



Adapting to Climate Change:

Migration, Vulnerability and Livelihoods in the Bengal Delta - The Search for Effective Policy Options

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Background



Bangladesh's Government is a model for Disaster Management and Mitigation. The Government of Bangladesh has emphasized **streamlining movements** into the national development plans under the Five Year Plan(s) as well as in the Vision 2021, and the Perspective Plan of Bangladesh; towards an **Upper Middle Income State**. Also attaining **SDG Goals. An important Goal - Migration: 10.7 and 10.7.2.**



Rationally enough, migrants try to **minimize risks** to their **livelihoods**, in times of **stress or structural inequities** (IOM- World Migration report 2012; Auerbach et.al., 2015; Begum 1999 and 2017), by movements that would optimize their chances of survival. Given situations that auger threats to their lives, often, whole families are forced, coerced or involuntarily motivated to shift to safer places.

Background (Contd.)



Hydro-meteorological havoc often creates **systemic, pervasive or surprise change**, making household's **coping ability, especially of the women**, inadequate.



There is a need to study impacts of **sudden on-set** natural events, **associated vulnerabilities**, loss of **livelihoods**, process of **migration, coping** capacities and strategies; the **influencing** factors for water and cyclone-led deluge that could foster **migration**, whether the **options are different** for the same set of families (where perception plays a vital role), and how it **differs in case of men and women**.

Rationale



Bangladesh Delta Plan 2100 projects conceivable state of future uncertainties;



Solicits strategic approaches to be embedded in empirical knowledge; share knowledge, and jointly **build capacities for the implementation** through **evidence based research, such as this study;**



Invites, **first-hand experience of lives in this dynamic delta and the coping strategies adopted by stakeholders, to the plans and policies;**



NSSS has excelled at consolidating reform of food security, food transfer programs and coordinating with the food stocking policy; but, **consolidation and implementation of plans, especially for vulnerable groups experiencing disaster,** has been weak in articulation;

Study Imperatives



The relevant authorities pledge to ensure proper sanitation, safe drinking water, lighting facilities of the cyclone shelter. However, **the prevailing scenario of the cyclone centers is not as it should be.** *Gender Justice* (Neelormi 2011) for women is missing. Children and elderly suffer; culture of **male domination- extremely abusive. Social norms discourage taking refuge with strangers;** Gender dimension : top priorities for GoB;



“Core Family Shelters”- linking disaster shelter homes with livelihoods, markets, skills etc; stairs conducive to use by pregnant women and toddlers; increase fresh drinking water; health and education programs; involve more women;ERF staff;train female DDM officials in ER (Islam 2015; Begum 2017);



International evidences; Karim and Noy (2016) - more **important** to look at the **medium to longer-term differentiated impacts of natural disasters as these natural events could have regional consequences that can persist for decades.**

Policy Aim



Policy concerns

- Medium to longer-term challenges;
- *Subjective probabilities to plausible **hazards** will differ for various socio-economic backgrounds;*
- **Gender dimensions;**



Policy aim

- **Risk** probabilities;
- *Inhibition of human and capital saving/investment in an affected region, **experiencing livelihood constraints for decades;***
- *Factors influencing men and women's responses to disasters;*
- Gender friendly **livelihood** options/**diversification;**
- **Coping** mechanism(s) of the peasant families, in these different settings, information on before and after the disaster, will offer **important insights from this study** .




Author(s)	Topic Addressed Primarily: <i>Vul; Migration; Coping Strategy</i>	Period Covered	Main Findings
Auerbach et.al., 2015; Islam 2010	Vulnerability and Migration in the Delta Region; Reviewing the Strategies within a dynamic situation	Cyclone affected households in the Bengal Delta, preceding the study period	Delta is sensitive to alteration, flooding and storm surges
Seto 2011; Fusella et.al., 2015	Coping with Disasters	Cyclone Aila affected households in southwestern coastal Bangladesh, in the Koyra sub-district, in early 2009	Household's coping ability , especially of the women, inadequate - thus failing to increase the resilience of migrant households
Government of Bangladesh's Documents	Disaster Management Cyclone Shelter Construction, Maintenance and Management	National Disaster Management Policy (2016-2020) Disaster Management Act (2012) Cyclone Shelter Construction, Maintenance and Management Policy (2011). National Social Security Strategy (2015) BCCSAP (2009)	Social welfare; disaster management - articulated in the all documents are very commendable, but implementation must be ensured with due transparency. But Due importance should be given in the Documents towards quality and maintenance of cyclone centers. Construction of shelters –free-undue pressure from those in power. Bandh and roads and their proper maintenance require high priority. BCCSAP: Women are the main actors. <i>Question could be posed, especially among the affected, as to how effective National Policies and disaster management Act-have been in implementation?</i>
Toufique and Yunus (2013)	Survey of 532 household data, to assess vulnerability using the Livelihood Vulnerability Index (LVI) concept	12 coastal districts of Bangladesh in order to assess the vulnerability of households living in the coastal region of Bangladesh	Sudden cyclone: Households are exposed to more vulnerability than flood affected households: due to poor access to health facilities, weaker social network, including natural disasters and climate variability.
Vincent , Lazar, Begum et.al., (2019)	Migration is viewed as a Coping Strategy of Women in Affected areas,	Survey of 1500 households in origin areas; 19 coastal districts in BD in	Migration is an adaptation strategy.. But women are more vulnerable in

