Impact of salinity on coastal people's livelihood and adaptation mechanism : A sociological study on Shyamnagar upazila

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Abstract

Livelihood basically means of supporting one's existence. Most of the people's livelihoods are based on agriculture in south west area of Bangladesh. Salinity is one of the major concerns of this area. The study focused on impact of salinity and irrigation water insecurity, measure and mitigation strategy that taken by the respondents. Here, most of the people face salinity and irrigation water insecurity. Nearly all of the respondents said that they can cultivate only one crop by rain water. Few respondents also cultivate second crop by pond water. Ground water is salinity affected so They unable to use ground water for irrigation. Drinking water scarcity also hampered the people's livelihood. As ground water is salinity affected so they take pond water by filtering. They reserve rain water in water tank and use; few respondents also said that they bought water from market. The study finds out the respondent's assets-based vulnerability. All respondents have no equal capacity and acceptability on capital such as, financial, natural, social and human capital.

Keywords: salinity, coastal, livelihood, water insecurity, capital, sustainability, vulnerability and *gher*.

Introduction

Agriculture is one of the largest employment sectors in Bangladesh. Every year this sector has significant contributions on GDP. Agriculture sector in Bangladesh hampered every year by various environmental threat. Salinity has negative impact on south west part of Bangladesh. Salinity level gradually increase as a result demand for water also increase. Many areas of this country face water insecurity problem (Rosengrant,2009). Satkhira district locates in south west part of Bangladesh. This districts agriculture sector faces water insecurity problem, that holistically impact on livelihood also. Southern part of satkhira consists of agro ecological zones, means situated on Ganges tides flood plain (Rimi,2009). In this area rising of salinity level is a problem that decreases agriculture productivity, because unavailable of freshwater and soil degradation emerge as a problem (Rasel, 2013). Throughout the year salinity create unfavorable environment and hydrological situation that always hampered the normal crop production (Haque,2006). In this area most shallow ground water is saline and the surface water also (Tanveer,2010).

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Safe drinking water is a problem in this area. Drinking water problem are also relates on health disease and several others problem.

Rising of salinity level will decreases agriculture productivity rate and salinity also is the prime concern of soil degradation. Soil quality defragmented and freshwater scarcity arise. Reduce rice production in a village of satkhira in 2003, 1151 metric ton less than the year 1985 (Rasel,2013). Most of the coastal areas are located over medium highland. In dry season salinity problems are on severe conditions and fresh water that is necessary for cultivation is unavailable (Haque, 2006). South western coastal regions contribute a important share (16%) of the total rice production of Bangladesh. other crop also produced and have important role on national economy. Not only the geographical condition the causes for salinity and water insecurity but also several reason on salinity problem. In Khulna division increasing salinity in river water, blockage on river, unplanned *gher* expansion are the prime reason for water insecurity and salinity problem (Quddus, 2004) Agriculture sector withdrawal 70% freshwater globally and most of the least developed countries this withdrawal rate is 90%. According to WHO and UNICEF, in south Asia 19% water use from world water resources and 23% in Eastern Asia between 1990 & 2012. But salinity and water scarcity create problem on both types of water using. This study focuses on vulnerability that also hampered livelihood, what types of strategy people take to mitigate the problem to reduce the salinity and water insecurity problem not only people's consciousness and steps is important but also both government and private sectors active engagement is necessary. People's cooperation and joint venture is needed to reduce the water insecurity problem. South west part of Bangladesh is low land area. Coastal areas most of the people's livelihood are Agriculture related. They also engaged in other activities. It is a sorrowful matter that agriculture activity are not properly maintained by the farmer because of water insecurity problem only one crop they harvested. This study conducted in shyamnagar upazila of satkhira district. Most of the areas of shyamnagar upazila are in this problem. Few people cultivate crop second time in a year by using pond water. But that's water is not sufficient. Most of the surface water sources are saline affected that are unable to use in cultivation and in dry season water scarcity belong in this area. The main crop cultivated in monsoon or rainy season; rest of the year crop agriculture land is barren. Because main sources of water for agriculture are depend on rain in rainy season.

