

Climate Change Impact: Vulnerability and Poverty in the Dry Zone of Myanmar

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General indicators for household vulnerability in rural area of selected dry zone

Myanmar is the 58th most vulnerable country and the 2nd least ready country. The high vulnerability score and low readiness score of Myanmar places it in the upper-left quadrant of the Readiness Matrix. It has both a great need for investments and innovations to improve readiness and a great urgency for action.

Over the last decade, the percentage of Myanmar's population living below the poverty line has declined to 26%. Rural poverty is almost twice as high as urban poverty across all the country's states and regions, but the degree of rural poverty ranges widely from 73% in war-torn Chin to 16% in Kayah (IHLCS, 2012). Thus, rural poverty is still a massive problem. In addition to poverty, households in rural areas are exposed to high levels of vulnerability because they face manifold risks and have insufficient means to manage them. Therefore, addressing the issue of poverty, vulnerability and risk management in rural Myanmar is important.

Under a broad context of social and environmental sciences, the vulnerability often refers to as "a potential of loss" (Cutter, 1996; Cutter *et al.*, 2003). This "potential of loss" is considered either as a characteristic that inherently exists in an individual (a group or a system), or a function combining the sensitive individual and the force (stress) that the individual is sensitive to.

The complexity of the poverty phenomena is challenging. In this context the concepts of poverty and vulnerability was applied in the selected dry zone of Myanmar to assess the impact of livelihood shocks and the reaction of the rural households in terms of adaptive and coping strategies vis-à-vis risks.

Households, not yet poor but having low capacities in risk management, may be confronted with a high poverty incidence in the future. Therefore, poverty reduction policies should incorporate the provision of appropriate and adaptive risk management strategies, not the least in view of agricultural risks.

Poverty and vulnerability are not synonymous, but are closely related. Many households that are now considered to be outside the bracket of being poor are certainly vulnerable to fall into poverty. Poverty is static but vulnerability is dynamic. A thorough understanding of the characteristics, constraints and priorities of the poor and vulnerable is crucial to formulate an effective strategy for reducing poverty and for designing social protection programs (Alayande, 2004).

General indicators for vulnerability assessment were measured in selected dry zone (Table 1). The accumulation of savings is so far the only adaptive strategy that is applied by the farmers in selected dry zone. The analysis of data revealed that about 66% in Nyaung U and 83% in Meiktila of the surveyed households were not saving meaning that majority of money was going to food and non-food expenditure which lead to low investments in agriculture.

Of the sampled households, asset loss was found to be 47% in Nyaung U and 57% in Meiktila respectively. Because of the crop failure due to drought, sampled households in Nyaung U faced job loss which had lead to difficulties in procuring food. These two indicators (job loss and difficulties in procuring food) had close relationship found in both study areas.

Table 1. Percentage of household having general indicators for vulnerability assessment in selected dry zone

No	Indicators	Unit	Nyaung U (n = 70)		Meiktila (n = 70)	
			Yes	No	Yes	No
1	Job loss	%	60.00	40.00	10.00	90.00
2	Asset loss	%	47.00	53.00	57.14	42.86
3	Difficulties in procuring food	%	50.00	50.00	21.43	78.57
4	Saving money	%	34.29	65.71	17.14	82.86
5	Able to work	%	68.57	31.43	78.57	21.43

Source: Own survey, 2011

Interviewers' perception of scoring poor level was done and it showed that majority of households entered into the categories of poor and normal which can be identified as just being able to cover the food cost (Table 2). Vulnerability of a person is conceived as the prospect of becoming poor if currently not poor, or the prospect of continuing to be poor if currently poor.

Again, households were asked about their monthly income shortage and were proved to be more than 50% of households in both areas that were facing the income shortage (Table 3). Crop loss due to drought also impacts on the financial hardship experienced by farm households. Since drought reduces farm output, it has a direct effect on the local economy and employment opportunities.

Table 2. Percentage of households showing poverty level under assessment of interviewers' perception

No	Level of poverty	Nyaung U (n = 70)	Meiktila (n = 70)
1	Very poor	7.14	1.43
2	Poor	32.85	25.71
3	Normal	37.14	62.86
4	Rich	14.28	10.00
5	Very rich	0.00	0.00

Source: Own survey, 2011

Table 3. Percentage of households in income shortage in selected dry zone

No	Income shortage	Nyaung U (n = 70)	Meiktila (n = 70)
1	One month	10.00	11.43
2	Two months	7.14	17.14
3	Three months	11.42	11.43
4	Four months	2.85	12.86
5	Five months	2.85	8.57
6	Six months	11.42	8.57
7	Twelve months	2.85	0.00
8	None	47.14	34.29

Source: Own survey, 2011

Economic situation of sample households in selected dry zone

At a micro level, economic success deals with analysis of the farm, off-farm income and family income of the farming systems. These are measures of welfare that have to do with the financial status and purchasing power of the families (Obamiro, 2004).

