.g. transplantation); incomplete awareness of the environmental benefits of SRI; a lack of confidence that yields can be maintained without the use of chemical fertilizers and pesticides; lack of manure; and/or insufficient labour during labour-intensive periods.

Training has been provided in Dai Nghia through the district Plant Protection and/or Extension Centres and Cooperatives. The Farmer Field Schools organised for SRI in the researched community targeted at least 50 percent participation of women, and benefited many, and indeed women participated in great numbers even if this target was not always reached. Trials were undertaken by selected farmers to compare SRI and conventional rice production. Neighbouring farmers have adopted the technology because they observed the economic benefits and the Cooperative disseminated further technical information. The water supply is serviced by the Cooperative. SRI has a tight schedule for ploughing and irrigation, and therefore all farmers participate in the new water management practices, also those farmers who did not initially participate in SRI training.

It is critical that the implications of this new technology for women and men, for gender relations and for different groups of households are analysed in depth and that actual implementation is regularly monitored, especially as water management requirements mean that all in a community will participate in the adjusted irrigation schedules. Research findings suggest that at least some women now have a greater say over household incomes, which increased. The workload of men and women changed because of the application of SRI. Labour demand for weeding increased but it decreased in transplanting and SRI brings several benefits. However, it should not be assumed that women always benefit from it. The general feminisation of agriculture is leading to rural women having higher workloads, without having access to sufficient labour and sometimes skills to cover additional workloads whilst they are still often (in practice) excluded from agricultural extension activities.

Development projects and programmes can help to create new legitimate public spaces for women where these projects engage women and where visible community-wide or household impacts challenge prevailing gender norms and relations. This was illustrated by the efforts of Oxfam to state an expectation that women would attend meetings in their disaster risk management training and their stipulations of numbers of women and men attending. This potential for external organisations to help create new spaces for democratic engagement, in this case promoting women's participation, may particularly be the case with energy products which are associated with technological knowledge and which tend to have higher status than for example handicrafts⁵⁷. However, merely opening up new public and policy spaces does not alter existing power inequalities – it is only the start of the process – rhetoric of participation instead of real participation can mask inequalities.

Reduced emissions from deforestation and forest degradation (REDD) represent a source of climate finance which could be used in developing countries to protect forests and theoretically reduce carbon emissions. Concerns have been expressed about carbon trading to fund REDD for a number of reasons, one of which is that it might lead to dispossession of indigenous peoples and local communities. Millions of poor, rural households depend upon forest resources for their livelihoods, and more than 70% of people living in poverty are women. At the same time women tend to have less secure state and customary forest resource tenure and a comprehensive gender assessment of the potential impacts of REDD initiatives is needed⁵⁸. Of the relatively limited public funding to be made available for REDD, compared to potential market based financing which focuses on large-scale deforestation, large amounts should be targeted to community-based activities, particularly those involving women's associations, and with issues of gender and tenure being explicitly tackled through reform of land legislation. GHG emissions mitigation initiatives have, by and large, been market-led technical fixes. Within the Clean Development Mechanism (which has been widely criticised), there are projects which seek to provide development benefits to low income communities, but these

have so far suffered from low delivery of direct benefits to local communities, and are often inaccessible to those groups because of limited size of such initiatives⁵⁹.

There may be opportunities for increasing gender equality and incomes, whilst at the same time improving both the local and the global environment and mitigating GHG emissions. Technological innovations such as biogas digesters or SRI, and new sources of financing, such as REDD, may help to limit GHG emissions, and in some cases have simultaneous climate change adaptation benefits (e.g. SRI producing more climate-resilient rice) and the ability to tackle the underlying drivers of vulnerability such as energy poverty. However, technical transitions and institutional shifts do not occur in a vacuum, and even where projects aim to empower women, without adequate gender analysis and strategic and targeted action as well as continuous monitoring, it is possible that they could worsen gender inequalities or that opportunities will be missed.

6. Conclusions and recommendations

6.1 Conclusions

There is clear evidence that villagers in Viet Nam are observing climate change, and that this may undermine human development gains. Increasing exposure to climate change (both slow onset and rapid onset) is evidenced by the unusual climate events noted by local people across the three villages in which the field research of this study was executed, and particularly in coastal, low-lying Hai Ba.

The impacts of climate change will not be felt equally across Viet Nam. Economic growth has led to investment in rural areas in Viet Nam and contribution to poverty reduction since the late 1990s, but social inequality is also rising. Because of prevailing gender inequalities women are likely to be more affected than men. Sensitivity to climate change varies, and is particularly strong amongst poorer, rural households and amongst women who tend to rely on natural resources and climate-sensitive livelihood activities.

Adaptive capacity is differentiated along gender and social lines because of prevailing gender norms, power relations and poverty patterns. Indicators of household resilience in Viet Nam include access to and control of labour, savings and credit, and security of land tenure. The field research shows that key factors shaping resilience include: life cycle stage of households, previous experience of dealing with disasters, the strength of a local self-protection ethos, social support through kin and community networks, and relative strength of livelihoods (diverse strategies and entitlements).

