

EXECUTIVE SUMMARY

1.0 PREAMBLE

Based on the PRA conducted by Development Research Communication and services Centre(DRCSC), the following areas of concerns relating to climate change have been identified as ‘community perspective of climate change and associated vulnerability’:

- Rainfall is Intermittently scanty and is declining further, especially during last 5-6 years
- Temperature, both maximum and minimum, rising
- Agriculture is mainly rain-fed. Soil is poor in nutrient content.
- The forest cover is vanishing gradually. The collected food items are no longer grown in the forest. This zone is dominated by tribal, who are generally more dependent on non-timber forest products (NTFT).
- Lack of fodder and degradation of grazing land.

Wells are gating dried quickly during summer

Before launching the Project with full vigour, DRCSC have decided to conduct a BASE LINE SURVEY of a few residents of a few selected villages in the districts of Bankura and Purila to know the actual ground situation.

The job of conducting the Base Line Study has been entrusted to Economic Information Technology , Kolkata.

2.0 The objectives of the study are as follows:

- Individual / Household Level -prepare a profile of the ‘socio-agricultural-economic-vulnerability to climate change’ profile of the households.
- Community level: Through the conduct of group discussions with residences of the villages, gate an overall picture of ‘community perspective of climate change an associated vulnerability ‘.
Compare this knowledge with the results of PRA conducted by DRCSC given in para 1.5 in the last sections.

3.0 Methodology

It was, ex-ante, decided to cover the following blocks and G.Ps (Gram Panchayats) in the above two districts

Sl. No.	Districts	Name of the Block to be covered	Names of G.Ps to be covered
1	Bankura	Chatna	1. Gpshergram 2. Jhuka
2.	Purulia	Kashipur	1. Rangamati Ranjandi 2. Agardi Chitra 3. Soinathali

It was, ex-ante, decided by DRCS that 18 villages in Bankura and 22 villages in Purulia (as named by them) were to be covered. Brake up of these 40 villages are given below:

Sl. No.	District	Block	GP	Number of villages to be covered
1.	Bankura	Chatna	1. Goshergram	7
		Do	2. Jhunka	15
		Sub total		22
2.	Purulia	Kashipur	1. Rangamati Ranjandi	5
		Do	2. Agardi Chitra	9
		Do	3. Sonathali	4
		Subtotal		18
		Grand Total		40

The total number of households in these villages (total) are :

Bankura (2GPs)	4200
Purulia (3GPs)	2375
Total	6575

Allocation of the sample size of 500 was done in proportion to the number of households in each village. Accordingly, the following total number of households were selected:

Bankura	315
Purulia	187
Total	502

We have used Systematic random sampling for the study

Method of data collection – Personal Interview Method.

Survey Instrument - A well designed Households Questionnaire developed by DRCS was used to elicit the required information from the selected households. Copy of the Questionnaire is annexed as Annexure-1

A total of 15 Field staff were deployed

Supervisors – 5
Field Investigators-10

Training Programme – A 2-day training programme in Kolkata to acquaint the field staff with the objective of the project, methodology being used, and survey instrument.

Dr.A.K.Roy, Chief Executive, Economic Information Technology, Kolkata acted as the Main Faculty member.

Shri Sujit Mitra Coordinator, DRCSC clarified the issues and problems raised.

Data Entry – Data Entry was done by using CSPRO Software.

Tabulation was done using SPSS-15

For the Qualitative Study , the following methodology was used

Key informants interview was conducted by Dr. A.K. Roy Chief Executive, Economic Information Technology, Kolkata with the following officials/KIs:

1. Shri Sahdev Murmu – Farmer and social Activist
2. Shri Prasanta Mandal-DRCSC,

A Group Discussion was organized on 02.05.2014 in one of the selected villages (comprising people from the neighbouring selected villages).

A total of 41 individuals (females-19 and males-22) attended the meeting and took part in the deliberations. The age of the participants ranged between 13 and 75 years.

A copy of the names (together with their age, Occupation and signature) is given in Annexre-3.

In the meeting, the following officials of Economic Information Technology, Kolkata were present:

1. Dr. A.K.Roy Chief Executive
2. Shri B.K.Mazumder, Senior Executive

4.0 RESULTS (BANKURA)

The total number of households surveyed in the study in Bankura district is 315.

The average household size works out to 5.68.

The sex ratio varies from 778 (for age group 0-6 years) to 993 (for age group 51-70 years). Sex ratio , especially for the age group 0-6 years, is really a cause for concern.

