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Vulnerability Context of Marginal & Small Farmers in Raipur District of India

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Abstract – **Vulnerability has been defined in several terms and concepts by different scholars, multilateral and bilateral organizations and international and UN agencies. The vulnerability context can be stated as the extent of feebleness of people to external shock and hazards in the environment in which people exist. The vulnerability context encompasses shocks such as illnesses, disasters, conflict, floods, droughts, storms, and crop and livestock pests and diseases and stresses such as long-term trends that undermine livelihood potential: population, declining natural resource base, climate change, pollution, inflation, currency devaluation, structural unemployment, and poor governance and others such as seasonality's. All these describe the characteristics of marginal and small farmers in several developing countries including India. Though, *India is accounting for bigger economy in the globe*, it seems that the rural poor are not testing the sugar. Farmers in the Indian sub-continent are suffering for water stress and it is a principal social contention in the rural India. Therefore, this study conducted with the objective to analyse the vulnerability context of the Indian small and marginal farmers.**

In the this study, the extent of vulnerability was ascertain in terms of vulnerability index based on socio-economic status, living standard, food and fodder availability and various disasters (flood during crop maturity, erratic rainfall, draught at various stages of crops, social content, diseases and pest outbreak and environmental pollution) faced by respondents during last ten years.

The result of vulnerability context portrayed that majority of the marginal and small farmers majority of the respondents, in the survey area perceived that their living standard was the same as it was during last ten years and faced environmental pollution, disease outbreak, drought and erratic rainfall nonetheless, they used savings; took loan from various sources, migration, government relief and aid etc. as coping mechanisms. This implies that the government has to develop livelihood improvement and vulnerability reducing projects for the rural poor.

Keywords – **Vulnerability, Climate Change, Environmental Pollution, Hazard, Drought, Livelihood, Welfare, Marginal, Small Farmers.**

I. INTRODUCTION

Vulnerability has been defined in different ways by different scholars but the basic concept relies in same. It is defined as the degree to which people are susceptible to shocks, stress, droughts, floods, disease and disasters/hazards that are occurring in socio-economic and other dimensions of their environment and their relative capacity to cope up form these hazards and/or natural and social disasters. Small and marginal farmers in developing world are characterised by having extended type of family with large number of members, small fragmented land holdings, limited income, food insecurity, unsustainable livelihood with limited assets and prone to migration risks in search of alternative income generating wage labour to feed their family. Lack of infrastructures and limited capitals and assets take the lion's share.

Shock or hazards in small and marginal farmers can occur in several dimensions and extent as compared to the middle level and large scale farmers. In the global context: globalization, global financial crises and environmental disasters have severe impacts over these groups of farmers. At the national/community and sub continent level: proxy wars, civil wars, drought, floods, pest and disease out breaks, theft, murder, riots, contentions between countries and communities and with in community and/or country affects them. These farmers are more vulnerable than others for the reason that they usually lack assets or capitals and collaterals to cope up form these stresses and shocks/hazards.

Moreover, the current era of climate change influence the small and marginal farmers to be highly vulnerable to natural hazards of flood, drought, erratic rain fall, disease and pest infestations etc... and market inflations. This aggravates their extent of poverty by causing low production and productivity. In such way food insecurity, limited fodder availability for their cattle and nutritional imbalance and disease outbreak became a challenge for them.

India is stable democratic peaceful country, which is *registering a rapid economic growth* that puts the country in to the groups of emerging economies. India contributes for a cosmic annual Gross domestic product. According to the World Bank report the India sub- continent Gross Domestic Product (GDP) was worth *1858.70 billion US dollars in 2012 that is more than 300 billion dollars bigger than Australia and even more than Canada* and several developed industrialized western countries.

Since constraints play a significant role to the living systems and their degree of vulnerability; the major constraints confronted by respondents and suggestions pointed out by respondents tackle the constraints are studied altogether. This study entitled "*Vulnerability Context of Marginal & Small Farmers in Raipur District of India*" has been carried out at in the year 2011-2012 with the following objectives and significance.

