

Governance of Climate Induced Migration in the Coastal regions of Bangladesh: New Transformation Required?

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Abstract:

This study explores and examines various internal and external factors influencing environmental and socio-economic change and thereby people's displacement and migration in the coastal region of Bangladesh in the changing climatic system. Based on field surveys and focus group discussion with local people, the study identifies that the transformation of traditional land use pattern from rice farming to shrimp culture has caused serious environmental and socio-economic and threats to local resilience. Reduction of household resilience has shifted away vulnerable people to move outside their origin territory ranging from one week to a maximum of six months. The study also finds that people have little understanding of whether or not such environmental and socio-economic changes are linked to climate change however they perceived that man-made interventions and traditional land use changes are the main causes of the displacement and migration; climate change exacerbates the already existing problems. So far governance of migration has not been effectively mainstreamed in the current policy regimes and considered as threats. The study suggests new transformation of an integrated land use governance mechanism that can bring people back to the self-sustaining agriculture systems.

Keywords: Climate change, Man-made disaster, Resilience, Adaptation, New transformation, Governance

Introduction

Environmental change and migration is an important topic and there have been discussions and debates surrounding this in several international forums, documents and discussions. The reasons why people decide to migrate depend on case to case or area to area (Hens, 2011) or more specifically may be social, environmental, economic, cultural, political and religious reasons, however extensive migration now a day's linked with the environmental security of the area after the economic causes. Bangladesh is one of the worst affected countries in the world due to its geographical location, extreme poverty, various effects related to public health and economic dependency on climate-sensitive sectors like agriculture, food, and fisheries. It is prone to severe natural disasters, such as cyclones, tidal surges, and floods, in combination with other natural and man-made hazards, such as landuse changes due to shrimp farming, erosion, climate change and sea level rise, water logging, water and soil salinity and various forms of pollution. The reality of surrounding environmental degradation or environmentally induced migration of people is not unusual in Rural to urban migration is a common phenomenon and has been the most prevalent form of migration for a long time in

Bangladesh (Sen, 2003; Afsar, 2003; Walsham, 2010) but in recent years significant changes in the local environment repeatedly forcing local vulnerable people to migrate to search for income generating opportunities and thus increased pressures on urban destinations and city centres.

This paper empirically analyzes factors and under which conditions migration has been accelerated and suggests new transformation of an integrated land use governance mechanism that can bring people back to the self-sustaining agriculture systems.

Research Methods

The research consisted of mixed method approach that included a number of separate but interdependent components such as desktop research; field investigation both in coastal villages and slums; focus group discussion and interview during June to August 2011 in two sub-districts (Koyra and Paikgacha) under Khulan Districts of Coastal Bangladesh. The study followed a semi-structured qualitative questionnaire to allow for in-depth discussion with local people in the most vulnerable parts of the study areas based on some criteria such as location close to the Bay of Bengal, close to Sundarbans mangrove forest, high risk of natural disaster and human induced landuse changes. Before the interviews, a target was fixed to talk with people from age group >30 years and different occupational categories including farmer, shrimp farmer, day labourer (van puller¹), agricultural labour, others) and business. Seasonal/temporary migrants living in the villages and who intends to migrate were also considered and emphasized for the study. The questions were focused under three major categories viz., livelihood/economic activity; local environmental change, associated impacts and strategies; migration issues and future perspectives.

Theoretical Framework

The study focuses on two main theories. The first is the migration theory, which is linked to traditional push and pulls factors to reshape migration trend from rural to urban areas. The second is resilience theory that has linked to gradual environmental change of the local environment fueling the traditional pattern of migration. Two main aspects have been highly linked to resilience of the local system/areas viz., adaptation and collapse and both of them have been linked to several multiple aspects that perceive the strength of resilience e.g. diversification of livelihoods/income choices, social networks, flexibility of mechanisms/choices and transformation.