Percentage of earning members for the two age-groups (19-30 and 31-50 years) are 64and 80 respectively .

Sex-wise percentages of education (literate) works out to 58 for females and 73 for males with a total of 66

Among 304 households (who have school going children ,) 167 households (58percent) have school going children while this percentage for female children is 45 percent.

Seventy five percent of children are studying either in primary class or in middle class.

There are 24 households having 'College going children'.

Six households have 'dropout children'. Reasons for drop-out mentioned are "not interested" (33 percent), "got married" (17 percent), "illness" (17 percent) wtc.

Half of the six drop-out children are presently 'doing nothing'. One each is working as 'Labour' or engaged in 'cooking' or 'household work'

No household has 'Annapurna' ration cards while 10-48 percent of households have 'Antyodaya' cards. 46 persons having 'ration cards' belong to BPL.

Most of households (56 percent) have to travel a distance of more than 1km. to their ration shops.

About half of the households (48 percent) have categorized the services of ration shops as 'fair , bad or very bad'.

First three ranked occupations are:

Rank	Primary	Secondary
I	Labour(51 percent)	Labour (40 percent)
II	Farming (33 percent)	Self Employment (19.48 percent)
III	Service (5 percent)	MGNREGS (19.12 percent)

As far as type of houses in which the households are living, most of them (72 percent) have 'Permanent katcha structured houses'. Only 19 percent of the households stay in pucca houses .

Only 7 households (2.22 percent) have received 'Government assistance' for building houses. Most of the households (57 percent) received 'Rs. 30.000'. The average amount received works out to Rs. 36333/-

Out of 315 households surveyed, 288 households (91.43 percent) belong to 'No TOILET' category.

There –fourth of the households (76 Percent) are 'using permanent toilet'.

Only 1household has 'recorded government assistance' for constructing toilets. They had received Rs. 2000/-

Half of the households (49.84 percent) use 'Electricity' as the sources of lighting followed by 'Kerosene' (29 percent). Around 21 percent of the households were covered by Rajiv Gandhi Electrification programme

'General chullah/traditional chullah' is the most Important chullah /cooking stove used by households (94 percent):

Wood is the maximum use fuel (54 percent) of the respondents

The first three ranked sources of drinking water are (1) Tube well (84%), (2) Tape water (9%) and Well (7%)

Out of 315 households, 116 households (37 percent) have faced 'scarcity of drinking water

Out of 315 households, 63 households (20 percent) are 'pattadars' (55 registered and 8 not registered) while 53 households (17 percents) are 'bargadars' (41 registered and 12 not registered). Only one household has 'Forest PLOT'

Medium high and upland constitute the maximum of the type of land of the households.

The major crops grown are:

Kharif	-	Paddy
Rabi	-	Mustard
	-	Vegetable
	-	Potato
Pre-Kharif	-	Vegetable

157 households (50 percent) had sold some of their crops

The major places of sales are 'taken from home' and 'outside the village to the market'

Majority of farmers (276 out of 315-88 percent) use chemical fertilizers. They generally use DAP, Urea, 10:26:26. Organic manures are being used by 230 households (73 percent). Use rate of organic manure works out to 29 kg/bigha or 87 kg/acre.

The average annual income per household works out to Rs. 72,768/- i.e. monthly average income of Rs. 6064/-.

The average monthly expenses of households is observed to be Rs. 4946/-.

The average monthly expenses of households of Rs.4946 /- is well within the average monthly income of households of Rs.6064/-.

The first five ranked durables /assets with the households are listed below:

Rank	Durables /Assets	Number of households (percentages)
I	Sickle	308(98)
II	Spade	307(97)
III	Pick-axe	285(90)
IV	Cycle	284(90)
V	Mobile	257(82)

Out of 315 households, the total number of households who have reported 'any diseases between BAISAKH -CHAITRA in 1420 is 270 (86 percent).

The first 3 ranked diseases (in terms of number of households reporting that disease) are:

Rank	Disease	Number of Households
I	Fever	45 (13 percent)
II	Couch and cold	29 (8 percent)
III	Fever & cold	25 (7 percent)

The first 3 ranked responses are tabulated below:

Rank	Period Response	Number of Households
I	Chaitra	51
II	Falgun	38
III	Magh	38

The average per household expenditure works out to Rs. 2107/-

Out of a total of 315 households, 85 households (27 percent) have said that they had faced scarcity of food.

Only 22 households (7 percent) have faced cattle feed scarcity.