Author(s)	Topic Addressed Primarily: <i>Vulnerability; Migration; Coping Strategy</i>	Period Covered	Main Findings
Adri and Simon (2017)	Impact of certain climatic events on people's migration decisions along with post-migration experiences of the migrants.	80 climate induced migrants (target group) and 40 non-climate induced migrants (control group) households living in Korail slums have been interviewed in Dhaka	Vulnerability of people remain: unplanned migration can not necessarily upgrade the quality of life and hence rejects this unplanned migration to term it as adaptation.
Mallick <i>et.al</i> (2017)	Vulnerability and Migration as an Adaptation Strategy; Revisiting the Coping Mechanisms	Cyclone Sidr in 2007 and Cyclone Aila in 2009, people of 1555 households from 45 coastal villages in the southwestern region of Bangladesh.	Switching livelihoods/occupations, unemployment, reliance on micro-credit and other forms of loans The study finds migration as an adaptation strategy as people move to large urban areas for livelihoods.
Ahsan (2017)	Coping with Disasters and Role of Perceptions	Cyclone Aila affected 360 households in southwestern coastal Bangladesh, in the Koyra sub-district, in late 2009 have been surveyed	Findings of adoption practices of water management, agricultural adjustment, and non-agricultural diversification by the coastal households in order to cope with perceived escalating risks , like tropical cyclones .
Haque et al. (2013)	Attempts to formulate an adaptation strategy mainly focusing on the nexus between household perception on climate change and health risks for Bangladesh	Covered 450 households from 2 villages, one from the northern part and the other from the southern part, coupled with focus group discussion and key informant interviews.	Overall livelihoods of local people encompassing means of living, human health, and agriculture, are negatively affected by the climate variability.
Karim (2018)	Negative Impact of Disaster: short-run economic impacts of recurrent flooding on Bangladeshi households.	Households show the results of 2010 data that have been compared with the pooling data	The paper focuses on the impacts of climatic disaster (i.e., recurrent flooding) on economic development aspects (i.e. household income, expenditure, asset, and labor market outcomes) of Bangladesh. This paper concludes with robust findings.

Karim and Noy (2016)	Impact of disasters on nine outcome variables; income is reduced at a faster rate than that of consumption	Extract ed161 separate observations from 38 studies within different time periods	The Poor households are observed to smooth out their food consumption by lowering non-food items consumption along with spending on health and education: analyzes the heterogeneity of the impact of disasters on the poor and proves the general pattern of post-shock dynamics.
Karim and Noy (2016)	This paper explains the impact of both direct and indirect natural disasters on poverty and income distribution. Also coping strategies and responses of the poor with respect to natural disasters	Conducted a survey on sixty-two literature analyzing the direct and indirect impact of natural disaster events specifically on the poor and their impact on the distribution of income within affected communities and societies.	It establishes the fact that disasters can also be an important source of damaging fluctuations (second moments); adjustment of expectations in response to future catastrophic events allows subjective probabilities to plausible hazards in which people from different socioeconomic backgrounds may differ in coping behaviors.
Dasgupta et al. (2016)	This paper examines the family structure and economic welfare of coastal households in response to inundation risk and salinization in Bangladesh.	Based on major cyclone events experienced by Bangladesh from 1876 to 2009, it is estimated that a super cyclone has a 10-year return period, and that changing climate: a future 10-year return period storm is likely to be more intense and will cover 43% of the vulnerable area.	Evidence of higher migration rates for working-age population, higher dependency ratios and a higher incidence of poverty rates in the affected regions compared to the non-affected regions. Economic necessity leads to working-age males to migrate and those who are left behind fall prey to extreme poverty, eg. women, children, old.
Begum A., (2017)	Review of policies on Resettlement and Disaster Management and Impact on Women, as well as responses, to migration as a strategy.	Survey of households in Chittagong and Key Informant Interviews conducted in 2016 , in coastal district .	There is a need to study impacts of sudden on-set of disasters - associated vulnerabilities in livelihoods, coping capacities and strategies; whether migration is gender differentiated Climate change often creates systemic, persistent, unexpected changes , making household's coping ability, decision-making, especially of the women , inadequate.

