

Role of joint forest management and eco development committees in the bio-diversity conservation of jaldapara national park in alipurduar district of West Bengal

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ABSTRACT: *Jaldapara National Park has dense forest mainly of grassland type and is also immensely rich in bio-diversity. The forest is the home of varieties of carnivores, herbivores, avian, reptiles etc. The much of the boundary area of the forested tracts are habitats of man. The Government has taken some initiatives to conserve the bio-diversity in the area by several way. The biodiversity of the area has faced rapid depletion due to poaching, conflict, destruction of green cover, encroachment in the forest area etc. The Joint Forest Management has a new initiative to conserve the rich diversity with the help of Eco development committees. Several activities of Joint Forest Management are also form to give rise sustainable management of wildlife animals in the forest area. This research endeavor is an attempt to find out the nature, several proposals and projects in the conservation strategies related to biodiversity depletion in the Jaldapara National Park of Alipurduar district.*

Key Words: *Joint Forest Management, Eco development committees, bio-diversity, poaching, conservation strategies*

1. INTRODUCTION

The Jaldapara National Park is very much famous for rich Bio-diversity. The forest area is about 216.51sq.km. The forest is also famous for one horned Rhinoceros, Captive Elephant, Leopard, Hog Deer etc. The forest area is mainly the savannah type with tall elephant grass. In the area, transformation of forest land, increasing of population across the area, Human Wildlife Conflict, poaching, flood condition etc. hampered the sustaining of forest resources. Decreasing of unsustainable use of forest products is going to increase the event of Conflicts across the forest area. According to the *World Conservation Union*, Human Wildlife Conflict (HWC) occurs when wildlife's requirements overlap with those of human populations, creating costs to residents and wild animals. But now the situation is going to change by different activities that are conducting by the forest department. Such of these activities, like as Joint Forest Management (JFM), Eco-Development Committees (EDC), Special Task Force, Lady Task Force, Night Patrolling, Elephant back Patrolling etc. are important.

The initiative of forest department is to conserve and manage the forest resource with sustainable use. The effective fact is to involvement the local communities under forest department by linking their livelihoods and substances. It can lead to harness the socio-economic potentiality of the people to generate the environmental services. The Joint Forest Management (JFM) is organized under the recognition of National Forest policy by June 1st 1990 for the protection and management of forest. In 1996, "Eco Development Committees (EDC) were constituted to co-operate of the fringe people to protecting and development of Wildlife Protected areas" (WBSFR, 2014-2015). Joint Forest Management (JFM) is an approach and program initiated on 1988 in the context of the National Forest Policy wherein state forest departments support local forest dwelling and forest fringe communities to protect and manage forests and share the costs and benefits from the forests with them. Mainly the Communities organize themselves into a JFM Committee to protect and manage nearby forests, guided by locally bodies prepared by laws and micro plans. The Government of West Bengal has succeeded on behalf of the JFM as they engaging with local communities and promised them both short term alternative income and a long term share of forest products with sustainable using.

2. STUDY AREA

The location of study area is the Jaldapara national park which is situated at the foothills of the Eastern Himalaya in northern West Bengal in Alipurduar District of Indian State of West Bengal. The Jaldapara National Park lies in the district of Alipurduar, West Bengal. The latitudinal and longitudinal extent is 25°58' to 27° 45' North latitude and 89° 08' to 89° 55' East longitude(figure-1). The forest is lying in 7B Bio-

geographic zone Jalpaiguri District was established in 1869 in British India. The Division of Jalpaiguri District took place and thus eastern part of the District is named as Alipurduar on 25 June 2014. The Sanctuary is located in the floodplains of the river Torsa and other small rivers, which have created large tracts of grasslands sustaining a large population of one horned Rhinos. The study area is demarcated in the north by the international borders with Bhutan and Totopara Village and State border with Assam in the east and District borders with Jalpaiguri in the west, Darjeeling hills in the north- west,Cooch Behar District on the south.