A total of 66 households (21 percent) had said that they needed to work outside to meet shortages.

A total of 98 members (77 Male members 21 female members) worked outside.

The number of days worked by majority of the households outside is '50-99' days (45 percent) followed by '20-49' days (15 percent)

Majority of the households (64 percent) had worked as ' daily labour'

The average amount earned works out as Rs. 9729/-.

Most of the households (85 percent) saved 'Less than Rs. 50/-' a month:

Most of the households (88 percent) have saved money in 'Banks'

114 households (36 percent) have taken loans. Out of 114 , 68 households (60 percent) had taken loans for "agriculture" followed by 25 households (22 percent) who had taken loans for " health/ illness"

More than half (166) of the households (53 percent) have some form of insurance. Sixty Eight percent have taken insurance on "Health Insurance "followed by "Life Insurance "Thirty One percent.

The WEIGHTED AVERAGE OF DEPENDENCE on natural resources works out to

Sl.No	Resource on which dependent	Weighted average of dependence
1	Food	39.23
2	Fuel	74.71
3	Cattle feed	54.52
4	Income	17.45
5	Other	57.5

"FUEL" stands out as the MOST important item on which largest percentage of households with the highest weighted average of dependents depend on natural resources.

278 households out of a total of 313 had (88 percent) communication with Gram Panchyat

Out of 313 households, 212 households (67 percent) do participate in Gram Sabha meetings.

Number of households who received any Government scheme /Yojona works out to 161 (51 percent)

Only 12 households (3.81 percent) have expressed some specific skills

Effect of climate change for last four years have been

Quantum of rainfall	-	Normal or more – 56 percent
Rainy season	-	In time – 28 percent
	-	
	-	
	-	
Cold	-	Normal or more – 64 percent
	-	
Winter season	-	In time – 33 percent
	-	Before time – 18 percent

Summer	-	In time – 27 percent
	-	Before time – 21 percent
	-	
	-	
	-	
Temperature in summer	-	Normal or more – 69 percent
Lighting	-	“Normal or more” – 55 percent
	-	
Fogging	-	In time – 23 percent
	-	Before time – 17 percent
	-	
	-	
Fog	-	“Normal or more” – 58 percent
	-	
Storm	-	“Normal or more” – 51 percent
	-	
Hailstorm	-	“Normal or more” – 38 percent
	-	Less – 37 percent
	-	
Cloudy sky	-	Normal or more” – 48 percent
	-	Less – 29 percent
	-	
Drought	-	- one –fourth (24 percent of the respondents said that there had been a drought in 2010

During last three years, following have been effects of natural disasters:

- 2013 - Around 13 percent of the total households lost about 40 percent of ‘quantity of products’.
- Around 1 acre of land could not be cultivated.
- 2012 - Around 30 percent of all households faced ‘damage of quality of products’ at an average rate of 30 percent.
- Around 1.33 acres of land could not be cultivated.
- 2011 - Around 6 acres of land could not be cultivated.

QUALITATIVE STUDY

Salient points arising out of the key Informants' Interviews and Group Discussions are presented below:

GENERAL	<ul style="list-style-type: none"> ❖ Onset of KALBISAKHI is getting delayed every year affecting the expected climate with its own effect on weather. This year, KALBAISAKHI has not come till date. ❖ Earlier all the 6(six) seasons (GRISHA, BARSHA, SARAT, HEMANTA, SEET, BASANTA) was clearly useable and discernable. Now, there seems to be the following three seasons: <ol style="list-style-type: none"> 1. GRISHA (Summer) 2. BARSHA (Monsoon) 3. SEET (Winter) ❖ Duration of summer is getting prolonged every year (in last 5-6 Years).
RAINFALL	<ul style="list-style-type: none"> ❖ Major problem is 'UNCERTAINTY'. It is very difficult for farmers (specially) to anticipate the rains by Calendar days /months (which earlier they could do). Earlier, for each seed variety, the farmers knew the dates of sowing, transplanting etc. Now, this has become a 'Total Guessing game' affecting output. ❖ Frequency distribution of quantum rain over the rainfall period has undergone major changes. Earlier ASHAR (mid- June, July) and SRABAN (mid –July to August) would get the maximum rains. Now, it is unpredictable. You may get good rains in BHADRA (mid –August to September) or even in ASWIN (mid-September to October). ❖ Quantum of rain in a particular period also has undergone changes. Some periods get unusually hearing rains (when is unpredictable) While some periods get scanty rains. Quantum of rain, in most cases, is either more or less than expected/ desired.
FOG	<ul style="list-style-type: none"> ❖ Both total time period and intensity of fog have increased creating lot of damage to different Crops (mainly vegetables). ❖ We have never seen or even heard of 'fog in summer'. Now, it is becoming a reality.
WIND	<ul style="list-style-type: none"> ❖ Earlier, one could anticipate the wind (both timing and velocity –roughly) along with its ferocity. Now, it has become 'sudden. It is also not possible to anticipate the intensity which has also gone up.
LIGHTNING	<ul style="list-style-type: none"> ❖ Periodicity has gone up much more in last 3-4 Years. ❖ Earlier, one would not hear about death / accidents due to lightening (may be one or two in one-two years). Now, one hears a number of cases of death in an area every year.
TEMPERATURE	<ul style="list-style-type: none"> ❖ Summer temperature and duration has gone up in last 5-6 years. ❖ Winter period has shortened. ❖ During winter, we may have a few days of extreme cold followed by a few days of 'very little Cold' followed again by 'very cold' etc.