Author(s)	Topic Addressed Primarily: <i>Little Migration due to Disasters, with few benefits</i>	Period Covered	Main Findings
Gray and Mueller (2012)	This study attempts to calculate the effects of flooding and crop failures on local population mobility and long-distance migration	It examines climate-related natural disaster-induced long-term migration in rural Bangladesh using longitudinal survey data from 1,700 households spanning a 15-year period	The results indicate that flooding has modest effects on mobility that are most visible at moderate intensities and for women and the poor; significant barriers to migration exist for poor hhs.
Caroline Moser and David Satterthwaite (2009)	Pro-poor adaptation to climate change in the urban centres of low and middle-income countries,	Asset-based actions at different levels to build resilience to extreme weather in 2007-2008	Support for households and community organizations to get back to their homes and communities and plan for rebuilding with greater resilience; support for recovering the household and local economy.
Islam et al. (2014)	This paper identifies that the affected people are unaware of the full extent of negative impacts and unable to realize the maximum welfare, in their adaptation strategies. Vulnerable families adapt in various ways.	Examined adaptation strategies of fishing communities, 2012-2013.	Adaptation strategies faced by the fishing communities: physical characteristics of sea and climate like hidden sandbar, more repeated exposure to cyclones; and barriers are connected with technological, social, economic and formal characteristics including poor engine boats, inaccuracy of weather forecasts, lack of access to credit, low income, underestimation of cyclones intensity, make the fishermen bound to go for fishing –owners’ coercion-more deaths

Study Objectives

-  To appraise the impacts of **hydro-meteorological deluge** on **livelihoods**;
-  To understand the **coping mechanisms and capacities** of affected communities to adopt or avoid **migration**;
-  To find out which factors influence migration decision (over a long period), and the way it **differs** for men and women.

Conceptual Plan

Risk/Climate Risk = f (Hazard, Exposure, Vulnerability)

- *Black et al. (2011)* - migration push and pull factors

Research Questions



1. What are the impacts of hydro-meteorological disasters, like Cyclone Aila, on livelihoods in Bangladesh?
2. Is migration a coping strategy for men and women?

Methodology and Context: Scoping Study

1. Reports of various organizations who work in rural Bangladesh;
2. Knowledge of local communities in building resilience: international experience;
3. Review of literature and analysis of secondary data;
4. Interviews with Chairmen, locals, in destination areas;
5. Interviews with Key Informants;
6. Videos of interviews with migrants from Koyra;
7. Referral lists to identify respondents in origin;



Methodology


-  Desk-top **Review** of Documents;
-  Primary data using **Quantitative and Qualitative** methods were used for the empirical exercise:
 1. Questionnaire Survey: **who migrated** after Cyclone Aila; and **who remained** in the affected villages after Cyclone Aila;
 2. **In-depth Case Studies** of migrant and non-migrant families to understand the consequences of disaster, **gender dimensions of vulnerability** and **coping strategies** and role of social networks in decision-making. **KII** with Union members and **FGDs** with affected women hhs;

Site Selection and Sampling


- Koyra district in Bangladesh's Sundarban region: affected by the devastating Cyclone Aila (2009). This population had also suffered serious destruction from Aila but unlike the hardest-hit Gabura respondents (near the embankment) received less relief and had to cope more in the ensuing years.
- *Loss of human and capital saving/investment in an affected region, experiencing livelihood constraints for decades;*
- *To probe if migrations options are different for men and women;*
- Migrant's villages at Destination, drawn from **Scoping Study** undertaken in Aziznagar in Chittagong Hill tracts, during 25th Sept. 18 - 28th Oct.2018; ...
- 2019: Commenced our Quantitative Survey in origin by conducting **Snowball Sampling, using Referral Lists (2018-19)**, to identify the households who migrated to other districts for livelihoods, then data from origin households were collated through **structured questionnaire (459)**, at their places of destination and origin.

