

Original Research Article

**ATTITUDE TOWARDS WATERSHED DEVELOPMENT PROJECT IN
COOCH BEHAR DISTRICT OF WEST BENGAL, INDIA**

ABSTRACT

In many countries watershed approaches have increasingly becoming a holistic approach to natural resource management and rural development through improved land management and rain fed crop production. Recognising the importance of watershed development programme in the state, Cooch Behar district also implemented 6 nos. of micro watershed project during XI- five year plan (2007-08 to 2011-12) of which *Rangamati* watershed project was implemented at *Mathabhanga-II* Block. A positive attitude towards any phenomena or activity is an indirect means of efficacy of it and creates a higher probability for its success. The present study analysed the attitude towards watershed development project and traced the impact of positive attitude towards the success of the watershed project. The study revealed that the farmers of the watershed area had developed a positive attitude towards the project; and the farmers with positive attitude reaped higher benefits from it. So, it is suggested that with the introduction of watershed project, government should campaign for development of positive attitude towards the project which can reap the highest benefit from the scheme.

Key Words: Watershed, Attitude, Cooch Behar, Micro-watershed

24

25

INTRODUCTION

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

Watershed is an area of land that contributes run-off to a common point and is separated from adjoining areas by a natural ridgeline. Watershed development program is a multidisciplinary approach (Molden, 2007) to enhance farm income by increasing crop yield; and generate employment by altering cropping pattern (Jain, 2008; Palanisami *et al.*, 2002). Watershed development project aimed to improve the peoples' action through development of grass-root institutions. These institutions develop peoples' interaction, build cooperation (Ghosh *et al.*, 2004) and thus develop positive attitude. Attitudes are generally viewed as one's relatively enduring affective cognitive and behavioral dispositions toward various aspects of the world including persons, events and aspects of the world including persons, subjects. Many studies have shown relationship between attitude and participation (Lise, 2000). Hence, the understanding of attitudes is one of the central concerns in social life and is vital for bringing desired change in the behavior (Fishbein and Ajzen, 1975; Stephen, 1990; Rishi, 2003). Social actions of people are directed by their attitudes. By knowing the attitudes, it may be possible to do something about the prediction and control of their behavior, which may be ultimately useful for the more successful implementation of watershed management program (Sisay, 2015). Therefore, the present study tried to identify people's attitude, level of participation in watershed development activity and analyze the relationship between the attitude of the respondents and its impact on benefit of watershed project.

45

46

MATERIALS AND METHODS

47

Study area, selection of respondents and data collection

48 Recognising the importance of watershed development programme, Cooch Behar
49 district of West Bengal implemented 6 nos. of micro watershed project during XI- five year
50 plan (2007-08 to 2011-12) of which *Rangamati* watershed project has executed at
51 Mathabhanga-II Block. The present study was conducted in this *Rangamati* watershed project
52 area. There are a number of beneficiary families under the project area. Among these
53 beneficiary families 60 were selected as respondents for the study. Primary data was collected
54 by using household interviews. The interview was conducted of all the farm households in
55 the treatment and the control villages.

56 *Development of attitude scale*

57 For measurement of the attitude of the villagers, an attitude scale was developed
58 following the methodology proposed by Likert (1932). The following steps were followed:

- 59 1. Lists of statements which reflect the attitude towards the watershed development were
60 collected covering all the domains of watershed development. Care had been taken to
61 make the list exhaustive and include positive and negative statements to make the
62 scale appropriate.
- 63 2. After a preliminary processing of the statements based on the indicators proposed by
64 Edwards (1957), the statements were sent to the experts for relevancy test. Relevancy
65 test is one type of validity test (content validity) regarding the relevancy of the
66 statements in relation to the attitude to be measured. Those statements having a
67 relevancy score of 0.70 were selected for item analysis.
- 68 3. Item analysis is assessing each statement regarding its discriminatory power between
69 peoples having favourable and unfavourable attitudes over test domains. The
70 statements were exposed to 30 non-sample respondents for item analysis. Among the
71 relevant statements those statements were finally selected which had significant
72 (based on t-test value) discriminatory power over the respondents.

73 4. The finally selected statements were included in the final attitude scale (table-3) and
74 Cronbach Alpha was calculated for reliability test (Cronbach Alpha value was 0.708
75 including all the statements which is acceptable for an attitude scale).

76 Each statement was assessed on a five-point ordinal scale continuum with “strongly
77 agree”, “agree”, “undecided”, “disagree” and “strongly disagree” with 2, 1, 0, (-)1 and (-)2
78 respectively. The mean score was calculated for each attitude statement and for every
79 respondent represented by simple arithmetic mean.