Objectives:

1. To analyse the extent of vulnerability of the respondents,
2. To enlist the problems and suggestions in sustaining the rural livelihoods of farmers in the study area.

Significance of the study:

- It takes the initiation for scientific study in the state; since there is limited research available in the area.
- It can be used as a ground for further study in the area.
- The result of the study will have a modest contribution to the existing literature by showing the constraints and

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opportunities, issues and realities of marginal and small farmers' vulnerability.

Limitations:

Finally the study has countered the following limitations:

1. Due to scarcity of time, finance and other resources and language barrier; the researcher is forced to study in only two blocks of one district. The investigation is based on the information collected from 6 villages and 120 respondents.
2. Translation of the interview schedule in to local language has been done; however language barrier could not be completely avoided.
3. Enumerators were involved for data collection which may influence the process of data collection to a small extent.
4. The research relied on the respondents who are often reluctant to explain precise information typically personal ones. Cross cutting questions were used to solve this problem.
5. Few researches have been done regarding the topic in the country in general and at state level in particular.
6. Selected relevant factors are considered to assess the cause and effect relation; there could be more factors that can contribute to the outcomes of the existing status.

II. Research Methodology

Method of data collection

Facts of the study area was taken from internet and literature review. Primary data for the study was collected by personal interview with the respondents with the help of pre-tested structured interview schedule. The objective of the study was explained to the respondents, in order to facilitate free response from them. The 120 respondents 60 from marginal farmers and 60 small farmers were interviewed either in the field or at the place of residence and after that group discussion and observation were conducted to cross-check the information; Secondary data and other relevant information of the study were gathered from the different literatures.

Data processing and statistical framework used for analysis of data.

The data collected during the course of investigation was first screened, edited and coded into the coding manual and then the data was fed and analyzed through excel spread sheet and SAS (Statistical analysis software) was made according to objectives. The statistics applied were percentage, frequency, mean and standard deviation were carried out.

Vulnerability context of the respondents

The responses of the respondents regarding various dimensions of vulnerability were recorded and vulnerability index was developed for each farmer by using the following formula:

$VI = Oi/S \times 100$

Where, VIi = Vulnerability index for i^{th} respondent.
Oi = Total score obtained by i^{th} respondent.
S = Total obtainable score

On the basis of vulnerability index (VI) of the individual respondents they were categorized in to the following five categories:

Extent of vulnerability	Score
Very Low (Up to 20%)	1
Low (Between 21-40%)	2
Medium (Between 41-60%)	3
High (Between 61-80%)	4
Very High (Greater than 80%)	5

Constraints confronted by respondents to sustain their livelihoods

It was considered as the items of difficulties faced by the respondents to attain their livelihood. Constraints were obtained through a simple open ended question with some alternatives as a guide. They were asked to list out the constraints they are confronting according to their priority through interview schedule. Moreover, group discussion and observations were also used to point out some of the major constraints faced by the farmers with its priority.

Finally, constraints were counted in frequency and then percentage were calculated and ranked accordingly.

Suggestions pointed out by respondents to sustain their livelihoods

Respondents were requested to point out the possible suggestions or solutions to overcome the problems faced by them to attain sustainable livelihood. Suggestions were taken from respondents through open ended interview schedule and group discussion methods.

Finally, solutions were counted in frequency and then percentage were calculated and ranked accordingly.

III. Result and Discussion

Vulnerability context of the respondents

It is the extent of respondents' ability to cope up with stresses, shocks, disasters, disease and other environmental, social, economical or political calamities that they are facing.

Table 1 explains the respondents' perception about changes in various dimensions of livelihood during last ten years. The table demonstrates that majority of the respondents (83.3%) had average economic status followed by 14.2 percent of them were poor. Likewise, majority of the marginal (78.3%) and small farmers (88.3%) had average economic status followed by 20.0 and 8.3 percent of them were poor.