This area is a disaster-prone area. Irrigation problem is severe because ground water also saline affected. People have no scope to use ground water by pump machine. Natural disaster is one of the prime obstacles for development. Natural disaster hampered ecological biodiversity, collapsed embankment, intrusion of Saline water, water logging, and damage crops and create several others problem. One of the major problems of this area is drinking water problem. Most of the people are in this problem. There is no scope to use deep tube well water because tube well water also saline affected. So, in the study

area tube well is now absent. They use pond water through filtering system. Most of the household in this area also use rain water for safe drinking water. They preserve Rain water in a tank for whole of the year and use consciously. Now people also buy drinking water from market, few areas also introduce supply water, but extra cost also rises. This extra cost create problem on coastal people's livelihood. Salinity problem not only emerge from environment but also by the people's activity. Some areas in this upazila introduce *gher* on cultivation land that means saline water-based fish or shrimp farming.

Objectives of the study

The study also has some objectives. The objectives are as followings,

a) To explore the impact of salinity on coastal people's livelihood.
b) To address the measure and mitigation strategy taken to address the gaps.

Literature Review

Literature review is the existing work or study which is relevant to the study topic. Literature review demonstrates the studies work reliability. In this study there also some relevant literature that help the study and also provide important information about relevant study. Bhowmick & Rahman. (2016) a research work titled "Salinity changes in South west Bangladesh and its impact on rural livelihoods". This study reported that salinity intrusion greatly affects the livelihood pattern of rural people. There are various causes for increasing salinity. Increasing sea level rise, river sedimentation, siltation is the reason. South west region of Bangladesh has a network of water system farming the largest delta in the world. 49% people are engaged in agriculture. Different types of mitigation strategies taken to solve the salinity and improve livelihood. Chowdhury 2010) in her article titled "The relative efficiency of water uses in Bangladesh". She works on water scarcity as well as North West regions. He mentioned that in dry season south west region suffer in water scarcity. Farakka barrage are the causes for this problem. There also drinking water problem in that area. Most of the places ground water is salinity affected. Surface water salinity affected in south western part of Bangladesh. That water scarcity hampered ecological bio diversity and over ally the livelihood of the coastal people.

Gain, Aryal, Sana, & Uddin (2007) a study developed in south west coastal region of Bangladesh titled "Effect of River Salinity on Crop Diversity: A Case Study of South West Coastal Region of Bangladesh". Study found that, in south west coastal region of Bangladesh, water insecurity problem exist. That problem has impact on agriculture production. Farakka barrage have impact on water scarcity and salinity problems in this area. Salinity changes the soil fertility. Normal growth of agriculture plants also restrict. Day by day salinity level gradually increases. Haque, (2006) conduct a study on "salinity problems and crop production in coastal regions of Bangladesh". In this study he discussed about salinity and its impact on crop production in Bangladesh. During the dry

season when fresh water becomes very low, on that time river water salinity also increase. Irrigation water unavailability is a common picture in coastal area of Bangladesh. Scarcity of quality irrigation water limits the cultivation Boro rice and the rabi crops in winter season. Miah, Mannan, Quddus, Mahmud &Baida (2004) in "Salinity on cultivable land and its effects on crops". In this study he focused on cultivation problems. They identified some reason that promotes salinity. There also unplanned gher expansion in coastal area that destroy the cultivation rate because salinity expand through gher. Consequences on salinity on crop production damage crop production. Increasing level of river salinity also create problem on irrigation. Rasel, Hasan, Ahmed, & Miah (2013) a study conduct named "Investigation of soil and water salinity, its effect on crop production and adaptation strategy". In this study they found that total coastal area is about 20 percent about main area of Bangladesh. Rising of salinity level decreases agriculture productivity. Salinity not only damage or decrease agriculture productivity but also fresh water problem and soil degradation. Termination energy and germination rate of some plants also decreases by this salinity. Toufique and Yunus 2013) conducted a work titled as "Vulnerability of Livelihoods in the Coastal Districts of Bangladesh". This found on vulnerability and livelihood in coastal areas. This study focuses on multiple issues in coastal area. They identified vulnerability in the context of, health condition, social network and erratic rainfall. Social network gradually fragmented among people. One of the problems of saline affected area is safe drinking water. People always search for drinking water in alternate ways. Overall agriculture-based livelihood groups have several problems, that is obstacles for their livelihood development.