80

81 **RESULTS AND DISCUSSION**

82 *Socio-economic characteristics of the beneficiaries of watershed development project*

83 The data in Table-1 depicts the personal and socio-economic characteristics of the
84 respondent. The table indicates that in watershed villages 13.33 percent of respondents
85 from watershed villages were under the age group of 24-30 years followed by 70.00 percent
86 respondents were under the age group of 31-50 years and 16.67 percent respondents were
87 above 50 years, whereas, in case of education 48.33 percent of respondents were having
88 primary education, followed by 46.67 percent with secondary education, and 5.00 percent of
89 them were graduates and above. The distribution of respondents according to organizational
90 participation reveals that 56.67 per cent of respondents reported low score followed by 41.67
91 percent and 1.67 percent with medium and high scores of participation. Most of the
92 respondents (66.67 %) had higher outside contact whereas only 3.33 percent of respondents
93 had low level of exposure. In case of personal media participation results show that 21.67 per
94 cent of respondents reported to had low score followed by 35.00 percent and 43.33
95 percent with medium and high scores respectively. In mass media participation, 95.00 per cent
96 of respondents reported to had low score followed by 5.00 percent had medium score.

The distribution of the respondents according to their land holding shows that majority of the respondents (96.67%) from watershed villages fall under marginal to small holders with up to 4ac of land holding. In case of occupational diversity results show that 36.67 per cent of respondents reported to had low diversity followed by 63.33 percent having medium level of it.

From the mean values it is depicted that the beneficiaries of watershed development programme of Cooch Behar district of West Bengal had a mean age of 42.12 years with low-medium level of education status (mean value=6.07 years of formal education). Respondent from watershed areas had higher outside contact (mean value=9.25), media exposure (both mass media and personal media) (mean value=1.45 and 7.23 for mass and personal media respectively) and organizational participation (mean value=0.45) on an average. The occupational diversity per family was found encouraging on 2.05 on an average. Although watershed development programme created an opportunity of mass exposure to different awareness programmes through local television channel or group meeting, but mass media exposure was surprisingly low among the members of the watershed. It may be due to the fact that most of the farmers of the study area were resource poor and had less access to mass media channels like news paper or television.

[Table-1 is about here]

Table 2 represents the distribution of respondents according to the attitude towards watershed development programme. It reveals that, 78.34% of the sampled respondents had shown moderately favourable attitude (with a mean score value 1.08 to 1.50), followed by 8.33% having highly favourable attitude (mean value >1.50) and 13.33% respondents shown less favourable attitude (up to mean score 1.07) towards watershed development programme. The impact of watershed development takes time for its fullest manifestation. One's attitude

is developed seeing the positive impact of any activity. The farmers are experiencing immediate benefits of watershed project. This may be the cause that moderately favourable attitude is dominating the scenario.

[Table-2 is about here]

Table 3 represents the distribution of respondents according to the favourableness towards watershed development project. A negative mean score for a negative statement indicates the favorable attitude towards that particular statement. The result reveals that 65 % of the respondents strongly believed that over use of water definitely would be more and 55 % believed that livestock and crop production would reduce drastically if there was no watershed conflict in that area. 51.67% agreed that watershed development project (WUA) was a boon to the farmers of that area. It also came to know, 50 % respondents believed that group approach was the key to the success of the project by involving every farmer of that area. 71.67 % reported that WUA project not only improved the livelihood of recourse rich farmers but also helped small, marginal even landless farmers by taking up different viable income generation activities both from agriculture and non agriculture sectors (strongly agreed by 23.33 % farmers), thus ensured it's accountability and transparency. WUA also ensured efficient mobilization of people to participate different watershed activities like 83.33% mentioned that trainings provided by WUA were not monotonous and impractical 83.33% of them agreed that local resources had been managed effectively through community based organization in WUA. Not only that, 11.67 % of the respondents strongly agreed that WUA gave adequate concern to social and environmental issues also for sustainable development. Cost sharing with beneficiaries by watershed projects ensured respect and responsibility to the farmers participating in the development and here was no favouritism or biasness for availing credit to the members of different group.

145 [Table-3 is about here]

146 From the table it is found that the respondents of the watershed area had a favourable attitude;
 147 varies from moderate to highly favourable attitude. The average mean score (1.26) of
 148 people's attribute indicates a good impact of watershed on the livelihood of the people of
 149 Cooch Behar district. Attitude towards watershed was also studied by Manjula and Belli
 150 (1994) and the results are similar with the present study.