In addition, it can be inferred from the table that majority of the respondents (89.2%) had average recognized social status followed by 10.0 percent who were low recognized. Likewise, majority of the marginal (86.7%) and small farmers (91.6%) had average recognized social status followed by 13.3 and 6.7 percent of them were low recognized, respectively.

Moreover, the table also presents that majority of the respondents (84.1%) had sufficient food annually followed by 14.2 percent of them had scarce foods annually. Likewise, majority of the marginal (75%) and small farmers (93.3%) had sufficient food annually followed by

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25.0 percent and 3.3 percent had scarcity in availability of food annually, respectively.

Table 1: Distribution of the respondents according to their perception about changes in various dimensions of livelihood during last ten years

Particulars	Marginal (n=60)	Small (n=60)	Total (n=120)
Economic status of the respondents			
Poor	12(20.0%)	5(8.3%)	17(14.2%)
Average	47(78.3%)	53(88.3%)	100(83.3%)
Rich	1(1.7%)	2(3.3%)	3(2.5%)
Social status of the respondents			
Low recognized	8(13.3%)	4(6.7%)	12(10.0%)
Average recognized	52(86.7%)	55(91.6%)	107(89.2%)
Highly recognized	0(0.0%)	1(1.7%)	1(0.8%)
Food sufficiency status of the respondents			
Scarce	15(25.0%)	2(3.3%)	17(14.2%)
Sufficient	45(75.0%)	56(93.3%)	101(84.1%)
Surplus	0(0.0%)	2(3.3%)	2(1.7%)
Fodder availability of the respondents			
Scarce	23(38.3%)	22(36.7%)	45(37.5%)
Sufficient	37(61.7%)	38(63.3%)	75(62.5%)
Surplus	0(0.0%)	0(0.0%)	0(0.0%)
Overall living standard of respondents			
Worse	14(23.3%)	13(21.7%)	27(22.5%)
Same	33(55.0%)	33(55.0%)	66(55.0%)
Better	13(21.7%)	14(23.3%)	27(22.5%)

Further, the table demonstrates that majority of the respondents (62.5%) had sufficient fodder for their livestock for a year followed by 37.5 percent had scarcity in fodder availability. Likewise, majority of the marginal (61.7%) and small farmers (63.3%) reported sufficient fodder availability for their livestock for a year followed by 38.3 and 36.7 percent had scarce fodder availability, respectively.

Table 1 describes the overall living standard of respondents according to their perception. The that majority of the respondents (55.0%) reported that their living standard was the same as it was during last ten years followed by 22.5 percent and same percentage of them had perceived that their living standard was at worse and better condition, respectively. Likewise, majority of the marginal (55.5%) and small farmers (55.5%) had perceived that their living standard was the same as it was during last ten years followed by 23.3 and 23.3 percent had perceived that their living standard was at worse and better for both types of farmers, respectively.

The above results demonstrate that economic, social and food sufficiency status of the respondents was at a sound level whereas in case of fodder availability considerable numbers of respondents did not have sufficient fodder for their livestock which reduces their income from the sector and the natural capital. Besides, significant number of respondents replied that they perceived that their living standard was the same as it was during last ten years.

Table 4 presents the disasters faced by respondents along with their coping mechanisms. It is illustrated that majority of the respondents (63.3%) had faced environmental pollution followed by 33.3, 16.7, 16.7 and 10.0 percent who faced disease outbreak, drought, erratic rainfall and flood, respectively. During the interview majority of respondents pointed out that the disasters had caused reduced income, crop loss/yield reduction, livestock loss, water contamination, health problems (like asthma, bronchitis, etc) and fodder scarcity as major losses ranked, respectively.

Nevertheless of the disasters faced, the respondents had used different mechanisms in order to cope up from the losses caused by the disasters. The respondents used savings, took loan from various sources, migration, government relief and aid, change cropping pattern, shift agronomic practices, judicious use of irrigation water, crop diversification, pending ceremonials like wedding, using indigenous technical knowledge for controlling diseases and pest, arranging fodder on exchange bases, more plantation around the fields to control environmental pollution, filtering drinking water through indigenous methods and getting medical treatment regularly as coping mechanisms for the losses caused by the disasters.

