Case Study 5.4

Gendered Vulnerability to Climate Change in Limpopo Province, South Africa

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It is well-known that women in developing countries tend to be more dependent on natural resources than men, and thus that female-headed households tend to rely more on agricultural livelihoods than male-headed households (Meinzen-Dick et al, 1997). Climate change is projected to impact such livelihoods by altering the availability and distribution of natural resources, reflecting changes in temperature and the quantity and distribution of rainfall. Nevertheless, vulnerability to climate change depends on more than just the nature of exposure to the different climate parameters: it also reflects entitlements to the assets required to respond to the variations in climate. These assets include health, governance and political rights, social capital and networking, as well as financial and physical resources, and access to them is socially differentiated along lines of gender (as well as other aspects of social identity, such as age, ethnicity, class and religion) (Adger and Vincent, 2005; Denton, 2002; Cutter, 1995). This case study illuminates the differential vulnerability to climate change between female and male-headed households in a rural dryland community in Limpopo province, South Africa.

South Africa presents a particularly interesting context in which to look at gender relations and how they play out at the household level. A new constitution was intensely debated and negotiated at the time of transition to democracy in 1994, and it is now widely considered to be one of the most progressive in the world. Based on the principles of democratic values, social justice and fundamental human rights, equality features prominently, and thus the equal position of men and women in society is enshrined at the highest level (Government of South Africa, 1996). That said, the constitution also protects the rights of traditional customary law (and its patriarchal nature) alongside the new democratic governance institutions and processes. The result is that household decisions are embedded in an increasingly plural institutional landscape where the reality is that access to entitlements still differs between men and women, giving rise to gendered vulnerabilities.

The research used multiple social science methods to explore how vulnerability to climate change is gendered, and the gendered nature of access to coping strategies and adaptation in the recent past, as well as investigating how recent political and institutional change has affected the vulnerability of households of different headship. Data were derived from participatory rural appraisal, a questionnaire incorporating livelihoods survey, semi-structured interviews with household heads and key informants, institutional analysis, and policy analysis (for more information, see Vincent 2007a).

A naturalistic, place-based enquiry was undertaken in one community in Limpopo province, northeast South Africa, chosen for its experience of recent past climate variability and projected exposure to future climate change. This area, to the north of the Soutpansberg mountains, is semi-arid with a summer rainfall season (November–March). There are high levels of inter-annual variability, punctuated by regular droughts and occasional floods, most notably in 2000. In terms of human characteristics, the village comprises approximately 700 people in 180 households, and has a legacy of natural resource-dependent livelihoods (primarily crop farming, but also some livestock). From 1979–1994 this area was part of the 'independent' homeland of Venda, but since 1994 and its reintegration into South Africa, and the new and diversified opportunities that this has brought, there has been a steady shift away from the land. However, South Africa's high levels of unemployment impinge on access to formal sector employment, as does the legacy of poor education (with low levels of competency in English).

Vulnerability is determined by a number of driving forces, and the outcome of vulnerability is thus the result of an interaction of these. An overall household level index of social vulnerability to climate change-induced changes in water availability was constructed, comprising the weighted aggregation of five component sub-indices which were selected and weighted as appropriate to the specific context: economic well-being and stability (20 per cent); demographic structure (20 per cent); interconnectivity in higher level processes (20 per cent); natural resource dependence (20 per cent) and housing quality (20 per cent) (Vincent, 2007b). These sub-indices were theoretically

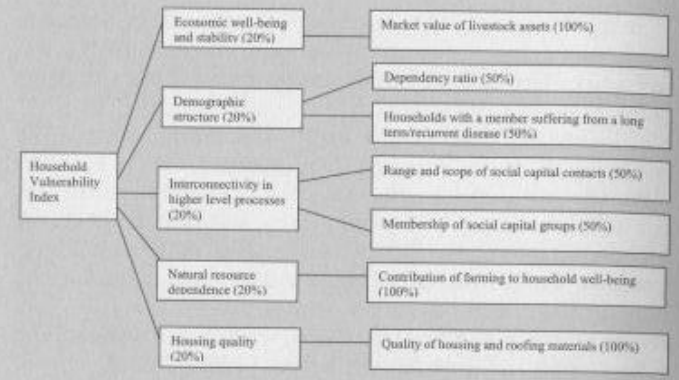

Figure 5.4.1 *Structure of the Household Vulnerability Index*

derived and based around the sustainable livelihoods framework (natural, social, human, financial and physical capital) (Adger and Vincent, 2005; Scoones, 1998) (see Figure 5.4.1). The overall index is normative, ranking households from the most vulnerable within the village, to the least vulnerable within the village. However, as the rank reflects an aggregation of five sub-indices, it is possible that a household may score poorly (i.e. be vulnerable) in four sub-indices, but a high score in the fifth sub-index could reduce its aggregate score such that in its overall rank it appears to be not so vulnerable. Table 5.4.1 summarizes the average vulnerability ranks of households of male-headed, *de facto* female-headed, *de jure* female-headed and child-headed households, where 1 is the most vulnerable.