151 [Table-4 is about here]

152 Table 4 shows that adoptions of crop production technology, adoption of watershed
 153 development technology, change in cropping area in dry season, cropping diversity,
 154 occupational diversity have positive and significant relationship with attitude toward
 155 watershed development project with correlation coefficient values of 0.288, 0.269, 0.249,
 156 0.291 and 0.320 respectively which is significant at 5% to 10 % level of significance. So, a
 157 positive attitude towards watershed development project enhances increased level of crop
 158 production and watershed technology which also positively change crop and livelihood
 159 diversity of the area. The findings are in line with the studies of Jain (2008); and Palanisami
 160 & Suresh Kumar (2009).

161 .

162 CONCLUSION

163 Watershed Development can open up new opportunities for households to both
 164 intensify and extensify production through increasing the frequency of cultivation, adoption
 165 of new technologies, and expansion of cultivable areas. It tends to generate increased
 166 demands for labour and generates employment opportunities for households – often poor and
 167 the landless. From the study it was concluded that the farmers of the watershed area had
 168 developed a positive attitude towards the project. So, it is suggested that with the introduction

169 of watershed project, government should take initiative to improve these personal characters
170 among the farmers to reap the highest benefit from the scheme.

171

172 REFERENCES

173 Edwards A. L. 1957. Techniques of Attitude Scale Construction, Appleton century Crafts,
174 Inc., New York.

175 Fishbein M. and I. Ajzen, 1975. Beliefs, attitude, Intention and behaviors: An introduction to
176 theory and research. Reading, MA: Addison-Wesley.

177 Ghosh S. Sahoo, N. Verma, H.N. RavenderSingh and Panda, D.K. 2004. Participatory Water
178 Management for Sustainable Development in Coastal Belt of Orissa. Journal of Rural
179 Development, Vol: 23, No:2, Pp.217-229.

180 Jain,A.K. 2008 Impact of Organizational Instruments on livestock Activities in Watershed
181 Developments Project. Journal of Rural Development, Vol.27, No.3, pp.401-410.

182 Likert, R. 1932. A technique for the measurement of attitude. Archives of Psychology edited
183 by R. S. Woodworth. No. 140. New York

184 Lise Wietze, 2000. Factors influencing peoples' participation in forest management in India.
185 Ecological economic, 34(3): 379-392.

186 Manjula N. and Belli R B. 1994. Attitude of Farm Women Towards Watershed Management
187 Programme. *Maharashtra Journal of Extension Education*. **13**: 227-230.

- 188 Molden D. 2007. Water for Food, Water for Life: A Comprehensive Assessment of Water
189 Management in Agriculture. Molden D (ed). International Water Management Institute
190 IWMI. Earthscan, London, UK; Colombo, Sri Lanka.
- 191 Palanisami K., Devarajan S., Chellamuthu M. and Suresh Kumar D. 2002. Mid-term
192 Evaluation of IWDP Watersheds in Pongalur Block of Coimbatore District, Technical
193 Report, Tamil Nadu Agricultural University,
- 194 Palanisamia K and Suresh Kumar D. 2009. Impacts of Watershed Development Programmes:
195 Experiences and Evidences from Tamil Nadu. *Agricultural Economics Research*
196 *Review*. **22**:387-396.
- 197 Rishi P. 2003. Joint forest management in India: An attitudinal analysis of stakeholders,
198 Resources, Conservation and Recycling, 51(2). August, 2007, pp: 345-354.
- 199 Sisay, Mulugeta 2015. “Attitude towards watershed management programs and level of
200 participation: Liaison analysis in southern Ethiopia”, *International Journal of Current*
201 *Research*. 7 (10):.20984-20992
- 202 Stephen J. 1990. Attitude and the prediction of behavior: A meta-analysis. Paper presented at
203 the annual convention of the American psychological Association (98, Boston, MA,
204 August 10-14, 1990) Reports-Research/Technical (143).

205

206

207

208

Table-1: Socio-economic characteristics of the beneficiary of watershed project

Expressed in percentage (N=60)