The extent of losses faced by the respondents due to the disasters is displayed under Table 2. It is portrayed that majority of the respondents (67.5%) out of those who faced the disaster, reported that the loss caused by disease outbreak was to a small extent followed by 55.0 percent also replied the loss caused by drought was to a small extent. Nonetheless, a considerable percent of respondents (39.5%) and (25.0%) had faced a great extent losses from environmental pollution and drought. Similarly, 60.0, 40.8, 33.3 and 30.0 percent had faced great extent losses from erratic rainfall, environmental pollution, flood and disease outbreak, respectively.

Table 3 portrays the distribution of respondents according to their extent of vulnerability. It illustrates that majority of the respondents (66.7%) fell under very low (up to 20%) category of vulnerability followed by 17.5 percent under Low (Between 21-40%) category. Likewise, majority of the marginal (63.3%) and small farmers (70.0%) fell under very low (up to 20%) category of vulnerability followed by 20.0 and 15.0 percent who were under low (Between 21-40%) category.

The result is supported by Veena *et al*. (1987), Ellis (1998), Francesca (2006) and Hiremath (2007).

Table 2: Disaster faced by respondents along with the extent of losses

Type of disaster	Frequency	Extent of loss			
		Great Extent*	Moderate Extent*	Small Extent*	Nix
Flood	12(10.0%)	2(16.7%)	4(33.3%)	6(50.0%)	108(90.0%)
Erratic rainfall	20(16.7%)	1(5.0%)	12(60.0%)	7(35.0%)	100(83.3%)
Drought	20(16.7%)	5(25.0%)	4(20.0%)	11(55.0%)	100(83.3%)

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Disease out break	40(33.3%)	1(2.5%)	12(30.0%)	27(67.5%)	80(66.7%)
Environmental pollution	76(63.3%)	30(39.5%)	31(40.8%)	15(19.7%)	44(36.7%)

*percentage is calculated from the respondents affected by a particular disaster

Table 3: Distribution of respondents according to their extent of Vulnerability

Extent of vulnerability	Marginal (n=60)	Small (n=60)	Total (n=120)
Very Low (up to 20%)	38(63.3%)	42(70.0%)	80(66.7%)
Low (21-40%)	12(20.0%)	9(15.0%)	21(17.5%)
Medium (41-60%)	8(13.3%)	5(8.3%)	13(10.8%)
High (61-80%)	0(0.0%)	4(6.7%)	4(3.3%)
Very High (Greater than 80%)	2(3.4%)	0(0.0%)	2(1.7%)

To sum up the results of Table 1 to Table 4; even though, considerable number of respondents had faced disasters during the last ten years and the damage was great extent they were able to cope up from it by using several coping mechanisms. This is primarily due to the government support given for the rural poor. Such groups of farmers are *given cards for support grouped as Green, Yellow and Green cards based on their category of below poverty line (BPL)*. Based on their type of cards the government is supporting them in different consumer goods distribution. Moreover, the impact of relief organizations during the disasters is also very significant to the extent that can lessen the degree of marginal and small farmers' vulnerability.

Nevertheless, there is a big question over here that is the result reflects that the rural poor are having the same living standard since the last ten years, which implies that the fast growing economy of India is not flowing to the marginal and small farmers apart from the BPL card. The nation has been registering a fastest growing economy in the world as indicated above. So, is there fair distribution of wealth in the country? Didn't they contribute for the nation economy? Certainly, they contribute. So, the wellbeing of these groups of farmers cannot be improved due to inequitable wealth distribution that means the fewer numbers of the higher classes i.e. the riches are getting richer while the rural poor are still in the same living standard as the past ten years. *This is typical character in several developing and emerging economies*. Hence, the government should develop policies, strategies, programs and projects to improve the living standard and reduce the vulnerability of these groups of farmers.