Tusar and Moumita (2013) developed a study titled "Climate change influence water use pattern in south-west coastal belt of Bangladesh" mentioned that, South western part of Bangladesh is a disaster-prone area. People face salinity problem not only in agriculture sector but also drinking water context. Pond sand filters, rain water harvesting, and supply water they use. In monsoon season 90% household use rain water for cooking, 60% household use pond water in other season of the year. Salinity destroys the ground water and surface water resources. As a result, crop production and drinking water problem day by day acute. Rain water harvesting is a common scenario in coastal Bangladesh. So, people face several vulnerabilities. Ullah, and Rahman (2014) in "Assessing Vulnerability and Adaptation to Climate Change by Farming Communities in Southwestern Coastal Bangladesh" work on south west coastal region. This study basically tries to find out the vulnerability that hampered people's livelihood and how people cope with vulnerable condition, what type of strategy they operate or taken on that vulnerability. Study also said that, South western coastal region is a low-lying area. This region is highly prone to cyclone, flood, salinity and other natural disaster. Rural people are more victimized in the severe condition. In this area, major vulnerability on farmer is saline water intrusion and irrigation water scarcity. Land use pattern also change, cropping land turn into shrimp

cultivation land. People adapt on this condition. They harvest crop by using rain water, pond water and saline tolerant crop they cultivated. For safe drinking water they use filter system and pond water. Construction of embankment can improve salinity problem. By using safe water skin disease also can be minimized or eliminated.

Theoretical framework

Basically, framework is a logical structure that guides the development of the study. All frameworks are based on key concepts and relationship among the concepts. Theoretical framework is the explanation of the relationship between two or more variables or phenomena. Theoretical framework derived from specific concepts and proportion. Theoretical frameworks have some purposes that are to test the relevant theory, to make research findings meaningful, to focus the relationships between observation and facts and also to stimulate the study.

Conceptual Definition:
In the study which concept is used and relevant are discuss on this part. The conceptual definition is given below:

Water Insecurity:
'Water insecurity is defined as the unavailability of an acceptable quality and quantity of water for health, livelihoods, ecosystem and production, coupled with an acceptable level of water related risks to people, environments and economics' (David Grey and Claudia w. sadoff,2007)

Livelihood:
The concept of livelihood extends to include social and cultural means "the command an individual, family or social group has over an income and /or bundles of resources that can be used or exchanged to satisfy its needs.

This may involve information, cultural knowledge, social networks and legal rights as well as tools, land and other physical resources.

DFID sustainable livelihood approach:
This study DFID model and its framework have been use. This model is mostly used in the livelihood context study or research.

Livelihood:
"A livelihood comprises the capabilities, assets and activities required for a means of living" – David Conway.

Sustainable livelihood:
A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or exchange its capabilities and assets both now and in the future, while not undermining the natural resource base.

This livelihood approach is adaptable and flexible and it is related to specific local settings.

Core principles of the Approach:
DFID models core principles are given below:

- This livelihood approach is people centered.
- Holistically this livelihood helps to understand stake holder's livelihood.
- This model is a manageable model that helps researcher to identify the factor that people have to face.
- Help researcher to learn the changes and help to mitigate negative impacts
- This model works to recognize everyone inherent potential and remove constraints.
- Sustainable livelihood approach works to bridge the gap and links both micro and macro level.

DFID framework sets out to conceptualize how people cope and operate within the vulnerability context. Vulnerability also depends on how people use their assets.

Elements of the Framework:
Elements of the framework are now given below:

Vulnerability context:
Vulnerability context focused on external environment in which people exist. Vulnerability emerges when people have face harmful threat or shock and if people have lack of capacity to respond effectively

Livelihood assets:
There is some capital that's acceptability and unavailability arise strength and vulnerability. The capital is human, physical, social, financial and natural capital. This framework not over emphasized policies, institutions and processes.

Livelihood strategies:
"Livelihood strategies comprise the range and combination of activities" and choices that helps to achieve their livelihood goals.