AGRICULTURE	<ul style="list-style-type: none"> ❖ Major crops in this area is Paddy. Most households, who produce paddy, do not sell paddy. Those who want to sell their paddy; they wait for the next crop of paddy. If there is a good weather etc. and they expect good yield of paddy, then only they sell their paddy. ❖ Vegetables are produced mainly sales. ❖ Farmers have adopted/ introduced a new technological innovation after the DRCSC has started funding here (viz. water harvesting, choice of varieties for different zone).
HEALTH	<ul style="list-style-type: none"> ❖ Climate changes and its unpredictability have brought new type of illness/ aggravated the old types by sudden increase / decrease in temperature, weather etc. ❖ Incidence of Cancer has gone up. ❖ Climate changes are not only affecting health of human beings, it is also adversely affecting health of livestock (viz. chicken etc.)

The deliberations of both KIIs and Group Discussion seem to confirm ‘the area of concern relating to climate change’ based on the PRA conducted by DRCSC (ref. Para 1.5).

5.0 RESULTS (PURULIA)

The total number of households covered in the study in Purulia is 187

- Average size of a household is 5.56
- Percentage of members in the household able to work is 67.76
- Percentage of earning members in the household is 48.70
- Percentage of members holding MGNREGA job card in the household is 43.60
- Percentage of literate persons in the household is 68.93

There are 210 school going children (105 each -50 percent each are males & Females).

Higher the class, lessor is the number of children in that class.

Per household dropout rate works out to 2.67 percent varying between 1.07 percent for males to 1.60 percent for females

Major reasons for ‘drop out’ for boys (2) is ‘In attentive in study’. For the three girls who have dropped out, reasons for each of them is (Table 26):

- Illness - 1
- Not interested - 1
- School too far - 1

For the 2 boys who have dropped out, one of them is doing 'nothing' while the other is doing the work of a 'labourer'. For 3 girls, 2 are doing 'nothing' while the 3rd is doing 'household work

Households having BPL ration card constitute 57 percent.

Majority of households (78 percent) have 'Labour' as the main occupation followed by 'Self employed'(13 percent). Month-wise 'labour occupation' varies from 6.21 percent in Chaitra to 9.86 percent in shravan.

MGNREGA is the major 'Secondary occupation' (49 percent) followed by 'Labour' (37 percent).

Most of the households (82 percent) have 'permanent structured katcha' houses.

Four (4) households have received Government assistance for construction of houses

Average amount received –Rs. 34,000/-

Most of the households (176 out of 187-94 percent) have 'No toilet'.

Three households have received Government assistance for construction of toilets

Average amount received=Rs.6, 700/-

'Wood' is the main fuel used (96 percent of all households)

"Tube well" is the most use source of drinking water (94 %) while pond is the main source of water for other household purposes (58%)

Scarcity of drinking water has been faced by 48 (26 percent) of the households. Average month of scarcity of water faced is 2.15 (90 percent of 48 households faced water scarcity between 2-3 months). During the scarcity months, the households had to travel an average distance of 0.70 km.

Scarcity of water for domestic animals have also been faced by 26 households.

'Stain through a cloth' is the most important method for purification of drinking water used by 4(57 percent) households.

The number of households growing vegetable etc. in orchards in different seasons is 49

Average value of production in different seasons from orchards is Rs 431.21/-

Major source of water for orchards is "Pond"

“Pond” is also the major source of water for agriculture followed by “River water”.

