Environmental Vulnerability and Early Marriage in Southern Bangladesh

Sigma Ainul[1], Sajeda Amin[1]

[1]Population Council

Extended Abstract:

Objective/Problem Statement

This paper explores the impact of recent environmental change on the probability of early marriage in the community. South-western Bangladesh is characterized by a number of indicators of vulnerability to climate change—as low-lying coastal communities on the Bay of Bengal the region is vulnerable to sea level rise. There is evidence of variable but increased water-logging, river erosion, flooding and associated salinity in parts of the region. The region has also witnessed several major devastating cyclones in recent years. Communities in the cyclone paths were variably affected because of characteristics of vegetation and land elevation. Local level variations in the impact of environmental conditions are known. The region is also characterized by high rates of early marriage in general and similar rates of local level variability in marriage rates. Literature suggests that climate vulnerability puts adolescent girls at more risk as they are female and young (Gaag 2013). In some settings extreme climate events and environmental disasters have been seen as an instigating factor for early marriages for adolescent girls (CCC 2008; Plan International 2011; Deen 2010; Felten-Biermann 2006). This paper explores the connection between the two as a way of understanding the potential impact of environmental factors on decisions about marriage.

Context

South-western Bangladesh has experienced a number of environmental changes that are projected to take place as a result of global warming. The region has a higher proportion of communities affected by water logging, river erosion and salinity that is thought to be associated with changes in the coastline and sea level rise. These coastal changes are associated with reduced productivity of land and loss of livelihood. Low altitude of the coastal area makes them highly vulnerable to flooding and tropical storms and cyclones. Two devastating cyclones- Sidr in 2007 and Aila in 2009- in recent years have displaced tens of thousands of people from their origin.

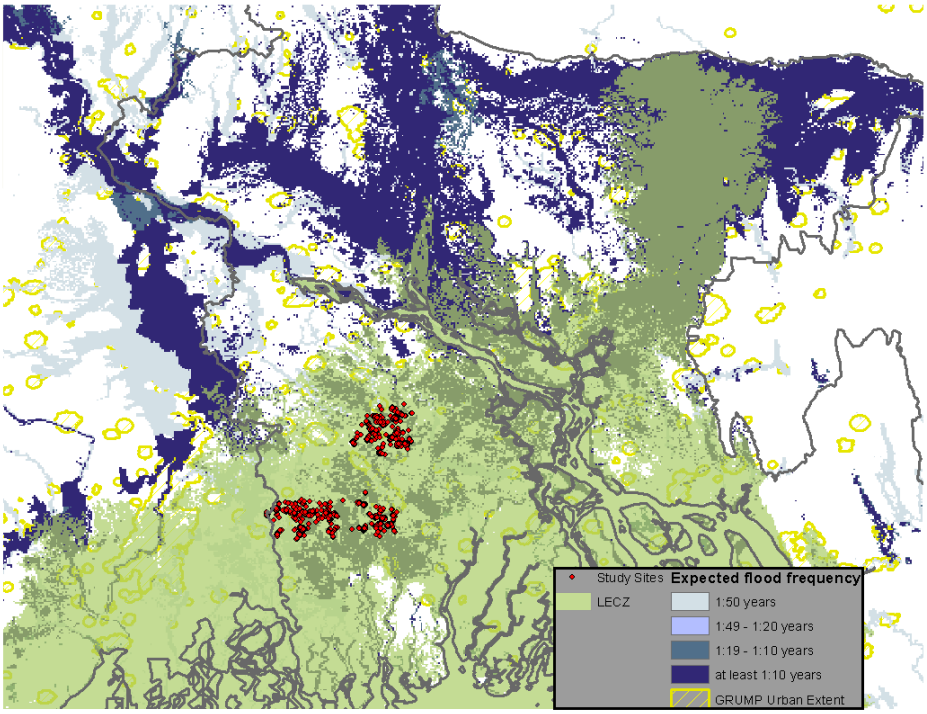

Figure 1: Bangladesh inland and coastal flooding

Data and Methods

This paper utilizes quantitative and qualitative data generated during an intervention research study being conducted in 72 villages. As part of the formative research a team of qualitative researchers conducted transect walks[1] to classify communities according to a set of characteristics that could be potentially important for intervention design and implementation. In addition to climate conditions listed above, the qualitative study characterized communities on the basis of school quality, market access and prevalence of migration. These characterizations were subsequently linked to an adolescent survey of 9000 girls 12-19 years of age.

The outcome measure is marriage outcome-married or not married. For the analysis, independent variables considered were indicators of environmental change—river erosion, waterlogging or increased salinity in land, recent history of cyclones, and presence of *abasan*[2]. Additional explanatory variables included as control variables in the multivariate analysis were Adolescents' age, education level, father's education level, mother's education level and number of sisters.

Preliminary Findings

The survey included detailed background information on individuals and households of the adolescents and we have linked these environmental vulnerabilities with survey data of 9000 Adolescent girls. Table1 below shows a summarized form of the selected indicators based on environmental characterization.