The households with least resilience to climate-related disasters and stresses tend to be those comprising female headed households, especially those with small children, widows, elderly, sick and injured members. As well as commonalities in terms of who is more vulnerable to climate change impacts, there are differences too: some communities are more exposed, sensitive and have less adaptive capacity than others, with the latter two dimensions being driven by poverty, cultural values, gender and power relationships, geography and environmental endowment.

Whilst awareness of gender equality has improved over the past decade in Viet Nam and there has been some progress in household decision-making and community participation in some places, on many indicators progress has been limited, particularly in the crucial area of participation in local decision making structures. This has implications for the ability to respond to climate change in a gender-sensitive way. Women face discrimination within legal structures and formal institutions, have fewer opportunities for education and development, face social pressure not to challenge traditional gender roles and an associated internal socialisation of a lack of confidence and public speaking skills, and an unequal division of labour which burdens women with most of the reproductive and many production responsibilities.

The field research found clear evidence of a feminisation of agriculture, with increasing numbers of (mainly men) undertaking seasonal migration to find work and generate income (especially in Quang Tri) or find local non-farm employment. This trend is being increased by climate pressures, such as the intensification of disasters. Again, because of what is deemed socially acceptable, women have less mobility. The field research found that mostly mid-level resilient households, i.e. those with a certain level of resources, were able to undertake migration as a livelihood strategy –

which begs the question 'What options are left to the poorest, least resilient households as climate change impacts begin to bite'?

Women do engage in wage labour activities, but in many communities less so than male household members and their pay may be less. Their domestic and subsistence production tasks usually remain, and their activities usually are less valued. The trend of male seasonal outmigration and / or local non-farm employment is forcing women to taken on more agricultural tasks and recovery activities following disasters which were previously done by husbands. The research has found that slow onset climate stresses are increasing workloads, because replanting and more planting of subsidiary crops is becoming a more frequent necessity. Nevertheless, more information is needed as to how this trend is changing the work burdens of women and men and household gender relations. Are women gaining greater influence in decision-making because their husbands are away (during the day or the season)? Are there social tensions when husbands return after seasonal migration? Can women gain access to the resources they need (labour, credit and land) to complete the necessary activities?

Roles in decision-making in disaster risk management (DRM) are also gendered, with women having less of a say in decision-making, responsibilities and experience. There is some local variation, but women are clearly under-represented in local and sub-regional formal decision-making structures, such as the Committees on Flood and Storm Control (CFSC) or Search and Rescue (S&R) committee at different levels. These committees have a male dominated culture which female participants may find intimidating, especially as they are represented in fewer numbers and generally have lesser access to relevant decision-making information. There are differences in the DRM tasks that are perceived to be male responsibilities (e.g. village rapid response teams, search and rescue), and those that are seen as female responsibilities (e.g. stockpiling food and water prior to the disaster season, caring for children and the elderly during and after disasters). In practice women may do all these tasks, especially where men migrate away for work. However, in general male efforts in DRM tend to be more highly valued than those of women, reflecting gender bias. Women's valuable role in providing emotional support to those affected by disasters, for example, is not recognised officially.

Climate change livelihood impacts are clearly gendered. Some of the linkages identified in the field research focus on human capital assets. Violence against women increases following disasters and women can suffer greater psychological impacts because of their on-going traditional roles of caring for others. Women eat less and become weaker in periods of prolonged food shortages and stress compared to men because of gender differentiated allocation of household food supplies. Health impacts are gender and age-differentiated, with children and (pregnant) women particularly at risk from water-borne diseases and psychological impacts and the elderly are most at risk from heat stress. Women also tend to be most affected by reproductive tract infections following floods. All of these impacts are likely to increase as climate changes are felt more strongly. Workloads for both women and men are increased by DRM activities, although men have more work during extreme events, compared to women who, generally speaking, have extra responsibilities in preparatory work and in recovery activities (caring for the sick etc). Mortality amongst men is higher during disasters according to villagers, partly because men are more involved in Search and Rescue (S&R), although more information is required.

As well as impacts on human capital assets, there are clearly gendered impacts on financial capital assets. Damage to crops particularly increases the work of women,

who are responsible for the care of crops, and replanting and changes to cropping patterns is becoming more necessary. These processes could affect power relations in the household in a structural and negative manner, as women are pushed more into traditional roles and men bring cash-income which is often valued more than subsistence farming; but more evidence is needed in this regard. The emotional impact on families of the separation of households, when (mainly) husbands have to go away to find work, is rarely discussed in development literature – but husbands in Quang Tri Province stated that they would prefer to stay at home. Remittances play an important role in the livelihoods of more resilient households, and this strategy can only become more common as climate changes increase – but the strategy may not be open to the poorest of the poor.

Poor households usually access loans with subsidised interest rates through mass organisations such as the Women's Union, which do not require collateral such as LUCs. The poorest, often including female headed households, find taking even this credit often risky in terms of their ability to pay back. However, when women and female headed households have moved out of poverty and want access to larger loans they may find gaining access to credit harder than their male equivalents partly because the names of wives have not been included on LUCs, because for that purpose such collateral is needed. Whilst this differentiated access to resources is not new, as climate pressures intensify, access to credit will become increasingly important for the renewal and change of livelihood activities. Gender and ethnically-based inequalities permeate access to and control of livelihood assets (e.g. land quantity and quality, domestic and irrigation water and labour) and it is likely that climate change will exacerbate these differences.