Finally, it is clearly seen that the root causes for the disasters that occurred in the area are primarily change in the environment and climate. I think this is not only for Indian farmers but it is applicable all over the world especially for the poor in developing world that are not responsible for the change. Those who are responsible for the change are also confronting the challenge though they have the adaptation capacity due to their infrastructure and capitals/assets.

Table 4: Disaster faced by respondents along with their coping mechanisms

Type of disaster	Respondents who faced the disaster	Type of losses/damage due to disaster	% *	Coping mechanisms for the losses from disasters
Flood during maturity of crop	12(10.0%)	Livestock loss Crop loss/yield reduce	50.0 50.0	• Use savings • Take loan from various sources • Migration • Government relief and aid
Erratic rainfall	20(16.7%)	Income reduced Destruction of water sources Crop loss/yield reduce	40.0 30.0 30.0	• Use savings • Take loan from various sources • Change cropping pattern • Shift agronomic practices
Drought at various stages of crops	20(16.7%)	Income reduced Destruction of water sources Livestock loss Crop loss/yield reduce Area reduced in *rabi* season	30.0 5.0 20.0 25.0 20.0	• Judicious use of irrigation water • Use savings • Crop diversification • Migration of family member • Pending ceremonials like wedding • Government relief and aid
Disease & pest out break	40(33.3%)	Income reduced Livestock loss Yield reduce Fodder scarcity	37.5 25.0 25.0 12.5	• Using indigenous technical knowledge for control • Land lease/ mortgage • Take loan from various sources • Government relief and aid • Arranging fodder on exchange bases

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Environmental pollution	76(63.3%)	Yield reduce water contamination Reduce in soil fertility Health problems (like asthma, bronchitis, etc)	19.7 27.6 6.6 46.1	• More plantation around the fields • Filtering drinking water through indigenous methods • Getting medical treatment regularly

*percentage is calculated from the respondents affected by a particular disaster

Constraints confronted by respondents that aggravate the vulnerability context

Table 5 demonstrates respondents' distribution according to the constraints confronted by small and marginal farmers that aggravate their vulnerability context. It illustrates that majority of the respondents (60.0%) pointed out that they were confronting lack of good road and transportation facilities primarily followed by lack of veterinary facilities in the village (46.7%), difficult bank loan procedure (45.8%), limited skill development trainings (39.2%), lack of hospital facilities (26.7%) and lack of public toilet (26.7%) are other major constraints they were confronting. Likewise, majority of the marginal (70.0%) and small farmers (74.0%) pointed out that they were facing lack of good road and transportation facilities primarily; followed by similar constraints that are stated above by the respondents. In addition other more constraints confronted by the respondents are given on the table.

The result is supported by Rathod (2007), Biradar (2008), Savitha, et al (2010) and Sunita (2011).

Table 5: Respondents distribution according to the constraints confronted by them that aggravate the vulnerability context

Particulars	Marginal (n=60)	Small (n=60)	Total (n=120)	Rank
• Lack of good road and transportation facilities	35(58.3%)	37(61.7%)	72(60.0%)	1
• Lack of veterinary facilities in the village	28(46.7%)	28(46.7%)	56(46.7%)	2
• Difficult bank loan procedure	30(50.0%)	25(41.7%)	55(45.8%)	3
• Lack of hospital facilities	15(25.0%)	17(28.3%)	32(26.7%)	4
• Lack of public toilet	17(28.3%)	15(25.0%)	32(26.7%)	5
• Lack of remunerative prices for farm produce and high price fluctuation	13(21.7%)	13(21.7%)	26(21.7%)	6
• Improper supply of electricity	8(13.3%)	10(16.7%)	18(15.0%)	7
• Problem of marketing milk	8(13.3%)	9(15.0%)	17(14.2%)	8
• Lack of pure drinking water/lack of sanitation in water bodies	9(15.0%)	7(11.7%)	16(13.3%)	9
• Lack of irrigation facilities	9(15.0%)	6(12.0%)	15(10.0%)	10
• Lack of communal pasture land	5(8.3%)	2(3.3%)	7(5.8%)	11
• Unexpected crop loss due to different causes	2(3.3%)	2(3.3%)	4(3.3%)	12
• Lack of input/fertilizer availability	2(3.3%)	1(1.7%)	3(2.5%)	13