¹ transport vehicle propelled by bicycle mechanism to carry people and goods

Migration as Livelihood Adaptation Strategy

Migration is a mechanism of people to manage the risk associated with vulnerability but the explicit and decisive causal linkages with migration are difficult to identify (Laczko and Aghazarm, 2009). In most of the cases in the rural areas, adaptation or mitigation and preparedness measures are inadequate to support in sustaining livelihoods and adaptive capacity of major portion of the landless people. Building resilience through adaptation at the local level often high priority for people, however when it fails people choose to migrate. So rather consider migration as threat to security, it can also represent a positive and legitimate livelihood adaptation strategy (Walsham, 2010), thus reduce poverty and risk associated with local vulnerability.

Findings and Discussions

Local environmental change, climate change and migration

It is clear from the study that people have long years of experience living in the coastal areas and they have perceived and experienced the changes that have been taking place in the last 30 years. The first change took place during the 1980s after the introduction of commercial shrimp farming. Before that, self-sustaining agriculture was the main sector people depended on, and there were subsequently several disastrous cyclone event hits on coastal districts as well. Most of the land previously used for rice cultivation has gradually been converted to saline shrimp farming. Studies have shown that conversion increase net income from the farming (CPD, 1998). However, these short term benefits lead to social disruptions and a range of conflicts, including drinking water problems, dying of livestock and tress, reduction of local fuel-wood base and fodder, drought, no grazing places for livestock, almost zero local production (except shrimp) in some areas, and resultant income discrimination. The ultimate impact has serious threats on the livelihoods and survivability of marginal and landless people and community rounded on the landscape as shrimp cultivation is not considered to be labour intensive work as only people require for its management.

For the case of the study about half of the respondents have changed their occupation to day labourer from agricultural farmer. Occupational change can be considered as both secondary occupations and diversification of livelihood options. The risk still exists e.g. no work during rainy season or prolonged water-logging, marketing channel for small business, risk of being kidnapped while working in the Sundarbans (e.g. fishing, collection of thatching materials

and honey). The risk of livelihood diversification at the household level is associated with inadequate capital for investment, and lack of skills and education for the maintenance of the activities e.g. integrated farming (poultry, fish and vegetable garden), or crab fattening. Success in those activities keeps people stable in the area, and failure leads to a transformation e.g. migration. Though there is serious ongoing debate about climate induced migration or climate refugees by different international organizations like IPCC, IOM; and NGOs from coastal Bangladesh, the study did not find any significant relationship between climate change and migration. However, predicting the scale of impacts of climate change induced migration remains a difficult task and existing estimates are largely based on long-term projections considering wide geographical scales (Walsham, 2010).