On-going investments in infrastructural developments, such as new school buildings, did not appear to include climate-proofing adaptations (e.g. raised floors). The gender implications of climate proofing and the gendered impact of climate change on physical capital require more attention, including the participation of local women and men in the planning and design.

The field research provides insights into adaptation strategies – but more gender analysis is needed to see how women's and men's strategies and the options open to them will vary. Knowledge of climate change is extremely limited, even in more disaster prone areas – and this clearly limits action on adaptation. Poverty and lack of resources constrain adaptation. Post-disaster recovery activities focus on renewal rather than transformation.

Some adaptation activities are already being taken out of necessity (e.g. changes in the timing of rice crop planting and harvesting, planting of different seed varieties, and increase in cultivation of subsidiary crops), and more information is needed on the gender implications of these adaptations. More gender sensitive agricultural innovation systems are needed.

Some communities will not only be affected by increased exposure to climate change themselves, but by the relocation and changes in strategies of their neighbours. For example, disaster prone Hai Ba neighbouring communes will be even more affected by sea level rise than Hai Ba villagers. Households from the adjacent areas may seek to relocate in the Hai Ba commune or may change livelihood strategies having a knock-on impact on markets and livelihoods of Hai Ba residents. There is potential for increased disputes over resource access and gender aspects of these should such events occur. Clearly, it is important to envision the range of potential future scenarios with a range of multiple stakeholders (including children) through learning alliances and to monitor change in different contexts.

Mitigation activities to limit growth in GHG emissions in Viet Nam, funded by government or ODA, should have clear co-benefits and bring about simultaneous economic, environmental and social benefits, because historically and currently Viet Nam is a low emitter of GHGs. As a matter of priority such investments should enhance access to energy by the poorest, and help reduce poverty levels. Ideally, these activities will also actively promote adaptation to climate change – but should certainly not undermine resilience.

However, achieving all of these objectives simultaneously can be a challenge. Small-scale, decentralised bio-energy schemes present possibilities for tackling energy poverty, and might be able to reduce GHG emissions. Biogas digesters are already being promoted in Viet Nam and offer a number of positive benefits – particularly for women who are responsible for securing household energy. Potential benefits include energy cost savings, a clean source of cooking and lighting energy, less pollution, job creation, and reduced deforestation. Although many bio-energy projects involve women because of their household energy roles, and some specifically target them, it is important not to assume that they share equally in the benefits, nor that they are able to participate equally in decision-making or that gender relations are necessarily improving. Biogas digesters can also lead to an overall rise in total consumption of energy amongst users, but at the same time they are helping to tackle energy poverty using renewable energy.

The System of Rice Intensification (SRI) can potentially provide economic benefits, achieve GHG emissions reduction, and enhance climate change adaptation. However, as with the bio-energy schemes, new technologies are not introduced into a vacuum, but are inserted in existing power and gender relations and the outcomes are therefore gendered and generally positive effects are only achieved through in depth analysis and targeted, strategic action. The field research and some additional sources suggest that the workload in SRI, particularly for women, may be decreased at transplanting time and harvest is faster, whilst the need for spraying herbicides or pesticides is reduced. However, more time is needed for manual weeding, a typically female activity, and water management practices are stricter (especially re timing). Many interviewees in Dai Nghia reported that advantages of SRI include that the rice has stronger stems and coped better with climatic hazards such as strong winds and drought. Women participated in Farmer Field Schools (50 percent was the target, even though not always achieved) and women have stressed that they had decided themselves to apply SRI, and had achieved more say about household financial decisions as SRI production brought additional income into the household (also: lower costs of inputs).

Development opportunities may arise through new climate financing of mitigation. As well as bio-energy initiatives and agricultural mitigation interventions, a key element of mitigation relates to forest protection. Financing to the forestry sector may be enhanced with success in the international negotiations on Reduced Emissions from Deforestation and forest Degradation (REDD), which can be from carbon trading and public funding. However, both present different risks and opportunities for those dependent on forest livelihoods. Public funding should be targeted to support of smaller-scale programmes, which can involve and benefit poorer groups and indigenous peoples. Attention must be paid to prevent the negative impacts of REDD market-based funding projects.

Development projects and programmes can help to create new legitimate public spaces for women where these projects engage women and where visible community-wide or household impacts are felt and simultaneously challenge

prevailing gender norms and relations. New climate and development policy spaces and forums can be created, enabling citizen participation, in particular women, but it is critical to realise that engagement in participatory processes, whilst important, does not significantly alter power relations on their own.