[1] A semi-structured participatory rural appraisal method of exploring and describing communities

[2] *Abasans* are built by Government to rehabilitate the vulnerable population those are affected by different types of environmental shocks and lost their livelihood, asset or homestead.

Table 1: Selected summary background characteristics of adolescents classified by environmental vulnerabilities observed

Environmental vulnerability	Secondary Education rates (range of average value)	Electricity availability in Household (range of average value)	Proportions married before 18
Waterlogging/ saline intrusion [10 unions]	6-23 %	36-78%	3-20 %
River erosion [6 unions]	6-27 %	22-74	3-21 %
Cyclone [4 unions]	6-13 %	45-56	3-19 %
Abasan [9 unions]	2-28 %	19-80 %	13-28 %

Indicators of secondary education rate, availability of electricity vary across a wide range but show a similar pattern under all four environmental characterizations. In case of marriage indicators we have found that proportion of marriage before 18 is high in *abasan* communities comparing to areas with other type of environmental vulnerability.

Cross tabulations (Table 2) among the four different indicators of environmental vulnerability-waterlogging, river erosion, cyclones, *abasan*- with marriage outcome shows that having an early marriage is significantly associated with living in *abasan* community but not with the other communities. Bivariate analysis also shows that educational status is significantly correlated with having an early marriage.

Table 2: Association of environmental vulnerabilities and marriage

Characteristics	Never married (N=7042)	Ever Married (N=1679)
Educational status* **		
Less than primary or no education	71.7	28.3
Primary complete	81.1	18.9
Secondary incomplete	82.2	17.8
Secondary complete or higher	81.3	18.7
Presence of "abasan" in her union* **		
Yes	75.3	24.7
No	81.5	18.5
Presence of river erosion in her union		
Yes	81.5	18.5
No	80.7	19.3
Presence of waterlogging in her union		
Yes	80.2	19.8
No	80.8	19.2
History of cyclone* **		
Yes	89.4	10.6
No	80.2	19.8

***** p<0.001; ** p<0.01; * p<0.05; All values are percentages unless otherwise indicated**

In the multivariate models, after adjusting for effect of other explanatory factors such as adolescents' age, own education level, parents' education level, no. of sisters the likelihood of getting married remained high and significant in *abasan* communities.

Table 3: Adjusted odds ratios from logistic regression analysis assessing relationship between marriage and selected indicators

Variables	Adjusted Odds Ratio#
Presence of "abasan" in her union	
Yes***	1.905
No (ref.)	1.000
Education status	
Less than primary or no education (ref.)	1.000
Primary complete***	1.294
Secondary incomplete***	0.481
Secondary complete or higher	0.080
N	7947
-2 Log likelihood	4917.07
Nagelkerke R Square	0.468

***** p<0.001; ** p<0.01; * p<0.05; Adjusted odds ratios were calculated after controlling for age, parents' education and no. of sisters.**

After controlling for the effect of explanatory factors, it is found that adolescent girls living in *abasan* community are almost twice as likely to getting married at an early age (OR=1.905 significant at 0.001 level) compared to adolescents who live in *non-abasan* community.

Discussion

We have examined four forms of environmental vulnerability in this paper to see whether there is any relationship of environmental vulnerability with high rates of early marriage. Our Finding show that adolescent girls living in *abasan* community are twice (odds ratio=1.905) as likely to have an early marriage compared to girls in *non-abasan* community. We found no significant relationship of early marriage with other forms of environmental vulnerability such as river erosion, cyclones, water logging and saline intrusion. These findings do not necessarily mean that other type of environmental vulnerability did not have any effect on early marriage for adolescents rather it emphasis that impact may not be observed in the place of origin due to the adaptation strategy of the migrated people.

Events like cyclone put immediate stress on livelihood as well as loss of assets of the affected people. Increased flooding, water logging, saline intrusion have rather a slow and cascade effect which might not seem as conspicuous as sudden events like cyclones but it too leads to crop failure and puts stress on livelihood of the family in the longer run and the affected population move to *abasan* community or to urban settlements as an adaptation to livelihood stress.

References

Gaag, N. van der, 2013. *Because I am a Girl: The State of the World's Girls 2013 In Double Jeopardy: Adolescent Girls and Disasters*, Plan International.

CCC, 2008. *Climate Change, Gender and Vulnerable Groups in Bangladesh*, Dhaka: Climate Change Cell, Department of Environment, Ministry of Environment and Forests, Comprehensive Disaster Management Program, Ministry of Food and Disaster Management.

Deen, T., 2010. "Famine Marriages" Just One Byproduct of Climate Change. Available at: http://www.ips.org/TV/beijing15/famine-marriages-just-one-byproduct-of-climate-change/ [Accessed September 18, 2014].

Felten-Biermann, C., 2006. Gender and Natural Disaster: Sexualized violence and the tsunami. *Development*, 49(3), pp.82–86.

Plan International, 2011. *Weathering the storm: Adolescent girls and climate change*, Plan International.