DFID promotes sustainable livelihoods through –

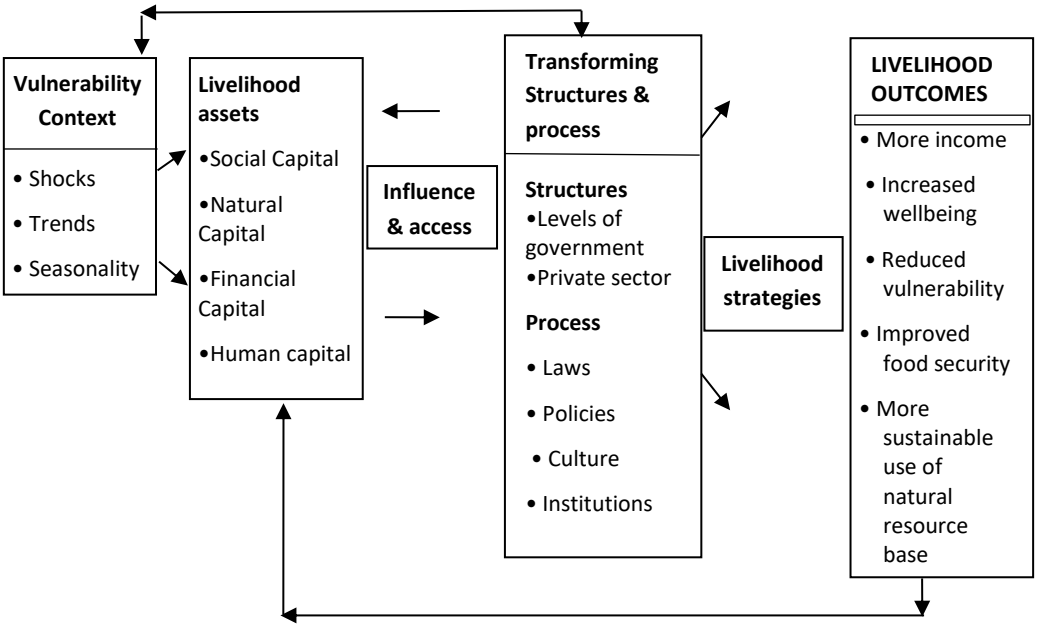
- Direct support to the poor people through assets.
- DFID support to functioning the structures and processes that are policies, public private sector organizations and social relations.
- Focus to any type of development activity.
- Helps to local and poor people in all planning processes and respect local people opinions.

- Focus livelihood outcomes. When people's income and other sector wellbeing and reduce vulnerability. DFID always focus to livelihood outcomes.

Rationale of using DFID model:

DFID model works on livelihood focus development of local people and reduce vulnerability. This study focuses water insecurity problem and livelihood on selected area. This strategy has vulnerability context and mitigation strategy that's mostly relevant with DFID model. DFID model are people centered, focus on reduce vulnerability, assets or capital, local people's livelihood development. This model also focused on People's participation in public and private sectors developmental activities. Basically, DFID model focus reduces poverty, especially on livelihood development.

The DFID Livelihood Framework



Human capital : the skills, knowledge, and ability to labor and good health important to the ability to pursue different livelihood strategies;

Physical capital: The basic infrastructure (transport, shelter, water, energy and communications) and the production equipment and means that enable people to pursue livelihoods;

Social capital: The social resources (networks, membership of groups, relationships of trust, access to wider institutions of society) upon which people draw in pursuit of livelihoods;

Financial capital: The financial resources which are available to people (whether savings, supplies of credit or regular remittances or pensions) and which provide them with different livelihood options; and

Natural capital: The natural resource stocks from which resource flows useful for livelihoods are derived (e.g. land, water, wildlife, biodiversity, environmental resources.

Shocks: Environmental, conflict related

Trends: Resources, technology

Seasonality: Price fluctuations, employment opportunities

Livelihood strategies includes social actor (male, female, household community, natural resource based, survive or sustain etc.

Sustainable livelihood approach develops DFID (British Department for International Development). In 1997 DFID integrated their sustainable livelihood framework.

Methodology

The study, impact of salinity in coastal people's livelihood: a sociological analysis in shyamnagar upazila. This study conducted on four villages of four unions in this upazila. That are Fulbari villages from 3 no shyamnagar union, kultoli from Munshiganj union, Arpangasia of 9 no Burigoalini union and Kathalbaria from kashimari union. This area faces the water insecurity problem. Salinity and irrigation water insecurity, drinking water problem, there also some vulnerability that people face in this area. this study selects this area to find out the water insecurity problem, which strategy people take to mitigate the problem. This study focused on two types of method. That means **Triangulation or mixed method** followed in this study. Triangulation method is the combination of both quantitative and qualitative method. Quantitative method is the computational technique to analyze data. Quantitative method focuses on theoretical model and generalizes numerical data. Qualitative method helps to develop ideas. Qualitative method helps any research to find out relevant data deeply. What type of problem people face and cope with the problem that also the focus area to find out the answer through deep interaction in qualitative method? This study selects purposive sampling to conduct the work. Purposive sampling is non probability sampling. Purposive sampling is based on the characteristics of the population and based on the objectives of the relevant study. Purposive sampling focused on particular characteristics of population. Researcher interest employ in this procedure as a result researcher can find out relevant answer. Purposive sampling also cost effective. Researchers have freedom to select sample to use his or her judgments from different sources.