Some commentators suggest that there is now a ‘development gap’ which needs to be resolved between the commitments to achieve the MDGs and the new, extra challenges posed by climate change⁶⁰. Projections of medium- and long-term impacts of climate change not only present challenges to development futures, but threaten to undermine development gains to date. The Global Humanitarian Forum report estimates that 300 million people are already seriously affected by climate change⁶¹. In this interpretation climate change is primarily a set of additional stresses requiring increased responses (e.g. service provision) – at a time when development budgets are being squeezed⁶². This is undoubtedly true, but at the same time the challenges posed by climate change mean that even more fundamental changes in development policy and planning may be required as societies seek to move to low-carbon, non fossil-fuel reliant pathways. Longer planning timescales are needed, greater public participation and social equality is necessary and ecological principles at the heart of development imperatives should be secured. So whilst livelihood programmes and services need to be improved and made more gender-sensitive, there needs to be greater reflection on how societies can meet climate challenges in equitable ways.

6.2 Recommendations

The following recommendations are based on the research data sources and above conclusions, and verified and discussed in stakeholder workshops, and they go beyond those as well, in order to set the conditions for turning responding to climate change into opportunities for gender equality.

The following recommendations include references to the mandate of some sector ministries, in particular in the context of formulation and implementation of action plans under the NTP-RCC⁶³.

In addition, the recommendations imply consequences for disaster management, agricultural extension, and migration-related policies and action plans, among others. Furthermore, the recommendations are also relevant to other national stakeholders with an interest in either gender equality or climate change and to other policy and policy implantation processes. Recommendations are also expected to be of relevance to international development organisations based in Viet Nam and their national partners, for their programme development and implementation.

The recommendations cannot be easily prioritised, and they are all important for the creation of opportunities for social equality in responding to the challenge of climate change. However, some can start immediately whilst others are more realistic in the medium to long term, depending on for example availability of resources.

Recommendation 1: Awareness raising and training on gender-climate change links

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.

- Support comprehensive gender sensitivity training for environment and climate change professionals and policymakers.
- Providing training and support for mainstreaming of both climate change and gender equality into DRM.
- Ensure enrolment and attendance of boys and girls, even in times of environmental stress.
- Integrate climate change and gender equality issues into curricula (schools, universities, life-long learning).
- Conduct gender-climate change awareness training with all members of local households.
- Support (legal) education and educational campaigns on gender equality rights and climate change, especially targeting low-income earners, and those living in remote and mountainous regions
- Encourage participatory learning and action approaches and training activities conducted by e.g. development agencies and NGOs, government extension services, as well as private sector organizations.
- Train those disseminating hydro-meteorological information (early warning system managers; weather forecasters) to understand how farmers interpret this information, how such information is gender-sensitive (e.g. in language, media channels, other means of communication), and how information may affect gender relations, to ensure better access to and relevance of climate information for women.

NTP-RCC Task and lead agencies: Task IV, '*Awareness enhancement and human resources training*' by MONRE, MOET, MOCI, MOPS, MOCST, MOFA, FF, FLSO, WU, YU.

Recommendation 2: Research on gender-climate change links

Improve the research base on the gender and climate change links and ensure gender sensitive data is collected and analysed to inform decision making

- Further vulnerability and adaptation research, covering different geographical areas and social groups is needed in particular on (a) post-disaster gender-based violence; (b) migration patterns and impacts to identify potential interventions; and (c) agriculture, to identify potential innovations which can promote gender equality and greater resilience
- Assess the gender dimensions of GHG mitigation activities, including REDD-related public and carbon trading financed initiatives, large and small bio-energy schemes, and agricultural innovation.
- Research gender-climate change links in the urban context (adaptation, mitigation).
- Research current and potential migration patterns and rural-urban linkages in the context of climate change; identify how gender relations and household structure and livelihoods are changing as a result.
- Analyse further how climate-related policy is tackling gender issues in climate change adaptation and GHG emissions mitigation at national and local levels.
- Analyse how different forms of differentiation and discrimination intersect (based on e.g. ethnicity, educational level, social status and economic conditions) and integrate this understanding in policies and programmes.
- Improve analytical frameworks and methods including inter-disciplinary and action-research which engage policy-makers and local stakeholders.

- Develop gender-sensitive (national) indicators and ensure gender-disaggregated data is collected, analysed and used in a systematic manner on climate change adaptation (including disasters) and GHG mitigation.

NTP-RCC Task and lead agencies: Task II, *‘Develop and implement science and technology programs on climate change’* by MOST, MONRE, MARD, MPI. Also closely related to Task VII, *‘Develop and implement action plans to respond to climate change’* by sector ministries and PCs.

Recommendation 3: Policy, participation and representation

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.

- Ensure gender mainstreaming in all climate change related plans and programmes, including all sector and local action plans under the NTP-RCC and mechanisms such as the Clean Development Mechanism and REDD.
- Promote social protection policies and programmes targeted at the most vulnerable, specifically regarding climate change-related vulnerabilities.
- Promote the application of CEDAW and human rights approaches in policy development and implementation, to enhance gender mainstreaming in climate change policies and actions.
- Address the systematic under-representation of women in public policy and management structures on climate change in Viet Nam. Set targets for participation of women in CFSCs and guarantee a proportion of minimally 30 percent women in leadership positions in State and socio-political organizations dealing with climate change.
- Develop practical tools to support increased attention to gender perspectives in policy making processes and institutions. For example, conduct gender audits and budgeting within critical climate change - related organizations (e.g. government departments, extension services, NGOs) to identify changes in organizational culture, workforce, and structure.
- Organise specific meetings with women to explore potential adaptation strategies and climate change futures at all levels.
- Support a national stakeholder forum of adaptation planning and monitoring, which involves civil society representation and in which women’s voices and those of the most vulnerable groups are heard.
- Support women’s networks, groups and alliances to increase their influence.