3. METHODOLOGY AND DATABASE

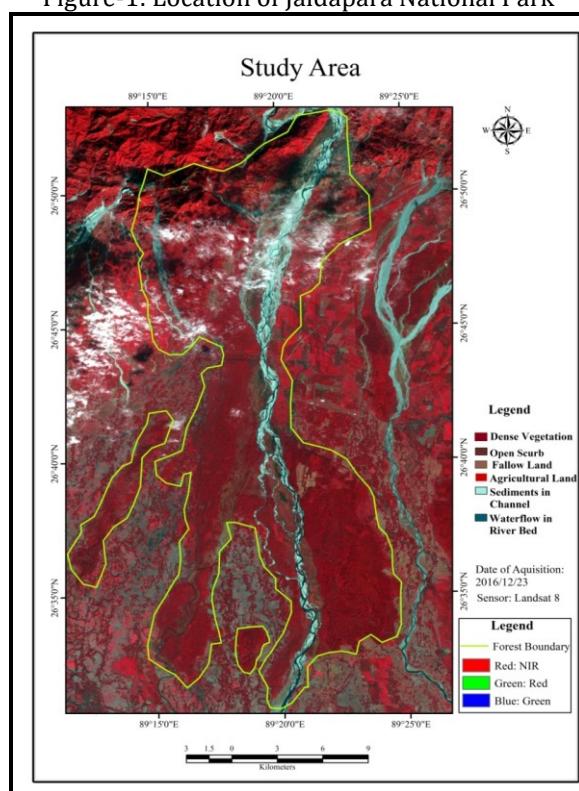
The methodology has followed a number of stages. Secondary data is mainly used for the preparation of this paper. State Forest Report, District Census Handbook are mainly consulted to gather the data. The Forest related Data has been collected from Koch Bihar Forest Division Office. Different types of Mapping Software have been used. Google Earth Images have helped to understand the co-ordinate extension of the area. Cartograms have been used to represent both the primary and secondary data. Different journal, books, papers are also referred. All the data are tabulated, analyzed through this paper.

4. OBJECTIVES

The aim of the present paper is under following heads-

- 4.1 To identify the activities of the JFM and EDC to protect and conserve the forest resources in Jaldapara area?
- 4.2 To assess the Rules, Regulation and laws of JFM and EDC?
- 4.3 To know present status of JFM and EDC in Jaldapara National Park?

Figure-1: Location of Jaldapara National Park



Source- LISS-III

5. JOINT FOREST MANAGEMENT

As per the provisions of National Forest Policy 1988, the Government of India, vide letter NO.6.21/89-PP dated 1st June, 1990, outlined and conveyed to State Governments a framework for creating massive people's movement through involvement of village committees for the protection, regeneration and development of degraded forest lands. *"Joint Forest Management (JFM) is an approach and program initiated in the context of the National Forest Policy of 1988 wherein state forest departments support local forest dwelling and forest fringe communities to protect and manage forests and share the costs and benefits from the forests with them"* (Joint Forest Management: A Handbook by Ministry of Environment and Forest).

The members of JFM are owners (Government) and the local people (Communities) only. The government is always trying to manage the use and manage of the forest based resources (products) with sustainable way. The government was to find out such a program which are actually control and manage the forest based products as well as protecting the wild animals. Though this management is helps to strong the fringe people those who are finds their way to share the cost of benefits in equally.

The primary objective of the JFM programme continues to be rehabilitation of degraded forestlands with peoples organization(Village Forest Communities-VFCs), in the course of evolution, approaches like village resource development, micro watershed development have got integrated into JFM as most state Governments are attempting to improve the socio-economic status of forest dependent communities in order to reduce pressure on forests(Majhi.B,2016).The villagers are now more concern to utilizing the forest based products to enhance their daily livelihood. In the past days, they were not much more concern about it but when it is going to a degraded and disintegrated around the forest areas, it would came to as control and manage by a suitable, usable and funding programme. Recognition in the National Forest Policy of 1988 that communities are central to forest protection and management led to the JFM Circular of June 1st 1990, and the subsequent 2000 and 2002 Guidelines, which provided the framework for state level rules, resolutions, and guidelines for JFM (Joint Forest Management: A Handbook by Ministry of Environment and Forest).When the Forest Conservation Act(1980) suggested for forest land diversion, the National Forest Policy(1988) given an account that the communities are integral to forest protection and management and also given the subsistence uses of forest lands for the local communities. It is estimated that nearly 200,000 villages are found around the forests (Forest Survey of India,1999). About 32 villages around the Protected Area of Jaldapara and there is a population of about 150000 (Management plan: 2006-2017).Although two villages are present within the sanctuary (table-1).