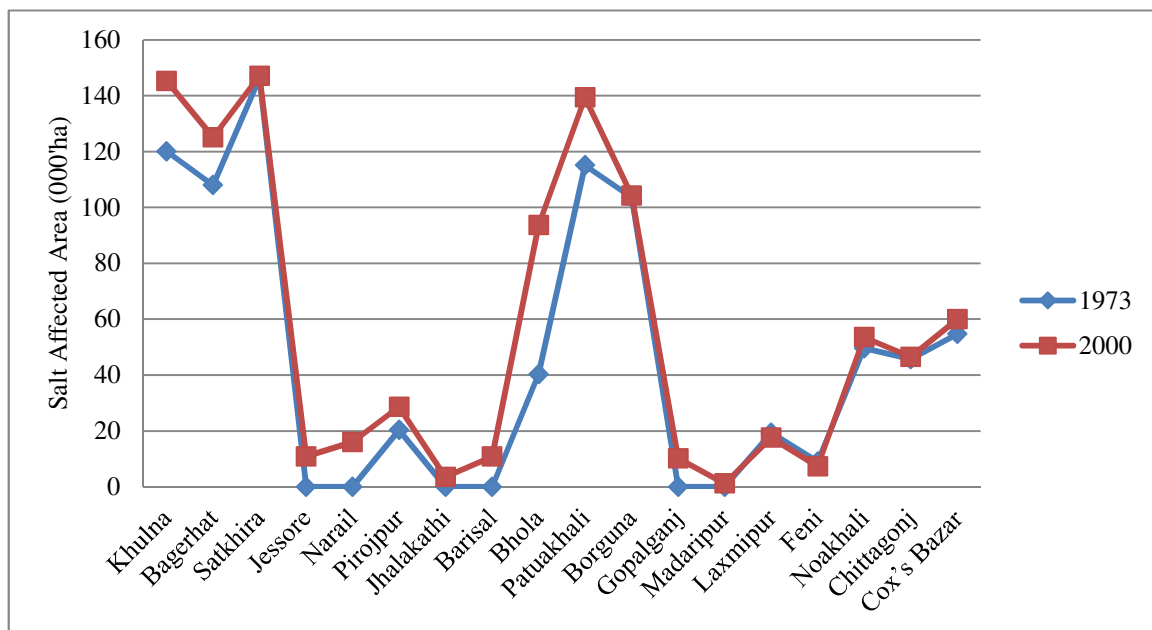


Figure 1: Comparison of salt affected area between 1973 and 2000 (SRDI, 2003)

It has been observed that salinity affected areas in the 18 coastal districts have increased by 22.47%, from 831,950 ha to 1,020,850 ha during 1973 to 2000 (Figure 1). During this period, the saline area has increased significantly in Khulna region from 120,040 ha to 145,250 ha, but in Sathkhira districts change rate is negligible (146,350 ha to 147,080 ha) though it has also some close proximity to the sea (SRDI, 2003). Specific to the studied location, the percentage of saline area is the same (81%) in both *Koyra* and *Paikgacha* area (Table 1; SRDI, 2003). Though *Paikgacha* is larger and located further away from the sea than *Koyra*, salinity is still high. So the expansion of saline is not because of climate change-induced sea level rising, but rather, the unique hydro-geological factors and settings of the specific

location. Saline shrimp is more intensive in *Paikgacha* than *Koyra*, which could be another reason for its high salinity.

Table 1: Salinity affected area of the studied location

Upazila	Total area (ha)	Total saline area (ha)	Percentage (%)
<i>Koyra</i>	26,333	21,410	81
<i>Paikgacha</i>	38,404	30,940	81

Source: SRDI, 2003

Salinity expansion is also related to man-made intervention of managing and diverting water from trans-boundary rivers. Bangladesh is located at the downstream and shares 54 trans-boundary rivers with neighbouring India (Mirza 2004). Excessive consumptive uses and diversion through several dams at upstream location of the river deprives downstream Bangladesh of their legitimate use of the shared water resource (Clarke, 2003). Unfortunately, upstream countries control water flow in the dry season, and let the gates open each time the monsoon-led heavy rainfall threatens (Clarke, 2003).. Reduction of freshwater flow is advancing salt water from the sea to replace it in the coastal regions of the country (Clarke, 2003; Mirza and Sarker, 2004), causing it to dump more of its silt in the channels of the delta rather than in the Bay of Bengal. The problems become even more severe from March to May. Water flow is higher from July to September due to rainfall in both India and Bangladesh, causing severe flooding in Bangladesh due to channeling excess water through dam gates towards Bangladesh. This problem is also exacerbated by the drought problem in the northern districts, which hampers agricultural production (Mirza and Hossain, 2004) and causes a high risk of river erosion and flooding in the south-western coastal districts.