Sample size is a important part of methodology. Sample is the proportion of total population that is judgmentally selected or identified. In this study there are mixed method.

Survey respondent in this study is 160, key informant interview (KII) respondent is 7, Focus group discussions (FGD) is 4 and case study respondent is 8. FGD is conducted in several four villages of several four unions in this upazila. This study focused on triangulation method. Data collection techniques of this study are Case study, Focus group discussion (FGD), and key informant interview from qualitative method. Questionnaire survey was from Quantitative. Questionnaire survey helps this study in a broader view, because respondent can give their answers without any hindrance or any pressure. They done the job what experienced they have in their livelihood. Case study techniques help to find out the answers deeply from separate individuals. KII helps to the context that which steps are taken by the knowledgeable respected person on that area. FGD is important techniques of qualitative method. FGD not only a group discussion but also illustrate the reason, fact which is behind the problem and what steps the take to mitigate or minimize the problem. Target group included of this study is both educated and uneducated people. Both male and female members of the society are included. This study targeted those samples that are permanent residence in this area and affected by several vulnerabilities. Farmer, Housewife, Student, Teacher, NGO workers, service holder are the respondent in this study.

Field test of this study have been done in December. After pretest and questionnaire develop the final data collection of this study has done in March 28 to April 10, 2018 in shyamnagar upazila. Data collected from selected four villages that is located on several four union. Several methods apply to analyze the data. For quantitative data analyze statistical data for social science (SPSS) is used, Microsoft word also used. SPSS is computational software. SPSS provide accurate data analysis that helps this study. For qualitative data analysis manual or thematic analysis is followed. Thematic analysis is more appreciate for FGD, KII and case study analysis

Findings of the study:

Table 1: Ghers negative impact on agriculture

***Ghers* negative Impact**	**Frequency**	**Percent**
Decreasing soil quality	54	33.8
Increase salinity	92	57.5
decrease production	8	5.0
Others	6	3.8
Total	160	100.0

Source: Field survey, 2018

This table mentioned on *ghers* negative impact on agriculture. What type of problem emerge from the *gher*. 33.8% people said that *ghers* negative impact on soil quality. 57.5% people mentioned that when a *gher* start in side of cropping land salinity level increase on that cropping land. 5.0% people said that by the *gher* production level decreased. 3.8 percent people also answered on several other perspectives.

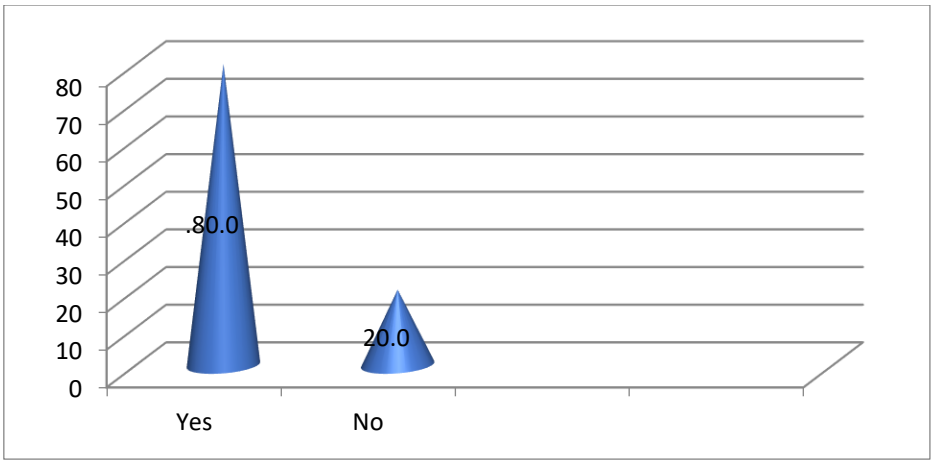
Table 2: Soil quality and salinity

Salinity impact on salinity	Frequency	Percent
Yes	137	85.6
No	23	14.4
Total	160	100.0

Source: Field survey, 2018

This table reveals the impact of salinity on soil quality. When saline water intrudes at first soil moisture or fertility damaged. Table shows that 85.6 percent respondent agree on the question that salinity have negative impact on soil quality. On the other hand, 14.4 percent respondents not agree on the relevant question.