NTP-RCC Task and lead agencies: Task III, *‘Building capacity of organization, institution, policy on climate change’* by MONRE, MPI and others, and Task VI, *‘Develop a standard framework for mainstreaming climate change issue into development’* by MPI and others. Also closely related to Task VII, *‘Develop and implement action plans to respond to climate change’* by sector ministries (especially MARD, MOLISA) and PCs.

Recommendation 4: Women's rights and natural disasters

Protect women's rights in particular during and after disasters that are enhanced by climate change.

- Promote mainstreaming of gender and participation of women in (community based) disaster risk management (DRM), including planning, development and implementation of policies and actions.
- Ensure guaranteed access to health care services, reproductive health, family planning methods and contraceptives, before, during and after climate change-related disasters.
- Ensure guaranteed access to education, during and after climate change-related disasters, specifically for girls.
- Ensure that support for DRM is targeted to the poorest groups in the most exposed locations first.
- Promote gender-sensitive investment in water and sanitation that operates also during and immediately after disasters, also for schools.
- Address gender based violence (GBV) during/after (climate change-related) disasters/stresses in all disaster response efforts.
- Encourage recognition of the different roles, efforts and traditional practices in DRM by both women and men including the more invisible work of women, through analytical work and capacity building efforts.

NTP-RCC Task and lead agencies: Task VII, '*Develop and implement action plans to respond to climate change*' by sector ministries (especially MARD, MOLISA, also mass organisations) and PCs.

Recommendation 5: Women's livelihood opportunities and 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.

- Complete the registration of Land Use Certificates (LUCs) in the names of both women and men, raise awareness of women of the value of having LUCs in their own names (e.g. for their access to larger scale credit; and for holding on to land rights in the case of divorce or death of husbands).
- Ensure that migration and settlement policies enable women and men to migrate without hindrance and take due consideration of women's and men's practical needs and strategic interests (for example registration policies and access to health and education services in receiving areas).
- Support practical access to land and / or resettlement for vulnerable women and men in areas highly exposed to climate change (e.g. coastal zones).
- Invest in safe settlements, housing and infrastructure (e.g. residential clusters in the Mekong Delta on raised land, accessible by road and water, and with basic social services that operate also during floods), with women's full participation in planning.
- Target support for compensation and resettlement to poorest communities, and particularly to women who are most vulnerable to climate change effects.
- Tackle energy poverty, as a means of promoting women's empowerment, through investment and support for energy development and GHG mitigation projects which improve access to safe, sustainable and effective technologies for less affluent people, especially women.

- Conduct gender and climate change vulnerability & adaptation analysis to better understand and strengthen the livelihood options for less affluent women and men in agriculture, animal husbandry, fisheries and aquaculture.
- Promote sustainable, agro-ecological farming methods, recognizing the potential changes in women's and men's workload and resource access, and household decision-making.
- Promote extension services that reach women smallholders; employ more female extension workers, and encourage the use of appropriate methods to reach women farmers.
- Invest in diversification of production and off-farm activities to spread risk, particularly involving women and female headed households, with analysis of gender impacts of new technologies and livelihood strategies.

NTP-RCC Task and lead agencies: Task VII, '*Develop and implement action plans to respond to climate change*' by sector ministries (especially MARD, MOLISA, also mass organisations) and PCs.

Recommendation 6: Gender and international climate change policy

Promote gender equality in international climate change policy, including financing.

- Support the integration of gender issues and support to women in negotiation texts under the UNFCCC, especially regarding capacity building and technology transfer.
- Support formulation and application of guidelines for Vulnerability and Adaptation assessment under the UNFCCC that take gender relations and women's practical and strategic interests fully into account.
- Support gender analysis of CDM, GEF, the Adaptation Fund and other funding arrangements under the UNFCCC and help formulate eligibility criteria and allocation processes to ensure that funding is prioritised for targeting poorer groups including women with less adaptive capacity or ability to mitigate their emissions.
- Seek domestic and international investment funds for activities which bring socio-economic benefits at the local level (adaptation to climate change and GHG mitigation).

NTP-RCC Task and lead agencies: Task V, '*Enhance international cooperation*' by MONRE, MOFA, and other ministries, including especially MARD and MOIT.

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Annex I Sources of data and research methodologies

The research used information from diverse sources, building on the desk review.

A. Secondary information analysis and literature review.

In addition to the desk review, more national and international published and other resource materials were accessed, including 'provincial participatory poverty assessments', Viet Nam Development Reports and project documents on climate change, vulnerability, gender, disasters and GHG mitigation measures, to gain an understanding of the situation in Viet Nam in comparison with international situations.

Data included commonly assessed (gender disaggregated) indicators of vulnerability to climate-related natural disasters, in as far as available, especially at the local level.