Quantitative Survey Findings

3 different time periods and 2 groups :-




Majority are still illiterate living in semi-pucca homes, having sanitary toilets and electricity; but- deterioration due to recent cyclones;



Migrated hhs have **recouped** hh assets compared to non-migrated hhs, but not to their pre-Aila level; Income decreased, agriculture adjusted to new env., unemployment rose; relief diminished; collecting honey, crab, fish, brickfield halved;



Step-up road/culvert repair and maintenance of Bandh; shelter; arrest saline water encroachment; restore agric. Save Land; water tolerant plants;




Majority- 85% opted for cities, among migrant families- middle-income; One-fifth willing to return to origin areas;




Health seeking after Aila: increase village doctors; hospitals;
NGO health care and volunteer teams..

Quantitative Survey Findings (contd.)

 Region experienced disasters, livelihood constraints for decades: “Post-Disasters posed risk to livelihood, and hazardous life” ;

 **Perception;** pre/post disaster: **GoB’s Role Applauded; Needs...**
Warning : Adequate but could be better for women;
Minimize loss from cyclone; Early warning; Shelter access;

 Majority mentioned **unconditional help** from Govt. to be beneficial; Women prefer assistance from relatives; Change in dietary pattern and obtaining credit to ease **pecuniary** state;

Quantitative Survey : BIDS Survey, 2019

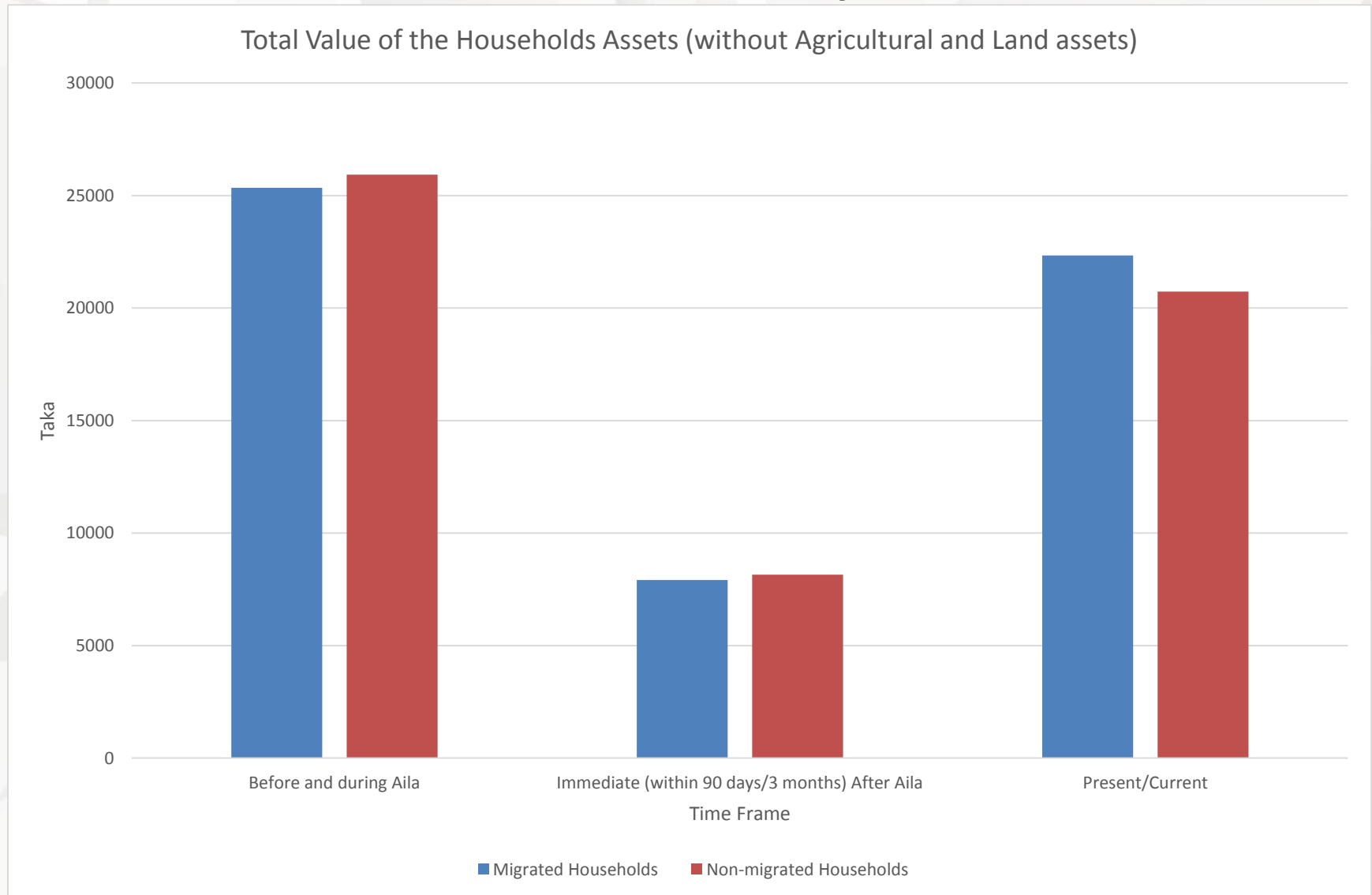


Table on Natural Calamities

Natural Calamities that affected the households most in rank (%)	Migrated Households	Non-migrated Households	All Households
Cyclone Aila	34.46	34.36	34.43
Drought/Irregular rains	10.45	6.63	9.36
Floods/Torrential rains	28	29.8	28.51
Landslides /Erosion	22.99	26.24	23.91
Fire/Tornado/Earthquake	4.06	2.77	3.69
Other (Specify)	0.04	0.2	0.08

Natural Calamities that affected the households most in rank

Source: BIDS Survey, 2019.

Table on Household Perception

The most effective means to avoid the losses from a cyclone (%)	Migrated Households	Non-migrated Households	All Households
Going to shelter center	33.45	33.02	33.33
Earlier information about cyclone warning	38.44	39.31	38.68