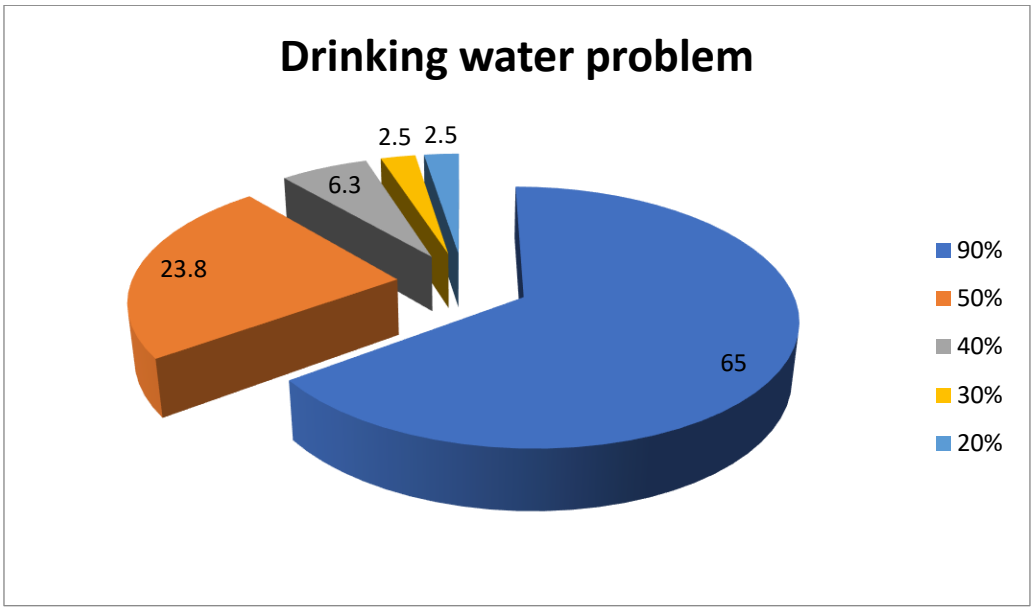
Figure 1: Impact of salinity on irrigation



Source: Field survey, 2018

Figure-1 Shows the percentage distribution of the impact of salinity on irrigation. In the survey question the question used for this figure is do you think that salinity have negative impact on irrigation? 80.0% people said that salinity have a negative impact on irrigation. Irrigation water scarcity arises. On the other hand, 20.0% people said that salinity creates problem but not severity on irrigation. They said that after rainy season they use pond water.

Figure 2: Drinking water problem



Source: Field survey, 2018

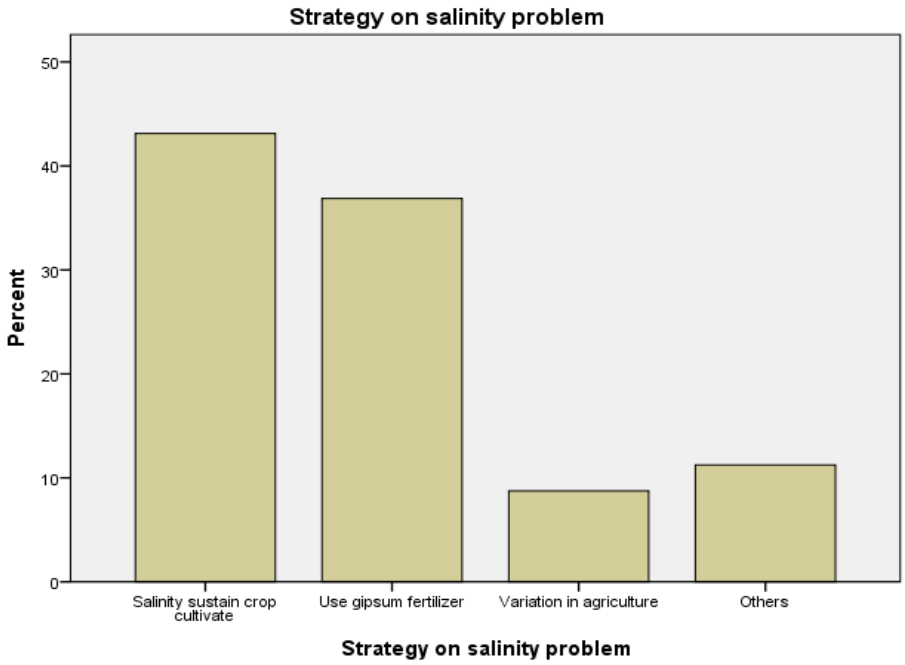
Figure-2 Represents the percentage distribution of the respondent's drinking water problem. 65.0% respondent said that nearly all of the people in this area on drinking water scarcity. Nearly half of the people under drinking water problem said 23.8% respondents. 6.3% said that nearly two fifth of the respondents in this problem. Nearly one third and one fifth of the respondent under drinking water scarcity said 2.5% respondent's ease.