Age of respondents ¹	Upto 30yr	31yr to 50yr	>50yr	Mean	SD
	13.33	70	16.67	42.12	9.22
Education of respondents ²	Upto 5yr	6yr to 12yr	>12yr	Mean	SD
	48.33	46.67	5	6.07	4.12
Outside exposure ³	Upto score 4	5 to 8	>8	Mean	SD
	3.33	30	66.67	9.25	2.19
Personal media exposure ⁴	Uptoscore 4	5 to 8	>8	Mean	SD
	21.67	35	43.33	7.23	2.88
Mass media exposure ⁵	Upto score 4	5 to 8	>8	Mean	SD
	95	5	0	1.45	1.71
Land ownership ⁶	Upto 4ac	>4ac to 10ac	>10ac	Mean	SD
	96.67	3.33	0	1.52	0.98
Occupational diversity ⁷	Only 1	Only 2	>2	Mean	SD
	1.70	91.70	6.70	2.05	0.29
Organisational participation ⁸	No	Only 1	>1	Mean	SD
	56.67	41.67	1.67	0.45	0.53
Scale of measurement: ¹ years in nearest integer; ² year of formal education; ³ number of visits to outer important places in specified period; ⁴ number of interaction with extension agent in specified period; ⁵ extent of usage of mass media channels in specified period; ⁶ amount of land possession in ac; ⁷ no. of occupations found in the family; ⁸ membership of number of grass-root organisations					

Table-2: Distribution of respondents according to attitude towards watershed development programme

Attitudinal class	Frequency	Percentage
Less favourable (upto Mean score 1.07)	8	13.33
Moderately favourable (Mean score 1.08 to 1.50)	47	78.34
Highly favourable (Mean score > 1.50)	5	8.33

220

Table-3: Attitude of respondents towards the watershed development project

Attitude statements	Strongly Agree	Agree	Undefined	Disagree	Strongly Disagree	Mean Score	Rank
Watershed Development Project (WUA) is a boon to farmers in watershed area (+)	31 (51.67)	29 (48.33)	0 (0.00)	0 (0.00)	0 (0.00)	1.52	III
WUA helps to increase income both from agriculture and non-agriculture activities in the area (+)	14 (23.33)	46 (76.67)	0 (0.00)	0 (0.00)	0 (0.00)	1.23	VII
Cost sharing with beneficiaries by watershed project ensures respect and responsibility to the farmers participating in watershed development (+)	14 (23.33)	36 (60.00)	10 (16.67)	0 (0.00)	0 (0.00)	1.07	XIII
Management of resources can be effectively done through community based organizations in WUA (+)	8 (13.33)	50 (83.33)	2 (3.33)	0 (0.00)	0 (0.00)	1.10	XI
Trainings provided by WUA are monotonous and not practical (-)	0 (0.00)	0 (0.00)	1 (1.67)	50 (83.33)	9 (15.00)	-1.13	IX
WUA helps small farmers, marginal farmers and even the landless to take up viable income generation activities (+)	22 (36.67)	38 (63.33)	0 (0.00)	0 (0.00)	0 (0.00)	1.37	V
WUA improved the livelihood of only the big farmers (-)	0 (0.00)	0 (0.00)	1 (1.67)	43 (71.67)	16 (26.67)	-1.25	VI
WUA do not ensure efficient mobilization of people to participate in watershed activities (-)	0 (0.00)	0 (0.00)	2 (3.33)	42 (70.00)	16 (26.67)	-1.23	VII
Group approach is an appropriate method to involve every farmer in watershed	30 (50.00)	29 (48.33)	1 (1.67)	0 (0.00)	0	1.48	IV
Effective accountability and transparency is not ensured in conducting the watershed activities through participatory approach	0 (0.00)	0 (0.00)	2 (3.33)	50 (83.33)	8 (13.33)	-1.10	X
WUA gives adequate concern to social and environmental issues for sustainable development of farmers in watershed area	7 (11.67)	53 (88.33)	0 (0.00)	0 (0.00)	0 (0.00)	1.12	XII
Favouritism is shown while availing credit to the members of different groups (-)	0 (0.00)	0 (0.00)	9 (15.00)	49 (81.67)	2 (3.33)	-0.88	XIV
If there was no watershed, production of livestock and crops would drastically reduced (+)	33 (55.00)	27 (45.00)	0 (0.00)	0 (0.00)	0 (0.00)	1.55	II
If there was no watershed conflict over water use would be more (+)	39 (65.00)	21 (35.00)	0 (0.00)	0 (0.00)	0 (0.00)	1.65	I
Average score (considering negative score for negative statement as favourable)						1.26	

221

Figures in the parentheses indicate percentage

222

A negative mean score for a negative statement indicates favourable attitude

223

224 Table-4: Correlation between impact variables and attitude towards watershed
225 development project

Sl. No	Impact variables	Correlation with attitude (r-value)
1.	Adoption of crop production technology	0.288 [*]
2.	Adoption of watershed development technology	0.269 [*]
3.	Change in cropped area in dry season	0.249 ^{\$}
4.	Change in Cropping Intensity	0.071 ^{NS}
5.	Change in crop diversity	0.291 [*]
6.	Change in occupation diversity	0.320 [*]

226 ^{*}significant at 5%level; ^{\$}significant at 10%level; ^{NS}not significant

227