Table-1: villages are present inside the sanctuary area

SI No.	Villages	Location	Ranges
1.	Ballaguri	Titi-4	Lankapara
2.	Salkumar	Salkumar-3& 4	Jaldapara East

Source: Management plan: 2006-2017

5.1 Background of Joint Forest Management in India:

During the ancient times, people were engaged in local use and protection of forests. The example like, as sacred groves, which are mainly indigenous people protecting forests for a variety of ecosystem services. Many communities have historically protected local forests. After the start of reservation of forest lands by colonial Government, Indian Forest Act of 1927 recognized the logic and for local control and management of forests in the form of a provision for Village Forests in Section 28(Joint Forest Management: A Handbook by Ministry of Environment and Forest). This gave impetus to the participation of stakeholders in the management of degraded forests situated in the vicinity of villages. The joint forest management programme in the country is structured on the broad framework provided by the guidelines issued by the Ministry. So far, during the last ten years, 27 State Governments have adopted resolutions for implementing the JFM programme in their respective states. As on 15.8.2001, 14254845.95 ha of forests lands are being managed under JFM programme through 62890 committees.The demand is formulated by the communities of Uttarakhand in 1931 on which it is noticed that the common lands as local village forest those are managed by a committee of villagers. After then the State Government has granted the proposal for their communities development. After the successful experience of Arbari hills in Midnapore district of West Bengal in where local people formed a forest protection committees to conserve the forest resources.

The Joint Forest Management (JFM) was initiated accidentally by an innovative Divisional Forest Officer of Midnapore District at West Bengal, in 1972.The name of the officer was A.K.Banerjee by which the innovative and effective programme was formed(Majhi.B,2016).So,West Bengal is called the Pioneer state in India in initiating the Joint Forest Management (JFM).First of all, Banerjee was trying to develop the grazing areas of villages by reforestation in response to the people could get the share of the timber harvest. Then, it was going to start for benefit of the Forest Department and of course to that community. Banerjee also launched a 'Socio-Economic Project' in the same Arbari Block, in where eleven villages engaged in protecting of Sal trees and in return subsistence non-timber forest produce (NTFP), employment generation (Majhi.B,2016).This was followed by the adoption of the Government's decision in 1989 to share 25% of usufructs and the net profit of the intermediate and final timber yield repetitively (WBSRF:2014 to 2015). With the initiating this programme, 618 families were early participated and rejuvenate 1,186 ha. of

degraded Sal forest by roping. Primarily, with the success of this movement of JFM, it was spread throughout the state, and by July 1990, 1611 Forest Protection Committees had been formed, protecting 1195,000 ha. of forest lands in the southwest districts of West Bengal: Bankura, Midnapore, and Purulia had made 47% of the total Forest land (Malhotra and Deb). Though the JFMC (Joint Forest Management Committee) is now well-developing programme around India, its value is increasing day by day with self-help group projects. It is being formed in different parts of the countryside but laws and principles and aims are similar.

5.2 Important development programmes of JFM in West Bengal:

The forest conservation method and protect the forests from different abuse activities is important for the forest resources. The formation and subsequent success of JFM led to rejuvenating the degraded forests and bringing economic upliftment of fringe people through series of measure including implementation of people-oriented programmes. The factors (WBSRF:2014 to 2015) which are considered important for the success of JFM in the West Bengal state are:

1. Realization of the natural resource managers regarding the failure of custodian system of management in continuing degraded of forests and their growing perception that only participation of stakeholders can bring in an otherwise bleak scenario.
2. Empowerment of the local people by the inclusion of Panchayati Raj institution.
3. Adoption of different micro-planning such as silvicultural and harvesting operation, management of degraded areas etc.
4. Community or Eco-development activities by infrastructural development, vocational training, management of land-use system and productivity, income generation, adequate employment in forestry and allied activities with sustainable way.
5. The department has sheared the usufructs with community participation that to carry forward the aim of JFM.
6. NGOs, leaders of JFMCs (Joint Forest Management Committee), secretary of the Panchayat to motivate and bring the awareness by a workshop, group meeting, awareness campaigns etc.