Geographically this area is more vulnerable. Salinity, irrigation water, drinking water scarcity as well as flood, cyclone and several natural disasters always threat for the local people. People always struggle to maintain their livelihood.

Measure and mitigation strategy

This section focused on measure and mitigation strategy that people taken to solve various types of problem. Both public and private sector also engaged in the way to strategy. To solve the salinity problem several steps taken by the local people, as well as to mitigate the irrigation water insecurity, to solve the drinking water problem and other problem peoples maintain various types of strategy.

Figure 3: Strategy on salinity problem:



Source: Field survey, 2018

Figure-3 represents the strategy to solve the salinity problem. In the selected area people take various types of strategy that's salinity sustain crop they cultivate, use gypsum fertilizer, change the pattern of agriculture or farming and others strategy. 43.1% respondents take salinity sustain crop, 36.9% said that they use gypsum fertilizer to mitigate the soil salinity. 8.8% respondents said that they practiced or verities on crop and 11.9 percent respondents' choice another strategy to solve the salinity problem.

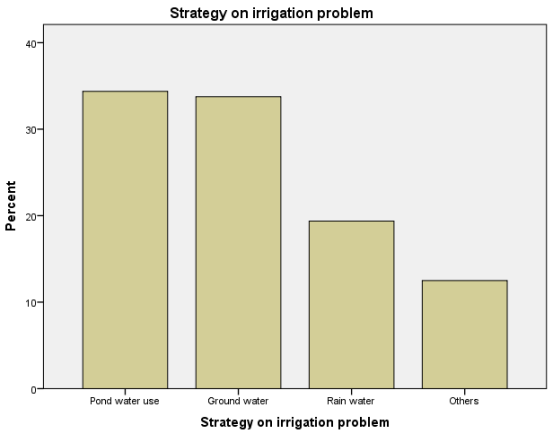
Table 3: People's strategy on soil salinity

Soil salinity and people's strategy		
Strategy name	**Frequency**	**Percent**
Use pump water	56	35.0
Use fertilizer	43	26.9
NGO support	36	22.5
Others	25	15.6
Total	160	100.0

Source: Field survey, 2018

Table 3 reports the strategy that people take on soil salinity. 26.9% respondents use fertilizer to remove or mitigate soil salinity, 35.0% respondents said that they use pump water (pond water). 22.5% said that they meet NGO workers to reduce the problem and 15.6% respondents said that they use other strategy to reduce the salinity problem.

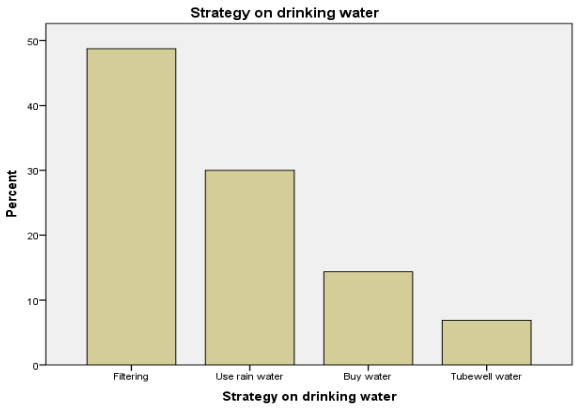
Figure 4: Strategy on irrigation insecurity



Source: Field survey, 2018

Figure-4 represents the strategy on irrigation water insecurity. 34.4% respondents said that they use pond water for cultivation but it is true that all people have no capacity on pond. 33.8% said that they use ground water but that water not saline free and not accessible in the entire place. 19.4% respondents said that they cultivate by using rain water. In the selected area people cultivate their expected crop by rain water and 12.5% said they also take several steps to irrigation water such as canal water etc.

Figure 5: Strategy on drinking water:



Source: Field survey, 2018

Figure-5 represents the percentage distribution of the respondent's strategy on drinking water. In the selected area drinking water problem is a major concern for all the people. People on the area also take several strategies with the help of NGOs and government to solve the problem. In this table, 48.8% respondents take filtering system for drinking water. They use pond and rain water. 30.0% said that they use rain water. On the rainy season they preserve rain water in tank (NGO and Govt.) and use that water all of the year. 14.4% people said that they buy water from market or supply line, per liter 1 to 2 taka. But all of the people have no capability on supply water and supply water technique also not introduce the entire place. 6.9% people said that they use tube well water basically shallow water that also arsenic contaminated.