Suggestions pointed out by respondents to tackle the constraints

Table 6 displays the suggestions pointed out by respondents to tackle the constraints. It portrays that majority of the respondents (55.8%) suggested for road maintenance & providing public transport primarily; followed by 52.5 percent respondents suggested for providing movable veterinary service, 49.2 percent respondents for establishing small scale credit and saving institutions at adjacent villages, 48.3 percent respondents for providing movable public health service and 47.5 percent respondents for providing vocational trainings to solve the constraints faced by them. Likewise, majority of the marginal (55.0%) and small farmers (56.7%) suggested out that road maintenance & providing public transport primarily; could solve the first constraint confronted by them; followed by similar suggestions which is stated above by the respondents. In addition to above the other more suggestions for the constraints faced by the respondents are given in the table.

Similar findings have been also reported by Arunkumar (2004) and Geetha (2007).

Table 6: Suggestions pointed out by respondents to tackle the constraints

Particulars	Marginal (n=60)	Small (n=60)	Total (n=120)	Rank
• Road maintenance & providing public transport	35(55.0%)	37(56.7%)	72(55.8%)	1
• Providing movable veterinary service	31(51.7%)	32(53.3%)	63(52.5%)	2
• Establishing small scale credit and saving institutions at adjacent villages	29(48.3%)	30(50.0%)	59(49.2%)	3

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• Providing movable public health service	29(48.3%)	29(48.3%)	58(48.3%)	4
• Providing vocational trainings	30(50.0%)	27(45.0%)	57(47.5%)	5
• Establishing veterinary service for adjacent villages/blocks	28(46.7%)	28(46.7%)	56(46.7%)	6
• Simplifying bank loan procedure	30(50.0%)	25(41.7)	55(45.8%)	7
• Providing hospital facilities at block level or adjacent villages	22(36.7%)	25(41.7%)	47(39.2%)	8
• Farming should be away from industrial areas /resettlement/	23(38.3%)	21(35.0%)	44(36.7%)	9
• Providing crop insurance service	21(35.0%)	20(33.3%)	41(34.2%)	10
• Constructing public toilet	17(28.3%)	15(25.0%)	32(26.7%)	11
• Regulating price fluctuation by government	13(21.7%)	13(21.7%)	26(21.7%)	12
• Supplying full time electricity service	8(13.3%)	10(16.7%)	18(15.0%)	13
• Facilitating milk marketing	8(13.3%)	9(15.0%)	17(14.2%)	14
• Building irrigation facilities	9(15.0%)	6(10.0%)	15(12.5%)	15
• Improving input/fertilizer availability/distribution	2(3.3%)	1(1.7%)	3(2.5%)	16
• communal pasture land at village level	5(8.3%)	2(3.3%)	7(5.8%)	17

IV. CONCLUSION

A lot have to be done to reduce vulnerability context of the marginal and small farmers to develop resilience to external shocks. The global community for development and national governments should give priority in order to improve the rural poor wellbeing. It is a question of survival. Lower level of vulnerability doesn't mean that farmers can cope up from all types and extent of natural hazards and disasters. If a disaster with greater degree and extent in its damage occurred, it is known that such types of farmers can't stand with. Because they don't have the adaptation and resilience capacity due to limited infrastructures, assets, collaterals and capitals.

All in all, from the results obtained from the research and the experience gained, we can suggest the following points for future work.

1. Similar study should be conducted in large area with more number of respondents,
2. Livelihood improvement projects should be designed for these groups of framers,
3. Last but not least, the respondents are highly vulnerable to environmental pollution due to industrializations of the survey area. Therefore, a farmer perspective comprehensive study should be framed out for re-establishment of industries far away from villages and farm areas and improvement in afforestation schemes to minimize environmental pollution in rural area.

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