5.3 JFM activities in Jaldapara National Park:

The JFM programme in the country was reviewed by Government of India from time to time in consultation with State Governments, NGO's (Non-governmental organization) and other stakeholders in view of several emerging issues. The forest department of Jaldapara also led to development of different integration activities such as Panchayet and Rural Development, Agriculture, Irrigation, Animal Resource Development, Cottage and Small Industries etc. In order to further strengthen the programme, the State Governments may take action on the following suggested strategies in Jaldapara area.

A) Legal backup to the JFM committees:

The forest Department of West Bengal has been supported through a various way of the legal action of the JFMC (Joint Forest Management Committee). The JFMCs are working as together as consciously. There are having 12 blocks and 45 compartments in Jaldapara National Park. After the declaration of the Sanctuary to National Park in the year of 2012, the supportive measure and protection were becoming important to conserve this rich diversity with substantially. The border area of the park is merging to Bhutan in the North, Assam in the east-both these region is prone to the poacher. Though, the incidents of poaching are reduced from 2010 by strong departmental activities with powerful JFMCs and EDCs (Eco-Development Committee)

B) Participation of women in the JFM programme:

The participation of Woman into the JFM is likely to be increasing day by day following to the male. Though the participation of woman is higher in Medinipur, South 24 PGS, Purulia etc. (SFR,2014-15).Now, the people in the fringe areas coming together to participate the programme as for their up gradation of Socio-Economic condition as the livelihood. About 60 JFMCs (Joint Forest Management Committee) with 180 women are participated in Jaldapara Wildlife Sanctuary. Although the participation of Woman is increasing in the area.

C) Extension of JFM in good forest areas:

Out of total geographical area of the district, 28.37% area is the under-recorded forest. The JFMCs (Joint Forest Management Committee) has joined the extension of forest, climber cutting operation, Thinning in plantations or grasslands for a conversion period of about like, 70 years for forestry operation and 150 hectares in every year for cut-back operation of old fodder grass in the month of December-January(Management plan: 2006-2017).It is important to note that fodder plantation should always be raised only in the blank areas of the forest. The plantation of fodder grass are only in JP(Jaldapara)-2,3,4,5 compartments,Malangi-1,2, and 3,Torsa-1,2,3 CP(Chilapata)-1,2 compartments respectively (table- 2).

Table- 2: Fodder Grass Plantation in Forest Blanks

Compartment	Area of plantation(in hectares)
JP-2,3,4,5	25 hectares
Malangi-1,2,3 and CP-1,2	15 hectares
Torsa-1,2,3	20 hectares

Source: Management plan: 2006-2017

D) Preparation of microplan in JFM areas:

The JFMCs are participating different developmental work around the areas. The share of the cost is provided by the forest department to the people. They engaging sericulture, bee-keeping, pisciculture, weaving etc. through which they can earn some income to uplift their socio-economic condition. In the jaldapara, people are participating the forest guide, jeep safari driver, Interpretators, Tribal dancer, singer etc. There is having 20 jeep safaris with 40 people as Tourist Guide for the riding on elephant back riding or riding on the jeep safari in the Sanctuary.

E) Conflict resolution:

Conflict arises from a series of both direct and indirect negative interactions between humans and wildlife. Human-wildlife conflict (HWC) can be defined as "any interaction between humans and wildlife that results in negative impacts on human social, economic or cultural life, on the conservation of wildlife populations, or on the environment"(Das, Kalyan, 2013). Man-animal conflict occurs also in Jaldapara Sanctuary and in response to the Government provides the compensation to the injuring or death people. Sometimes it happens in the fringe areas of the forest, unauthorized entry of human into the sanctuary, inadequate training staff, and infrastructure of the sanctuary etc. behind the reasons of HWC (Human-wildlife conflict).But the Jaldapara Sanctuary has been formed the following action to control and reduce HWC (Human-wildlife conflict).Daily patrolling should be maintained, especially in fringe areas.

- Anti-Poaching camp has been formed with 11 permanent and 7 temporary camps in the sanctuary (SFR, 2014-15).
- About 50 trained elephant are working for patrolling with forest staff .There is also deployed in Watch Tower at night (SFR, 2014-15).
- Existing pathways should properly be used on vehicle patrolling as per scheduled
- Provision for Arms and Ammunitions.
- Night patrolling by foot / on elephant back / by cycle. Controlling gates and barriers with proper care.
- Lady task force for the illegal women collector.