It is unlikely that household income is compared with consumption as households try to protect their consumption from income shocks by engaging in consumption smoothing behavior (Deaton, 1992; Morduch, 1995). This can happen through asset depletion through borrowing, participation in government insurance schemes such as public work programs, activation of informal insurance networks, a reallocation of the labor supply to the labor market, a temporal geographical reallocation of a household's labor supply, a reconfiguration of spending patterns away from investments in human capital or a combination of all of the above. Households engage in such consumption smoothing behavior, after income has been realized.

Table 4 revealed that farm households in Nyaung U faced the problem of income shortage having negative income whereas those in Meiktila kept the income even higher than the expenditure they incurred.

Table 4. Comparison of annual household income (Kyats per HH) with food and non food expenditure

No	Income and expenditure	Nyaung U (n = 70)	Meiktila (n = 70)
1	Household actual income	458856	1583709
2	Food expenditure	938852	1008845
3	Non food expenditure	31748	281921
4	Total food and non food expenditure	970601	1290767
5	Surplus/deficit	-511745	292942

If income shortage happened, households often also reduce their risk of exposure by smoothing their income. They diversify their income sources (Ellis, 1998) and engage in low risk, low return activities (Rosenzweig and Binswanger, 1993). In summary, the level and variability of a household's future consumption stream depend on the stochastic nature of the risk factors, the extent to which these affect its income (i.e. its risk exposure) and the capacity and desire of the households to protect its consumption from income shocks (i.e. their coping capacity).

Obviously, rural households try to use a diversity of strategies to manage shocks. These may include borrowing, saving, selling productive and non-productive assets, and other forms of 'self-insurance', and informal group-based risk sharing systems.

The economics literature conceptualizes vulnerability as an outcome of a process of household responses to risks, given a set of underlying conditions. Vulnerable households are those that have moved or are likely to move into a state of poverty or destitution as a result of the cumulative process of risks and responses.

In order to know the poverty of the farm households, indicators summarized in both tables (Tables 5 and 6) proved that farm households who suffered from poverty despite indicators of "less preferred food and skipped meal" showed no obvious signs of being in that stratum. Migration to other places to find a job was found in selected dry zone. Asset sales, crop and livestock sales and growing of crops supported the family needs.

Table 5. Indicators to understand how the farm households suffered from poverty in Nyaung U

No.	Vulnerability indicators	Think as % importance			
		Great	Major	Medium	Minor
1	Eating less preferred food	0.00	5.71	71.43	22.86
2	Skipping meal for entire day	2.86	4.00	49.00	20.00
3	Borrowing food	4.29	10.00	42.00	20.00
4	Migrating within country for job	1.43	14.29	54.29	30.00
5	Assets sale	21.43	30.00	32.86	11.43
6	Adults restricted consumption	0.00	10.00	62.86	27.14
7	Reducing number of meals eaten per day	5.72	14.29	60.00	18.57
8	Buying food on credit	2.86	17.14	52.86	27.14
9	Livestock and crop sales	18.57	30.00	32.86	11.43
10	Changing input use in crop production	1.43	18.57	32.86	47.14

Table 6. Indicators to understand how the farm households suffered from poverty in Meiktila

No.	Vulnerability	Think as % importance			
		Great	Major	Medium	Minor
1	Eating less preferred food	0.00	4.29	11.43	84.29
2	Skipping meal for entire day	0.00	1.43	10.00	88.57
3	Borrowing food	1.43	32.86	37.14	28.57
4	Migrating within country for job	7.14	18.57	17.14	57.14
5	Assets sale	1.43	20.00	37.14	41.43
6	Adults restricted consumption	0.00	1.43	10.00	88.57
7	Reducing number of meals eaten per day	0.00	2.86	14.24	82.86
8	Buying food on credit	0.00	42.86	44.29	12.86
9	Livestock and crop sales	4.29	30.00	48.57	17.14
10	Changing input use in crop production	0.00	8.57	47.14	44.29

Conclusion and policy implication

The assessment of the expected vulnerability suggests that agricultural crop production in the selected dry zone, especially in Nyaung U and Meiktila, was associated with the highest vulnerability due to impact of drought on the crop loss in the area.

Considering the current impacts of climate change in the selected dry zone, it can be concluded that poor farmers in the selected dry zone need external help and support to effectively cope with drought and adapt to current and future climate change. Direct and indirect financial help from government agencies and policy changes need to be made to assist poor farmers.

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