Arguably the most striking observation from Table 5.4.1 is that there is no clear-cut relationship between household headship and level of vulnerability to climate change-induced variations in water availability. The average vulnerability ranks place *de jure* female-headed households as the most vulnerable, with an average of 40.27, but this is closely followed by male-headed households and then *de facto* female-headed households. Looking at the range of vulnerability ranks illuminates why these averages are so similar: the most vulnerable household in this village (with a rank of 1) is male-headed, and the second most vulnerable is *de jure* female-headed; but the range for both types of female-headed and male-headed households are large. Of particular note is the relatively low average rank of

Table 5.4.1 *Summary of average vulnerability ranks and range of vulnerability ranks by type of household headship*

Household type	No in sample	Average vulnerability rank	Range of vulnerability ranks
Child-headed	5	78.3	67.5–85
Male-headed	28	40.5	1–81
De facto female-headed	17	42.35	7–77
De jure female-headed	35	40.27	2–84

child-headed households, and their range of 67.5–85 (relatively less vulnerable). This is counter-intuitive and contradicts the literature, which suggests that child-headed households are typically vulnerable (Bicego et al, 2003). However, when looking past the end ranks to the composition and qualitative status of the households, each of the five child-headed households has this headship status not due to being orphaned, but because both their parents are working away in the city and have left their teenage children at home in the rural area to finish their schooling. Thus the child heads of these households are aged 16 and 17, and have good stores of financial capital through remittances from their parents, no dependence on natural resources (since their parents are employed in formal sector employment) and good levels of physical, human and social capital (through their interconnectivity and relationships with people outside of the immediate proximity of the village).

While the aggregate ranking is important to allow for the substitutability of strengths and weaknesses in the different capitals (and thus different sub-indices), it is at the higher level of resolution that the gender differences are most apparent. Table 5.4.2 shows that in the natural capital (dependence on natural resources) sub-index, *de jure* female-headed households had the highest level of dependence, making them more vulnerable to exposure to climate change. Here 79 per cent of male-headed households and 88 per cent of *de facto* female-headed households had only partial or no dependence, meaning that their livelihoods are not solely tied to the availability of natural resources, making them less vulnerable overall in this category. In contrast, Table 5.4.3 shows the ranks of the social capital (interconnectivity in higher level processes) sub-index, which itself comprises two indicators. While male-headed households tend

to be less vulnerable on the basis of having a large number and wide range of contacts, *de facto* female-headed households are less vulnerable in terms of membership of local groups, such as savings wheels, burial societies and stokvels.[2] Women typically invest more, and gain more, from the reciprocity and networks of such local level social capital, which can provide both financial and psycho-social support in times of crisis (Goulden et al, 2009; Westermann et al, 2005). Many *de jure* female-headed households would also like to participate more in such groups, but are often constrained by the inability to pay the monthly membership fees. Box 5.4.1 provides a qualitative description of two of the sample households in order to further illuminate the profiles of vulnerability.

Table 5.4.2 *Natural capital sub-index scores disaggregated by household headship*

Household type	Frequency		
	Group 1 – heavy dependence	Group 2 – partial dependence	Group 3 – no dependence
Child-headed	0	0	5 (100%)
Male-headed	6 (21%)	8 (29%)	14 (50%)
De facto female-headed	2 (12%)	8 (47%)	7 (41%)
De jure female-headed	11 (31%)	8 (23%)	16 (46%)

Table 5.4.3 *Social capital sub-index scores disaggregated by household headship*

Household type	Mean indicator rank-contacts	Mean indicator rank-groups	Range of indicator ranks-contacts	Range of indicator ranks-groups
Child-headed	40.5	61.1	16.5–65.5	39.0–83.5
Male-headed	46.9	43.2	16.5–65.5	7.5–83.5
De facto female-headed	41.9	47.7	16.5–65.5	7.5–83.5
De jure female-headed	40.6	38.7	16.5–65.5	7.5–83.5

Box 5.4.1 *Profiles of vulnerability of two sample households*

The household ranked the tenth most vulnerable in this community is *de facto* female-headed. The female head is only 23 and she has only been head for a short period of time, since her husband left to seek work in Johannesburg. She receives irregular remittances from him, since he has not yet found permanent work, and has other financial assets in the form of a savings account and some small livestock. She cannot afford to belong to any social groups at the moment, and has medium dependence on natural resources as she farms maize for subsistence only.

The household ranked 75th (less vulnerable) is *de jure* female-headed. The female head is middle-aged (47) and has been head since the death of her husband seven years ago. She lives with her elderly mother, who receives a monthly social pension, and has a son working in Johannesburg as a policeman, who sends regular remittances. She is also fortunate to have formal sector employment as a saleslady. Her financial security allows her to belong to two social groups (a burial society and a stokvel), and she lives in a brick house. She does not farm at all, and thus has no dependence on natural resources.