Paddy and vegetables are the dominant crops.

For field crops, the average cost of cultivation works out to Rs 8575.29 per acre of which 52 percent is contributed by “ Labour”

Of the 164 of the households (88 percent of the total number of households of 187) have sold some or other crops grown by them

Paddy is the main crop sold by 54 percent of the households followed by vegetables (43 percent)

Average distance where households sell their crops work out to 4.5 kms.

Most of the sales are done ‘from home’ (40 out of 89-45 percent) followed by ‘outside the village’ (34 percent).

Fertilizer use (kg/acre) for paddy has been observed as:

Chemical fertilizers	-	11.26
Organic manure	-	121.69

Households owning trees around dwelling area are:

- Fruits and other trees used as food - 118 households(63.10 percent)
- Trees of other uses - 105 households(56.15 percent)

Average monthly income of all households works out to Rs. 5784/-.

The households who are engaged in daily labour constitute the highest percentage (31) as far as monthly income is concerned followed by those who are engaged in ‘agriculture’ (20 percent).

‘Food’ is the biggest contributor(36 percent) of household to the total kitty of ‘average monthly expenditure’ followed by ‘expenses on agriculture’ (12 percent)

The average monthly expenditure of Rs. 4507.44 is much below the average month income of households of Rs.5783.97.

First five ranked assets with the households are:

Rank	Asset	Number of Households
I	Spade	184 (98 percent)
II	Sickle	184 (98percent)
III	Pick-axe	181 (97 percent)
IV	Cycle	176 (94 percent)
V	Mobiles	156 (83 percent)

Almost 90 percent (167) of the total households have reported that their households had suffered from any disease during Baisak –Chaitra 1420.

The first three ranked months/period are (1) Chaitra (18%) (2) Magh (15%) and (3) Falgun (9%)

The most prevalent disease among households is “ Fever” (14 percent) followed by Diarrhoea (9 percent)

The first five ranked sources of treatment are:

Rank	Source of treatment	Number of household	Percentage
I	Quack	64	30
II	Govt. Hospital	52	24
III	Private Doctor	32	15
IV	BPHC	14	6
V	Private Hospital	10	5
	Others	43	20
Total		215	100

Scarcity of food has been felt by 30 households (16 percent).
Average days of scarcity felt by these 30 households is 77.4.

Most of the households depend upon ‘SHOP’ to tide over the scarcity period.

Scarcity of cattle feed had been felt by only 3 households (4 percent).

Little more than one-fourth (25.67 percent) of the households had to go out for employment.

Total number of members who had gone out for employment was 48 consisting of 43 males and 5 females.

One-fourth of the members had earned ‘Rs. 25,000 and above’

SHG is the main source of community savings use by 26 households. Most of them (92 percent) saved “ less than Rs 50” monthly.

Bank is the main source of savings for most of the individuals (69 percent)

There are two major purposes for which loan been taken:

- Agriculture -31 (48 percent)
- Health/Illness-23 (35 percent)

Mortgages had to be mainly for loan for agriculture.

Out of 187 households, 129 households (69 percent) have some from of insurance.

Most of the households have 'Health Insurance

Percentage of dependence on natural resources is the highest (94 percent) for "fuel"

Next to fuel, major dependence of households on natural resources is for 'Cattle feed' (60 percent). Even for 'food' 14households are dependent for 50 percent of their food.

Most of the households (155 out of 187- 83 percent) had linkages with their gram panchayat .

Majority of the households (122 out of 187-65 percent) participated in gramsabha.

177 households (95 percent) are included (beneficiaries of any Government Projects/schemes.

The first three ranked sectors from where households have received maximum benefits from Government Projects are:

Rank	Sector	Percentage of households benefitting
I	Education	54.01
II	Social Security	19.25
III	Health	9.63

A total of 129 households (69 percent) are members of some Government Yojana.

Only 5 households had reported having any specific skills- 3 for 'Matir kaj', 1 each for 'Rajmistri' and 'Veterinary'.

➤ Hail Storm	1. Less	26.20
	2. More	13.86
	Effect	Percentage of households
➤ Cloudy Sky	1. Less	19.63
	2. More	18.27

- Drought- a total of 180 households have reported that they had been affected by Drought. One Household reported that the 'Drought' was more than earlier.

'Climate Change Effects' had been 'more in the following cases':

- Quantum of rain fall
- Cold
- Temperature
- Lightning
- Fog
- Storm
- Health Storm
- Cloudy sky