The fourth reason is related to the dependency on groundwater as a source of drinking water (Falk, 2011). About 97% people drink water from the aquifer harvested from a hand pumped shallow tube-well (Ahmed et al., 2002). The percentage is less in the coastal districts, because some areas are severely affected by salinity both in groundwater and surface water, meaning that people depend largely on rainwater harvesting. Thus, extraction of ground water from shallow aquifers allows sea water to replenish the water pockets. However, it also depends on the availability of freshwater reserve in the aquifers. It has been found during field research that drinking water extraction is successful in *Dakhshin Bedkashi* (the last location of Bangladesh map) and some other parts of *Koyra* although it has close proximity to the sea, whereas in *Paikgacha* the deep tube-well is not successful.

Due to the geographical location of Bangladesh, saline expansion in the coastal regions depends largely on hydro-geological settings of coastal zone, natural and man-made interventions (Figure 2) and sea level rise could exacerbate the problem for the above reasons.

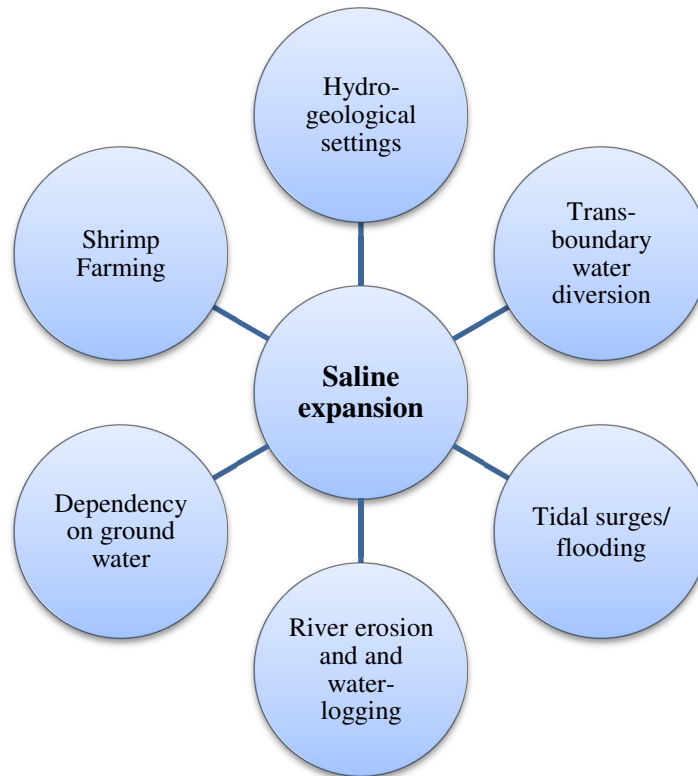


Figure 2: Major causes of saline expansion in the coastal region (*Source: Developed for this research; Field Survey 2011*)

Quantity and risks of natural disasters have also increased over the last few decades (Ali, 1996; EU, 1998; Khan and Sen, 2000; Agrawala *et al.*, 2003; Islam, 2004; MoFDM, 2007; BMD, 2011). It is often said that Bangladesh is a country ‘made for natural disasters’ (Poncelet, 2009). Record of 214 years (1795-2009) shows that 73 cyclones hit the Bangladesh coast, of them 53 cyclones hit between 1948-2009 which shows a clear trend of increasing the frequency of natural disasters in recent years (Islam, 2004; BMD, 2011). Though it has been claimed that the frequency and intensity of disasters are caused by increasing global temperature and sea surface temperature (Emanuel, 1987; Royer *et al.*, 1998; Ali, 1999), it could also be the improvement of meteorological science in tracking and recording disaster events in more recent years. The death toll from cyclones also has dropped considerably (Table 2) due to a successful cyclone preparedness program run by the

Bangladesh government and Bangladesh Red Crescent Society, as well as the existence of cyclone shelters built in 1970s (Lidstone, 1997; Lomborg, 2001).