The secondary sources were assessed for experience of changes in household and community level gender relations and women's status, and for climate (change) relevant social economic challenges in Viet Nam. This is also important for understanding the challenges and opportunities for increased gender equality in GHG mitigation better; women's and girls roles in household consumption decisions and productive activities; their participation in training and different professions; as well as women's roles in industrial leadership and policy making.

B. Fieldwork on vulnerability and adaptation (V&A) and rural GHG mitigation options

Fieldwork was undertaken in three rural locations in central and northern Viet Nam, with partners of Oxfam, using the following methodologies.

- Focus group discussions (FGDs): were held with:
 - groups of adults (men and women separately)
 - groups of teenagers (boys and girls separately)
 - commune, district and province officials.
- Several graphs, satellite images and maps with effects of climate change were used to probe discussions about future vulnerabilities and 'adaptation paths' according to different social economic scenarios to 2050 and 2100.
- Semi-structured interviews (SSIs) were held in combination with interview tools, in meetings with local authorities (district, commune) and (especially) women and men in selected communities. In SSIs opinions on the impacts of climate change and opportunities for low carbon development were explored in some depth, with different roles, responsibilities, needs, capacities, status and opinions of women and men.
- Local statistics and 'administrative data' were collected during the fieldwork at the province and lower levels of administration. This provided important context and complemented the data from SSIs and FGDs.

C. Consultation workshops

Consultations with Government, UN organizations, Oxfams, mass organizations, and (other) international organizations involved in responding to climate change were organized at key moments of the study.

- The first workshop on 28 April 2009 to get comments and contributions on the research design and methodologies.
- The second workshop on 11 June 2009 to share preliminary results of the field study and discuss draft recommendations.
- A third workshop upon completion of the final draft study report.

Annex II Climate trends – Viet Nam

The following is a summary of conclusions from two climate change scenarios that resulted from “down scaled” global circulation models to the year 2100, as they were produced by MONRE for the main regions of Viet Nam. This summary was an input into several focus group discussions in Quang Tri and Ha Tay (now: Hanoi), at the province, district and commune level, and was also used in presentations to teenagers, along with explanations of the large charts and maps with temperature and rainfall changes in different seasons and sea level rise, produced by MONRE⁶⁴.

- Average annual temperature will go up by 2100 by about 3°C by 2100 in the NW and NE Mountains, Red River Delta and North central coast regions; and by 2°C in the South central coast, Central Highlands and Mekong Delta regions.
- Predicted temperature increases are consistent with the observed trend over the period 1958-2007, over which especially winter temperatures in the NW and NE Mountains, Red River Delta and North central coast regions have increased
- With additional rainfall in June-November (the wet season) there is clearly increased risk of flooding, especially in northern regions, including lowland cities, and increased risks of landslides in mountainous areas.
- Strongly increased drought risk in the period December to May (the dry season), especially in southern regions.
- These predicted rainfall trends are NOT consistent with observed trends over the past decades (increased annual, winter and summer rainfall in the southern regions; decreased in the northern regions), but mean a reversal of those trends as a result of global climate change.
- Sea level rise and associated saline water intrusion will strongly affect the Mekong Delta and HCM City, parts of the Red River Delta and also strongly affect a significant coastal strip including small estuaries (Quang Tri: 36.7 km²). The 1 meter by 2100 is likely, but not an official prediction of global scientific models.
- Impacts of typhoons remain, especially in the Central coast regions. Other data suggest they may get worse (more frequent, stronger, landfall of a wider area).
- These data do not show “dangerous climate change” in full, e.g. they do not show that the fluctuations year on year would become more extreme – i.e. further away from the trend and the average.

Annex III Household resilience indicators

Field research findings on household resilience indicators	
Stage of household life cycle	A key influence over the baseline wellbeing/poverty of household members, because it shapes availability of labour. Loss of resilience is driven by injuries, sickness, ageing, deaths in the family and children leaving home – which reduces labour and labour productivity. Household resilience increases when children finish their education (which removes burden of schooling costs), obtain work and send remittances. Increased resilience occurs when land areas under cultivation are expanded, investment is made in equipment which can be used to generate income, and livelihood activities are diversified.
Knowledge and experience of disasters and access to social protection	Living with natural hazards and experience of disasters means that Hai Ba villagers have developed greater experience in preparing for and recovering from disasters, compared to those living in Dai Nghia, which has a more stable climate, and have received more external assistance from government and civil society on disaster risk management (social protection). The former is also better off region compared to the latter which also reduces vulnerability. Avao is also less prone to extreme and frequent disasters and so inhabitants have not developed similar expertise as those in Hai Ba. Avao villagers also have less wealth and crucially less access to disaster information.
Self-protection	Self-protection (e.g. in reinforcing homes and workplaces against hazards and climate stresses) was particularly thought to be important in Avao, where a 'spirit of self-sustainability' was given as a key criterion for household resilience. Those who receive support for housing or borrow capital to invest in livestock from external programmes, are not thought to be as resilient as those who do it themselves, however, it also appears to link to cultural values which emphasizes independent and autonomous action.
Support through community and kin networks	Mutual assistance (e.g. sharing of food and construction materials etc), is a strong tradition in Vietnamese communities, but it is particularly a feature of life in Hai Ba, enabling villagers to cope with and recover from disasters. However, socially excluded groups may not be able to access this support or be able to participate fully in community life: divorced women are often stigmatized in this way.
Strength of livelihoods	<p><i>Access to labour</i> Resilient households have sufficient labour force to secure adequate income and thus hire labourers. Male labour is valued more highly than that of women, partly because men are usually more able to generate cash. Households with married sons have additional labour alongside daughters-in-laws to assist in daily activities. Less resilient households have limited labour to care for animals with more dying in epidemics, cold periods, are washed away in floods. In Dai Nghia the least resilient households lack labour and have to hire others to do planting, weeding, and harvesting and recover more slowly from disasters or never fully recover. Vulnerable households in Avao include widows, single women, elderly members, female headed households with many small children or with male members who do not work and may drink alcohol. Where fathers have died young, villagers thought that sons lacked guidance.</p> <p><i>Access to savings and economic levels</i> Households with labour and savings to buy seeds and animals are generally considered more resilient.</p> <p><i>Diversity of livelihood activities and income sources</i> Dependence on agricultural production is common, especially rice production - the main source of income for most. In Hai Ba, the most resilient households</p>