Receiving help from the local disaster volunteer to transfer the specific valuable goods	27.62	27.36	27.54
Others	0.49	0.31	0.44

Household perception on the most effective means to avoid the losses from a cyclone
Source: BIDS Survey, 2019.

Qualitative Survey Findings

Satisfactory condition before cyclone Aila:

Rice traders and Agro-based Professions, Shop Keeper, Handicrafts, Dairy Farms, Poultry, Day Labourer, Motorcycle Driver, Van Puller, House-help, Small and Cottage Enterprise, Banana and Coconut Cultivation, “Jongaler Kaaj” , Livestock and Poultry Rearing.

About 200000 acres of agricultural land got submerged in salt water: also Business, Fish in ponds, Forests (pvt. And pub. plantations), Jewelry (gold, silver), Cash Savings, set aside at home, Machines, Stocked Food and Grains, Clothes, all Moveable Property, and other assets like boats...

Post Aila Condition: Detrimental

Damaged tube well, Sanitary Latrine, Solar Panel, Electricity Distribution Equipment, House Building Materials, Fishing Net, Boats, plough, shovel, Spade, Agricultural Equipment, Jewelry and Gold Ornaments, Cash etc. had to be recouped;

Now they work in Shrimp Farms, Brick Fields, Boatmen, Electrician, NGO worker, Construction Labourer, Small business, Transport and Communication, Vendors and Shop Keepers;

Drinking Water Scarcity is acute; Contaminated water for households -children worst affected;

Impact:

Impact of **pre-and post disasters on females** proved to be distressing, scarcity was acute and they have also been found to be **more vulnerable than males**; often taken advantage of by unknown males at the cyclone shelters;

Lack of employment opportunities in and around their origin-dwellings and lack of migration decisions in a culturally closed milieu, renders them more susceptible to deprivation.

Qualitative Survey Findings (Contd.)

Coping mechanisms Coping practices to reduce adverse impacts of hazard like Cyclone Aila were dependence on relief, friends and relatives, scaling down of food; alternate livelihoods, switching occupations, trapped in unemployment, reduced intake of food and other necessities, reliance on borrowing. They ate dead cows, deer, goats etc.