Table 2: Major cyclone attack and death toll in Bangladesh

Date of Occurrence	Wind Speed (km/hr)	Surge Height (ft)	Death Toll
November 12, 1970	224	19-32	500,000
April 29 -30, 1991	225	20-25	138,882
November 15, 2007 (SIDR)	180-250	10-15	3363

Source: BMD, 2011; MoFDM, 2007

Even the prolonged water-logging and displacement of people in *Koyra* after cyclone attack in 2009 has been claimed to be an indication of climate change (Akter, 2009; Mallick, 2011; Kartiki, 2011), but it has been clearly observed during field research that it is due to the lack of capacity and inadequate resources of government agencies to rebuild the embankment till now. The problem will be solved once the embankment will be repaired again. So it is suggested that rather spending a lot of money for emergency responses by NGOs and international organizations, they should collaborate with government to repair the embankment and enhance the self-sustaining resilience capacity of the local people.

Bangladesh is vulnerable to the global climate change but associated sea level rise might help to settle sediment coming from upstream at the edge of delta (backwater effects) without being dumped into the Bay of Bengal (Sarker, 2008; Falk, 2011).

From the discussion it is clear that climate change is not a driver of migration. Empirical study by Mortreux and Barnett (2009) in Funafuti, Tuvalu (highly vulnerable Pacific island to sea level rise; highest point 2m above average sea level) shows that climate change is not currently a significant driver of migration since the main reason to leave is employment, more opportunities and access to special services. People still wish to remain in Funafuti for reason of lifestyle, culture and identity (Mortreux and Barnett, 2009).

Pattern of Migration

Permanent migration from the study area is very negligible. The preferred choice for the vulnerable people (1-2 family members and groups of people from the area) is to seasonally migrate to outside (urban, semi-urban, regionally even other villages) when work is not available in the locality. Significant seasonal migration have been taking place during the rainy season, however people used to migrate any time in the year ranging from 1 week to maximum 24 weeks. People used to go the nearby villages mainly for earth work for 1-2 days.

Table 1 shows common patterns of seasonal migration, but people used to migrate any time of the year for earth works, day labour and rickshaw pulling in the city and other villages; when there is no work available in the locality mainly in rainy season or just for additional income (without regular employment). It was been revealed that seasonal migrant destinations are concentrated into regional locations (South-Western), Central, North-Eastern and South-Eastern regions for work, although the people mostly prefer the nearby/regional locations. The migrated people take a break of 1-2 weeks for visiting family (transfer of remittances as well) when they stay longer than 8 to 12 weeks (Personal Communication, 2011; Table 3). Some people go to India for long -term work, save, and then come back. Migration to India for work lasts for 12 to 24 months, even longer for exceptional cases.

Table 3: Popular patterns of seasonal migration

Migration period	Type of work	Length of Stay (week)	Destinations
December-January	<i>Boro</i> ² paddy sowing	3 to 6	Gopalganj, Faridpur, Madaripur, Narail, Netrokona, Sylhet, Noakhali, Jessore, Regional locations ³
April- May	<i>Boro</i> paddy harvesting	3 to 6	
July-August	<i>Aman</i> ⁴ paddy sowing	3 to 6	Jessore, Magura, Narail, Regional locations
October-November to April-May	Brick field	20 to 24	Dhaka, Barisal, Narail, Khulna, Faridpur, Noakhali, Delhi (India)
November-December	<i>Aman</i> paddy harvesting	3 to 6	Jessore, Magura, Narail, Regional locations
November-March	Wood processing work (with handy chainsaw)	4 to 8	Bagerhat, Barguna, Gopalganj, Barisal
January-May	Earth work (e.g. embankment, pond excavation)	2 to 12	Khulna, Bagerhat, Sathkhira
Any time of the year but mostly during rainy season (June-August)	Day labour e.g. rickshaw pulling	1 to 12	Dhaka, Khulna
	Garments factory		Dhaka, Chittagong
	Sea port		Chittagong
	Day labour		India

Source: Developed for this research; Field Survey 2011; Personal Communication, 2011