have diverse sources of income (e.g. animal husbandry, growing mushrooms, making conical hats, making and selling fresh steamed rice papers, providing services for mechanized paddy grain sorting and husking, coffee planting, collecting and selling firewood, carpentry and blacksmithing). Least resilient households have only small plots of rice and limited access to labour. In Avao, more resilient households have one or more household members working for government, gaining access to more information and with regular governmental salaries or other subsidies. The least resilient households may earn income from work for other households, carrying belongings and supplies for gold miners, clearing land or planting trees for border protection station in the area (since early 2009), but there are limited opportunities for this and low wages. There are also fewer opportunities for livelihood diversification than in the other research locations. Male labour not being used effectively (due to alcohol abuse, or lack of willingness to work).

Access to and control over land

In Hai Ba many of the least resilient households (e.g. single mothers, widows, households with many small children and disabled family members) have to rent land and pay half (sometimes even more) of agricultural produce to landowners. In Avao shifting cultivation on hilly land is widespread. The extent of clearance by a household depends upon access to labour, and is currently unregulated but is likely to become so in the future. Location of cultivable land is important in terms of vulnerability to flooding (land near springs or in low lying areas) or to drought (land far from a water source). Following disasters least resilient households lack the capital and labour to restore rice production. In Avao more resilient households are those who can invest in irrigation water pipes enables cultivation of two wetland rice crops.

Seasonal outmigration: Migration is predominantly undertaken by male members of households, which means that women have to take on more agricultural production tasks that were previously done by men, some of which they do not have experience of and it increases their workload. In Quang Tri Province men migrate south or to the cities to earn extra income, especially in off-farming seasons, but also after disasters to earn income for recovery, although many stated they would prefer to stay at home. Interestingly, only those with capable labour or mid-level resilience migrate, indicating that a certain level of resources is necessary to undertake this livelihood or coping strategy. During the floods of 1999 in Quang Tri, men who had left home to work elsewhere were only able to return home to help with disaster recovery when most of the emergency response and early recovery activities had been completed by women. In Dai Nghia, 70 to 80% of those working in the fields are women and men take off-farm jobs in cities or in the local vicinity. A key indicator of household resilience is that of remittances being sent by relatives abroad or children working in cities.

Access to information – More resilient households have greater access to information.