F) Recognition of Self-initiated groups:

The objectives of the SHG (Self Help Group) were to open alternatives sources of income with sustainable basis (table-3). Most of the people were uneducated and they did not understand or know about the management of funds, knowledge on proper planning to sustaining their life etc. So, the SHGs were trying to overcome the problems relating to the fringe villagers. Different development officers e.g. rural development, Health, Agriculture etc. with the officers of NABARD (National Bank For Agriculture & Rural Development) DRDC (District Rural Development Cell) NGOs (Non-governmental organization) are strongly involved in the programme. In the following manner, the three sanctuaries covers major areas of the northern part of West Bengal where the Jaldapara has more number of Self-groups (table- 3) as comparing the Gorumara and Darjeeling Sanctuaries. Even the number of woman member (about 1350) in the SHG (Self Help Group) of Jaldapara is high.

Table- 3: Status of Forest Fringe SHGs

Division	Number of Self Help Group	Number of Members
Jaldapara Wildlife Sanctuary	116	1308
Darjeeling Wildlife Sanctuary	17	196
Gorumara Wildlife Sanctuary	13	150

Source: State Annual Forest Report 2014-2015

G) Monitoring and Evaluation:

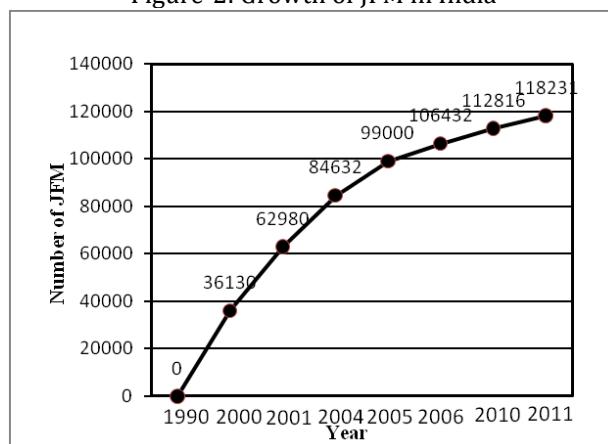
Monitoring is the important an aspect or management to control the particular activity. Due to increasing incidence day by day, it is obvious to require it for effective management. The Department of Forest in Jaldapara Sanctuary is arranged to monitor on specific things like Monitoring of Rhinoceros, Monitoring of

other animals, Monitoring of animal diseases, Monitoring of Rescue center and Monitoring of Habitat changes etc..

5.4 Status of JFMCs in India:

In India, about 21.02% is the forest land of the total geographical area. According to the report of MoEF (Ministry of Environment and Forest) that there has been the increase 3.13 mha of forest cover in the country since 1997 i.e. from 65.96Mha to 69.09 mha. People of the fringes are dependent upon the forest resources but even they may doing some time to sale the materials (ex.-Firewood) in the market. So, their dependence upon the forest with high population and this extensive activity with unsustainable way seriously that ultimately degraded the forests. There is also growing of JFM in the country by 2011 since 2000 (figure-2). According to MoEF, 2006 that around 40% of the poor of the country are living in these forest fringe villages. 'The holders of customary rights and concessions in forest areas should be motivated to identify themselves with the protection and development of forests from which they derive benefit' (National Forest Policy, 1988). About 1,18,213 JFMCs are present 28 states and UT of Andaman & Nicobar islands with 22.94 mha of forests undermanaging. About 14.5 million families including 4.6 million scheduled tribe families and scheduled caste families are involved in JFM (ICFRE, 2011).

Figure-2: Growth of JFM in India



Source:ICFRE,2011

The status of JFM in the states of India has shown with the area under JFM is shown in the following table-4. The percentage of area under JFM has significantly increasing. According to ICFRE,2011 (Indian Council of Forestry Research and Education)the area which is the highest percentage of area under JFM is Jharkhand and the area is 72.94 followed by the Bihar(71.42) Madhya Pradesh(70.62) and Punjab(58.32).But Haryana, Rajasthan, Andhra Pradesh, Uttarakhand, Karnataka, Uttar Pradesh etc. are the low amount of area under JFM. Madhya Pradesh has the highest number of JFMCs among all the states with 15,228 JFMCs (Joint Forest Management Committee) followed by Uttarakhand (12,089), Maharashtra(12,054) etc. by FSRI(2010).