Explaining the differences in ranks between households requires looking beyond the status of headship to the causes of that headship. The status of household headship is transient, with women in particular typically being part of male-headed, and *de facto* and *de jure* female-headed households at some point in their life. In particular in this community many of the *de jure* female heads of household were elderly, with an average age of 58.14 (Table 5.4.4), and had survived their husbands due to the gendered difference in life expectancy.

Table 5.4.4 *Relationship between age and household headship*

Household headship	Average age of head (years)	Range of ages of heads (years)
Child-headed	17.2	16–18
Male-headed	58.71	29–86
De facto female-headed	46.71	22–78
De jure female-headed	58.14	30–86

As well as differences in current vulnerability, access to coping strategies and adaptation shows gendered differences. Existing strategies in drylands to cope with inter-annual climate variability are based on flexibility in livelihoods, such as changing planting dates, planting hardier varieties (for example sorghum rather than maize), planting in alternative locations, or using river or borehole irrigation (Corbett, 1988; Ellis, 1998; Goulden et al, 2009). Men and women have different access to such options: land rights for women are often poor, and their lack of control of household financial capital and decision-making capacity may make it difficult to obtain new seed or sink boreholes for irrigation (Eriksen et al, 2005). Gendered roles that render women in charge of reproductive tasks, such as child rearing and healthcare, also mean that they have fewer options in terms of coping and adaptation, and thus tend to be more vulnerable than men. Men's gendered role is as the bread-winner within the household, and they have the ability to command other livelihoods as they can migrate, and have a historical legacy of better levels of education (although this is slowly changing), which can allow them to be more insulated from exposure to climate change. *De facto* female-headed households sometimes have the best of both worlds, as the household benefits from income from the non-resident male combined with insulation from the vagaries of climate, whilst the *de facto* female head often has greater decision-making powers in her husband's absence.

There are important implications of the empirical findings of the way in which vulnerability and access to coping strategies and adaptation within this community are gendered. Whilst many development policies within South Africa have directly or indirectly reduced absolute vulnerability to climate change, institutions and policies are rarely gender neutral, and thus the vulnerability of male and *de facto* female-headed households has, on the whole, reduced more than it has for *de jure* female-headed households. Gender differences in roles, responsibilities and capabilities mean that climate change may actually reinforce disparities between men and women. As a result, it is vital to consider the gendered effects of policies, to ensure that they do not inadvertently contribute to differences in the relative vulnerability to climate change of female- and male-headed households.

Notes

1 This chapter is based on primary research undertaken for Katharine Vincent's PhD thesis.

2 Stokvels are a South African example of a Rotating Savings and Credit Association (ROSCA).

References

Adger, W. N. and Vincent, K. (2005) 'Uncertainty in adaptive capacity', *Comptes Rendus Geoscience*, vol 337, pp399–411

Bicego, G., Rutstein, S. and Johnson, K. (2003) 'Dimensions of the emerging orphan crisis in sub-Saharan Africa', *Social Science and Medicine*, vol 56, no 6, pp1235–1247

Corbett, J. (1988) 'Famine and household coping strategies', *World Development*, vol 16, no 9, pp1099–1112

Cutter, S. L. (1995) 'The forgotten casualties: Women, children and environmental change', *Global Environmental Change*, vol 5, no 1, pp181–194

Denton, F. (2002) 'Climate change vulnerability, impacts and adaptation: Why does gender matter?', *Gender and Development*, vol 10, no 2, pp10–21

Ellis, F. (1998) 'Household strategies and rural livelihood diversification', *Journal of Development Studies*, vol 35, no 1, pp1–38

Eriksen, S. H., Brown, K. and Kelly, M. (2005) 'The dynamics of vulnerability: Locating coping strategies in Kenya and Tanzania', *The Geographical Journal*, vol 171, no 4, pp287–305

Goulden, M., Naess, L. O., Vincent, K. and Adger, W. N. (2009) 'Diversification, networks and traditional resource management as adaptations to climate extremes in rural Africa: Opportunities and barriers', in W. N. Adger, I. Lorenzoni, and K. O'Brien (eds) *Adapting to Climate Change: Thresholds, Values and Governance*, Cambridge University Press, Cambridge, pp448–464

Government of South Africa (1996) 'Constitution of the Republic of South Africa, no 108 of 1996', Pretoria

Meinzen-Dick, R. S., Brown, L. R., Feldstein, S. L. and Quisumbing, A. R. (1997) 'Gender, property rights and natural resources', *World Development*, vol 25, no 8, pp1303–1315

Scoones, I. (1998) 'Sustainable rural livelihoods: A framework for analysis', IDS Working Paper no 72, Brighton

Vincent, K. (2007a) 'Gendered vulnerability to climate change in Limpopo province, South Africa', PhD thesis, University of East Anglia, Norwich

Vincent, K. (2007b) 'Uncertainty in adaptive capacity and the importance of scale', *Global Environmental Change*, vol 17, pp12–24

Westermann, O., Ashby, J. and Pretty, J. (2005) 'Gender and social capital: The importance of gender differences for the maturity and effectiveness of natural resource management groups', *World Development*, vol 33, no 11, pp1783–1799