Endnotes

- ¹ UN - Viet Nam (2009)
- ² UNDP (2007); Chaudhry and Ruysschaert (2007); Huu Ninh Nguyen (2007); Oxfam (2008)
- ³ UN - Viet Nam (2009)
- ⁴ ADB (2009)
- ⁵ IPCC (2007)
- ⁶ Green house gasses include carbon dioxide, methane, nitrous oxide, and e.g. fluorocarbons
- ⁷ In 2005, assuming land-use change, Viet Nam was ranked 111 on the list of countries ranked by greenhouse-gas emissions *per capita* (based on data compiled by the World Resources Institute)
- ⁸ SRV (2003)
- ⁹ UNDP (2007)
- ¹⁰ Fitzgerald (2008)
- ¹¹ UNDP (2007)
- ¹² Data from the National Assembly (2006) as reported by MOLISA; NCFAW (2006) *Review report for the Advancement of Women*. Referred to in: FitzGerald (2008)
- ¹³ See World Bank, DFID, CIDA (2006)
- ¹⁴ See Ingrid FitzGerald (2008)
- ¹⁵ UN - Viet Nam (2009)
- ¹⁶ This is based on a proposed definition in Neefjes (2008)
- ¹⁷ 'Social Vulnerability, Sustainable Livelihoods and Disasters': Report to DFID Conflict and Humanitarian Assistance Department (CHAD) and Sustainable Livelihoods Support Office , Cannon, T; Twigg, J and Rowell, J (Undated)
- ¹⁸ Adaptation is defined by the IPCC as: 'Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory, autonomous and planned adaptation'.
- ¹⁹ WRI, 2007, p18
- ²⁰ WRI, 2007
- ²¹ IISD (2003), p.8+5 respectively
- ²² Rossi and Lambrou (2008)
- ²³ WEDO (2008)
- ²⁴ WEDO (2008)
- ²⁵ (e.g. *Third Global Congress of Women in Politics and Governance on Climate Change*, organized by CAPWIP in Manila, October 2008, that issued the *Manila Declaration for Global Action on Gender, Climate Change and Disaster Risk Reduction*; In Monrovia, Liberia, in March 2009 the '*International Colloquium on Women's Empowerment, Leadership Development, International Peace and Security*' choose as one of its four key themes 'climate change'; and discussed how to ensure gender mainstreaming in climate change policies and actions).
- ²⁶ Adapted from table 9.8 in ADB (2009)
- ²⁷ Parry et al. (2009)
- ²⁸ See <http://www.noccop.org.vn/index.html>
- ²⁹ SRV (2008)
- ³⁰ SRV (2008)
- ³¹ UN Viet Nam (2009)
- ³² SRV (2008)
- ³³ UN Viet Nam (2009)
- ³⁴ In 2009: 186 countries have ratified CEDAW.
- ³⁵ Fitzgerald, Ingrid and Vu Ngoc Binh, (2008) *Snapshot 2: Two new laws promote gender equality in Vietnam*
- ³⁶ Rea Abada Chiongson, (2009)
- ³⁷ UNIFEM (2009)
- ³⁸ UNIFEM (2009)
- ³⁹ Vietnam. At: Online Women in Politics.org
- ⁴⁰ In Avao there are relatively fewer climate hazards and stresses, so there is generally less awareness of disaster risk management and climate change adaptation. Women dig cassava

and collect fuel wood in preparation for times of stress (e.g. drought or prolonged cold periods). However, it is not clear if women and men both participate in DRR activities and higher levels of poverty mean that villagers have pressing short-term concerns.

⁴¹ Neumayer and Plümper (2006)

⁴² Nelson and Stathers (2009)

⁴³ This is similar to a gender and climate change analysis in semi-arid Tanzania where women's workloads have increased disproportionately with the need to replant crops due to increased climate variability (Nelson and Stathers, 2009).

⁴⁴ Clancy (2008)

⁴⁵ Rossi and Lambrou (2008); Dubois (2008); UNDESA (2007); ENERGIA (2009); UN (2007); Karlsson and Banda (2009)

⁴⁶ Dubois (2008)

⁴⁷ Nelson, forthcoming. A study in Cambodia found that there are risks that large investors could seek to establish plantations following the success of small-scale jatropha projects, which increase land values and may tempt smallholders to sell their land (Saumura, Karlsson and Banda, 2009).or lead to dispossession of those with weak resource tenure security – something which women are more likely to experience than men.

⁴⁸ Karlsson and Banda (2009)

⁴⁹ Nelson, forthcoming

⁵⁰ The Viet Nam and Netherlands Governments initiated a Biogas Programme in 2003 and provide funding alongside participating provinces and households. For more information see www.biogas.org.vn. It is implemented by the Ministry of Agriculture and Rural Development (MARD) Livestock Development Department with technical assistance from the Netherlands Development Organisation (SNV).

⁵¹ Wong (2009)

⁵² The MFP involves a small 10 horsepower diesel engine, which is mounted on a chassis, to which a range of end-use equipment can be attached and from which electricity can also be generated. Uses include oil press, electricity generator (water pumping, lighting, workshop tools, de-huskers, battery chargers), a mill for grinding cereal, a compressor to inflate tires etc. Initiated in Mali, MFPs are now being trialled in other developing countries, especially in Sub-Saharan Africa, such as Uganda, with biodiesel and pure plant oil being obtained from jatropha (UNDESA, 2007)

⁵³ Nelson, forthcoming

⁵⁴ Mehta (1996) in Cecelski (2004)

⁵⁵ Ngo Tien Dung (2009) *Bao cao tom tat tinh hình va ket qua san xuất SRI den vu đông xuân*, Cục BVTV (Overview report of SRI adoption as of the winter-spring season, Plant Protection Department). Report presented to the mid-term program review workshop in Nghe An, in August 2009 (Oxfam America / Oxfam Quebec).

⁵⁶ See for example a research paper that demonstrates the effects of intermittent drainage on methane emissions from rice fields: Nguyen Van Tinh, Nguyen Quang Trung, Nguyen Viet Anh (2006) *Influence of on farm water management to the methane emission in the Red River Delta area – Viet Nam*. Paper for the Viet Nam national Commission on Large Dams (see also: www.vncold.vn)

⁵⁷ Cecelski (2004)

⁵⁸ Schalatek (2009)

⁵⁹ Boyd et al. (2009)

⁶⁰ M Parry et al. (2009)

⁶¹ GHF (2009)

⁶² Boyd et al. (2009)

⁶³ References are made to Decision 158/2008/QĐ-TTg dated 02 December 2008 of the Prime Minister, specifically to the Annex: List of Tasks and Projects for Implementing the National Target Program To Respond To Climate Change In The Period Of 2009-2015

⁶⁴ MONRE (2009)