In case of seasonal migrants, people prioritize economic benefits and travel distance. For the paddy sowing and harvesting group, they even travel a long distance to north-eastern corner of the country e.g. Sylhet, Netrokona because of the high benefit from *Boro* cultivation in the recent times. However, for the case of *Aman*, they mostly prefer regional locations. The case

² rice varieties in Bangladesh cultivated in irrigated land (planting period: December-February; harvesting period: April-May)

³ nearby place with short travel distance where rice farming exist in the villages and sub-districts of Khulna Region

⁴ rice varieties in Bangladesh cultivated in irrigated land (planting first round: April-May; planting second round: June-August; harvesting period: November-December)

is quite similar with brick field group because they travelled to India. Paddy harvesting is the most popular type of work, as they brought the rice as salary into their house to ensure food security. All the seasonal migrants group and those that remain in the villages are used to migrating during the rainy season for short term work as day labour in Khulna (preferred), Dhaka, and Chittagong.

Two major findings are that: people are now migrating to other *Aman* harvesting regions during November to January to work, but before the introduction of shrimp farming they did the same work in their locality. Another finding is that people - especially from *Koyra* - used to migrate for short term work when regular employment is not available in the locality (e.g. rainy season, after sowing season of paddy), even if they had good conditions in their origin, they temporarily move for additional income so that they can invest this money to buy lands, to better support their family and provide education for children.

Governance of migration and new transformation

In coastal Bangladesh, both government and NGOs play a major role in social development issues in the rural areas, but both have inadequate capacity to effectively deal with the challenges of migration. The recent development of the Climate Change Strategy and Action Plan (MoEF, 2009) is a positive landmark for the future climate change adaptation task, but the issue of migration has not been effectively mainstreamed. The current policies are piecemeal, addressing one event at a time, and are not backed by strong implementation strategies due to lack of adequate financial capacity and manpower. Further, the policies do not reflect people's practical needs, culture and underlying socio-economic forces that are active in a social event like migration. However, recognizing the importance of this issue, the Government of Bangladesh has undertaken a comprehensive and integrated development plan for the coastal areas to protect 20,000 hectares of land from salinity every year and recover 18,000 hectares of land in the coastal areas by constructing embankments (MoF, 2010). This plan would help certainly help to regain rice production but the issue of saline intrusion through the government embankments that was highly criticized by local people needs to be addressed further to support vulnerable people in the coastal areas.

Several alternative livelihood adaptation strategies were initiated in 2004 under the CARE-RVCC (Reducing Vulnerability to Climate Change) implemented by partner NGOs in most of the South-Western coastal part of Bangladesh. Some of the options got utilized e.g. crab

culture/fattening (high export value) but this option needs capital for investment. Only few people got financial support from NGOs to develop demonstration farms to encourage other people into action. However, most of the people were unable to implement this practice due to inadequate capital and lands (ponds) for the crab culture. That means, even though they are working at the very grass-roots level to support livelihood strategies, the current efforts are insufficient. Often these efforts prioritize short term development (e.g. relief work during emergency period) and place little emphasis on long-term livelihood strategic solutions. However, in the study area they are involved in capacity building, skill development, and livelihood diversification; so they do prevent some migration but it is difficult to quantify this effect.

Accordingly, there is an urgent need for integrated and coordinated action by both government and NGOs to develop a long term vision to reduce the flow of migration from the coastal region. In this process, NGOs should be integrated into policy and decision making processes at both local and national level. It is also important that institutional action is flexible enough to accord with local people needs and expectations.

People in the coastal areas were found to be very positive in imagining their future. Most of them demand for the salinity intrusion and shrimp farming to be stopped as they wish to go back to the previous farming system (given the traditional self-sustaining agriculture has been transformed to the shrimp farming system). Now the system really demands new transformation in order to build resilience of the partly collapsed system. The current study proposes new transformation of an integrated land use governance mechanism to go back to a new resilient system to support socio-economic condition and local resilience (Figure 3). The ultimate target for this transformation is to retain rice production up to a certain level that would meet the demands of local people rather filling the Western hunger for shrimps.