Discussion

South west part of Bangladesh is low land area. Coastal areas most of the people's livelihood are Agriculture related. They also engaged in other activities. It is a sorrowful matter that agriculture activity is not properly maintained by the farmer because of water insecurity problem only one crop they harvested. Few people cultivate crop second time in a year by using pond water. But that's water is not sufficient. Most of the surface water sources are saline affected that are unable to use in cultivation and in dry season water scarcity belong in this area. The main crop cultivated in monsoon or rainy season; rest of the year crop agriculture land is barren. Because main sources of water for agriculture are depend on rain in rainy season. Salinity problem not only emerge from environment but also by the people's activity. Some areas in this upazila introduce *gher* on cultivation land that means saline water-based fish or shrimp farming. In this area *gher* introduced because salinity problem disrupted the main crop production as a result most of the time crop land was barren, then some people started shrimp farming by using the saline water. *Gher* have negative impact on livelihood because *ghers* saline water decreasing soil quality, Saline water first damage the moisture of the soil. 33% respondent said that soil quality damaged by *gher*s.

Irrigation problem is more acute in shyamnagar upazila. In this paper, 80.0% respondent said that salinity have a negative impact on irrigation. Only one crop farmer cultivates in this area. In rainy season they cultivate their main crop and others time they fail to cultivate their crop because in summer season most of the water sources were dry. In 3 no shyamnagar union few people cultivate their crop by using their pond water. Ground water also saline affected. As a result, their livelihood also hampered. One of the major problems of this area is drinking water problem. Most of the people are in this problem. 90% respondents said that they face drinking water problem. There is no scope to use deep tube well water because tube well water also saline affected. So, in the study area tube well is now absent. Peoples take several types of strategy to mitigate the Salinity problem. Most of the people engaged in salinity sustain crop cultivation. They also use gypsum and

variation in agriculture production. In the context of reducing soil salinity where water accessibility has, they use pump water. They use fertilizer that's effective for reducing soil salinity. Most of the respondents take help from several nongovernmental organizations. For irrigation water most of the respondent use pond water, few people also use ground water. For drinking water, they use pond water through filtering system. Most of the household in this area also use rain water for safe drinking water. They preserve Rain water in a tank for whole of the year and use consciously. Now people also buy drinking water from market, few areas also introduce supply water, but extra cost also rise day by day. This extra cost create problem on coastal people's livelihood.

Conclusion

Salinity problem is not a problem that hinders people's livelihood only in Bangladesh but also different countries of the world also under this problem. In Bangladesh this problem is more acute in coastal area. There are various causes that are behind this vulnerability, sea level rise, river and canal also grabbed by people, siltation in river is a common problem as a result water flow change. Salinity problem not only hampered in production sector but also damage the ecological biodiversity in the selected area. Production system collapse as a result financial vulnerability also emerges in that area. In dry season fresh water sources also affected. In this area nearly all of the people can cultivate only one crop in a year. Main crop cultivates by using rain water and rest of the year the cultivable land has barren and fallen. Few people also cultivate another crop by using pond water. Drinking water scarcity is a major problem in this area. People use pond water by filtering system. People use rain water most of the time, in rainy season they preserve that water in a water tank and use that water. Supply water services also introduced in the selected area but all people have no equal capability to buy water. By consuming salinity affected water people face several diseases as a result they also paid a good amount of cost on health.

There also other vulnerability among people of this area. A person all has no capability on financial, social, natural and financial capital. Such unacceptability on any or more assets also promote people on vulnerable conditions. Natural disaster problem also has negative impact on livelihoods. Cost of capital, livestock, damage crop and several problems emerge by disaster. In that area embankment collapse is the behind cause for saline water intrusion in cultivable land, as a result crop damage and soil fertility also decrease. People take several strategies to develop their livelihoods by eliminating or reducing vulnerability. For better development of the coastal areas people some steps would be more effective that are given below: Salinity tolerant crops cultivation and accessibility increase, use gypsum and other strategy to reduce salinity, use surface water for irrigation, peoples encourage to joint venture, deep tube well and water supply, available filtering system that would be household basis, people's awareness for disaster context. People's participation in any development activities, awareness for improves social capital and both public and private sector proper engagement in development activities. At last, it is said that global

climate gradually changing as result different types of vulnerability also emerge in the coastal area, so people also should focus on adaptation mechanism that would be more effective for their agriculture-based livelihood.

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