They require repair of the beri-bandh and connecting roads, arrest the salinity intrusions through the Bandh, recover their land from saline water, through government intervention on a priority basis. **This study identified the long-term shocks and vested interests, hurting perceptions, attitudes, reactions of the affected population;**

This study identified the factors influencing migration and the way it differs for men and women. Men have an advantage and resort to working in Dhaka and other cities; migrated families have recouped losses but want access to their lands; Thus, many resist displacement; Decision-making rests with men, women abide by it;

Pregnant women tied to trees, suffered post partum-bleeding, pre-mature births and hypertension; lack of assistance – births disconcerting, often life-threatening;

Burial of dead bodies was and is a problem: caskets anchored - boulders or tied to trees;

Qualitative Survey Findings (Contd.)

Capacities of affected communities to adopt or avoid migration: A decade of coping has convinced them that staying there is their best option, although they lag behind those who migrated. Migration is not an acceptable option because it is **costly**, and also **alienates them from own community** and hearth;

Female friendly environment is necessary for enabling socio-economic progress; hence, it is imperative to establish segregated (female friendly) **cyclone shelters**; **health service for women**, children, elderly, differently able; NGO and Social Service Support must be increased from organizations and community ;

NGOs and donor agencies must give **priority to women**, create inclusiveness through IGA activities in local households that are predominantly female headed;

Men want more **remunerated** activity, need -informed about **safety** measures, **insurance** provisions, given **skills**, mobilized through community for monitoring, want repair and **maintenance work prioritized** by government.

Qualitative Survey Findings (Contd.)

Cyclone Aila left a **lasting fright**, which plague them quite often; **Not** even epidemics can cause this destruction by **saline laden air and water**. It slowly but **surely gnaws** away their food, plants, erodes tin, cement, **columns**: -this, after the **cyclone damaged** more than 80 per cent of the roads and infrastructure.

The houses are constantly **under siege and men are continuously labouring in re-constructing** their homes. The only alternative is Asbestos sheets and multi-storied technologically sound buildings because the deluge leaves nothing (single storied houses with tin roofs) in it's path;

Those taking refuge on the roof are washed away. Fury of Aila left women, especially pregnant women, **crippled in mind and body**; "**Death was preferable**"; **babies were born to brave tides**, fathers quite helpless, without aide or health centres;





Phoni, Bulbul, and many more are expected, so **death is up-front without reprieve**;
Slow on-set of erosion of infrastructure, the environment laden with salt and the water bodies full of saline water, is taking it's **toll on their health (urinary tract infection, still births, diarrhea, vomiting, fever, eczema, scabies, psoriasis)**, lives and livelihoods; children taken out of schools;

"**Bheri-bandh**" should have some **offices**, which will give **signal during the storm**, structured high above. Shelters are inadequate, and should be **located on higher ground**;

People of Koyra **prefer Army or reliable Organization (s)**, to give relief instead of local govt. and Union Member, UP Chairmen etc.

A Monitoring team to be set up to handle rescue during storm and curb nepotism and corruption, post-disaster.

Gendered Dimensions

-  Sudden and **slow onset environmental** hazards impact vulnerability of people **in different ways**; women in particular;
-  Voluntary and involuntary relocation is one of the outcomes ([Cernea 1997](#), [Warner et al. 2010](#));
-  **Limited anticipatory planning**: women, children, elderly and disabled **may become trapped and exposed** to impoverishment and **increased vulnerability** at far higher levels;
-  **No acceptable livelihood** in their established homelands; Lack of rights-based national plan to assist people **directly impacted by climate change and other environmental hazards**;

Gendered Dimensions (Contd.)

Empirical **evidence suggests** that women, more than men, are severely affected (eg. post partum hemorrhage etc.), by post-disaster conditions involving, for example, **increased** exposure to salinity.



Conclusion

- Government schemes such as the **Village Cluster Model** should be explored for potential application to climate displaced people;
- Livelihood choices and rehabilitation could be expedited;
- **Gender Analysis** to understand impacts of climate hazards, esp. coping, for women, differently-able, elderly, etc;
- LFS (2017) : Total Working Population, 58.2 % :- 80.5 % Male and **only 36.3% Female**;
- **State-led** support and **monitoring** is crucial to achieve the SDGs;
- The use of **community land trusts** should be encouraged;
- Policy on Internally Displaced Persons (**IDPs**) and a review of events and activities, needed;
- Emergency and regular relocation programmes should be mainstreamed and **accessible**;
- **Land acquisition** and land (set aside) projects should begin immediately;
- **A rights-based national plan** to resolve issues of displaced people should be developed.

Thank You for a Patient Hearing

***Questions & Suggestions,
Welcome..***

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