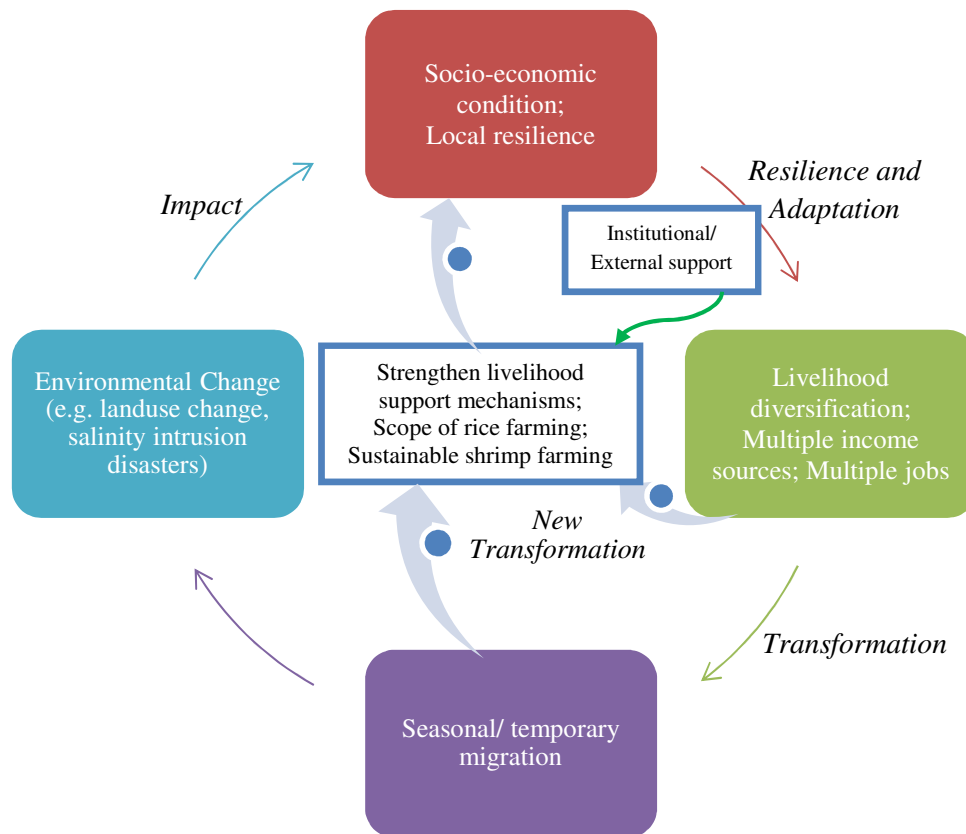


Figure 3: New transformation of an integrated land use governance mechanism

However, it is quite impossible to totally stop shrimp farming considering its export value but upcoming ecological disaster and socio-economic challenges should be accounted for (Falk, 2011) and further develop of industrial shrimp farming is crucial. Hence, priority action should be taken to retain mutual benefits through implementing strategies for ecologically sustainable shrimp farming under clearly stated land zoning systems and specific time allocations for cultivation in a year. For the ecological farming system, it is important to have processing industries closer to the farms. This will create employment opportunities at the local level and reduce seasonal migration. Institutional and external support is important for this action that might focus on joint investments with an interested group of small shrimp farms. Adequate freshwater supply should be ensured to boost rice production. No doubt this will take some time. But for the present period it is important to develop and strengthen livelihood support mechanisms e.g. alternative livelihood, small business, marketing channel development of the local product, distribution of *Khas* lands to the landless people for fish farming.

Conclusion

The livelihood transformation that has taken place in the last 30 years is linked with economic interests. The conversion of agricultural land to shrimp farming occurred because of the high economic return. Shrimp farming has a high export value and thus was the forced option due to the political and economic interests. However, the expansion of shrimp farming meant rice farmers could not continue farming in the saline environment. This caused the transformation of occupational choice both in local areas and outside to support livelihood resilience. Some people are trying to adapt to the changed situation, despite being faced with a range of challenges. The people that do not adapt, migrate to search for alternatives outside their origin, sometimes very long distances.

Both voluntary and forced seasonal migrations are in place due to the fact that unsustainable economic extractions of lands have brought out ecological disaster, causing less productive and less labour options in their local area. This has driven people to supplement their livelihoods in the vulnerable coastal region by extracting resources from outside the region. It is also clear from the study that permanent migration is very negligible, mainly for economic reasons and pull factors, e.g. job, education, new land for landless. In the case of temporary/seasonal migration, some people need to look outside for short term work, while others go merely to increase their financial resources in the rural areas to gain additional savings to provide better support to their family and education for children. So migration is taking place primarily for economic reasons. People are expelled from their land by shrimp farming industries and lose their base for self sustaining agriculture that existed before 1980 in the coastal region. Climate Change (sea level rise, change in temperature and precipitation etc.) is a problem, but in the case of migration it only exacerbates an already existing problem. Accordingly, rather than terming the migrants as environmental refugees/climate refugees, it is more appropriate and authentic to term migration as a transformational livelihood adaptation strategy to support resilience, which has failed in the local region due to man-made interventions. These man-made environmental problems are exacerbated by natural disasters during certain times of the year. Environmental causes of mass-migration can also be due to a sudden disastrous event and migration in coastal Bangladesh (mainly south-western part) is usually temporary in nature and migration can be considered as a livelihood strategic solution. However, returning to the self-sustaining system is very important because even a little migration may hamper the resilience of destinations system by overloading the destination area. The study suggests a new transformation of combined rice

and ecologically sustainable shrimp cultivation practices as well as further strengthening the alternative livelihood mechanism to increase the resilience capacity of the local environment which will reduce the flow of seasonal migration from the vulnerable coastal parts of Bangladesh.

Recommendations

Migration is considered to be a multi-causal phenomenon. Thus, governance of migration should prioritize long term development strategies and investments to ensure that people of those regions are better able to cope with the existing environmental-related vulnerabilities and upcoming challenges. Given the findings of this study, the following recommendations can be made:

- New reforestation programme should be developed to implement a plantation scheme in the shrimp farms (at least 10%) under certain legal and policy frameworks;
- Support shrimp farmers and companies to modify and further develop their methods of farming and processing to reduce their environmental impact;
- Government should emphasize building more embankments and maintaining existing embankments to protect coastal regions and support freshwater flows, as well as extension services to improve agricultural production;
- Further investment in infrastructure (cyclone shelters), basic services (education, health etc.) and livelihood diversification in these coastal regions would create a environment that would discourage migration;
- As high population growth is one of the major problems, the issue of family planning should be encouraged and made familiar to rural people through a coordinated strategy between government officials and religious institutions to control the population growth. Government may also try to prioritize service facilities for the families who have less than two children;
- As the influence of Dhaka city is very high, government should adopt decentralization of administrative structures and give more decision-making power to local government institutions in local level project planning and implementation in the coastal region. Creation of an emergency fund is also very important to allow for early action to reduce the effects of any sudden events;
- Government may provide tariffs/incentives to encourage investors to establish industries at the regional level, which will generate employment locally and reduce pressure on other destinations;

- Academic involvement in policy research is imperative. The current trend is not satisfactory;
- The issue of land gaining at the edge of delta should be further researched and further steps should be taken to preserve the land through infrastructural development;
- Facilitate the creation of adaptation market akin to carbon markets to influence more and adequate funding for adaptation projects to support resilience at the local level;
- Rather than focus on short term work, international organizations and NGOs should collaborate with government for large infrastructure developments; and
- The country should develop a national and regional policy framework to address the environmentally induced migration.

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