Table- 4: Percentage of Forest area under JFM in the States of India

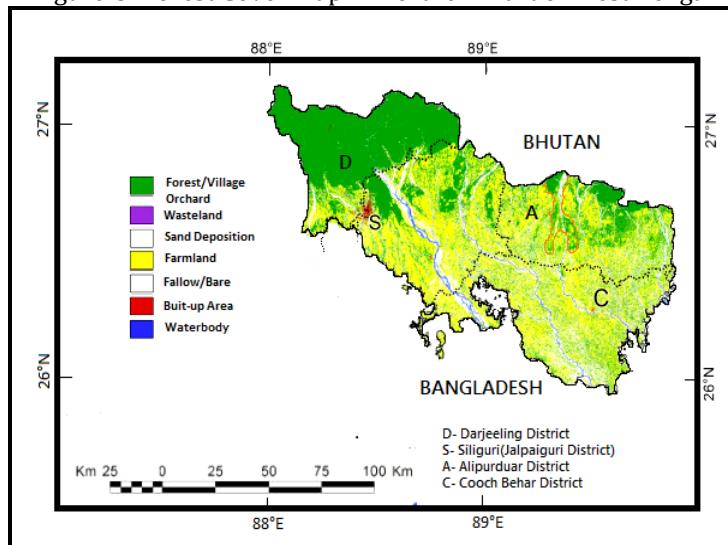
Sl.	State Name	Percentage (%) of total forest area under JFM	Sl.	State Name	Percentage (%) of total forest area under JFM
1.	Jharkhand	72.94	15.	Bihar	71.42
2.	Madhya Pradesh	70.62	16.	Kerala	18.41
3.	Punjab	58.32	17.	Uttarakhand	16.28
4.	Chattisgarh	55.53	18.	Sikkim	15.15
5.	West Bengal	54.39	19.	Uttar Pradesh	11.06
6.	Maharashtra	38.80	20.	Himachal Pradesh	5.54
7.	Tripura	38.31	21.	Jammu & Kashmir	1.91
8.	Tamilnadu	33.07	22.	Goa	8.17
9.	Haryana	26.42	23.	Manipur	9.57
10.	Rajasthan	26.31	24.	Nagaland	4.66
11.	Andhra Pradesh	23.80	25.	Mizoram	3.33
12.	Gujrat	21.88	26.	Assam	1.96
13.	Karnataka	21.11	27.	Arunachal pradesh	1.95
14.	Orissa	19.76	28.	Meghalaya	1.82

Source:ICFRE,2011

5.5 Status of JFMCs in West Bengal:

The management and protection of forest resources by formulating such way is unique in the today's world. With the co-operation of fringe people and the authority, people are now evolving to use the resources with a sustainable manner. The Government of West Bengal as an inventor of such programme that always tries to co-operate the people those who are living inside or along the forest area. Therefore, the number of JFMC (Joint Forest Management Committee) is increasing with the increase of people's awareness and participation on the programme. The land use pattern of West Bengal is quite large for the forest area i.e. of about 13.52% (ISFRE,2015). According to ICFRE (2011), 54.39% of total forest area is under JFM in West Bengal. Now there are having nine National Park and fifteen Wildlife Sanctuaries in West Bengal. Although five among them are situated in the Northern part of West Bengal (figure-3) except Sundarban National Park. The demarcation line in the Alipurduar District map is the Jaladapara National Park. It is interesting to know that the Jaladapara National Park (216.51 km²) is the second large National Park in West Bengal. In the southern portion of Jalapara forest area, there are having 11 revenue villages are located. The number population is growing in recent era in the fringe villages. The JFMCs has been shown in the Table-5, which reveals that Birbhum (198) has the highest number of JFMCs followed by Darjeeling (76), Baikunthapur (66) and Jalpaiguri (62).

Figure-3: Forest Cover Map in Northern Part of West Bengal



Source: LISS-III

The number of member in Birbhum (17221) is highest followed by Jalpaiguri Division (11302) whereas in Buxa Tiger Reserve (7996) the number of members is high compare to Baikunthapur (6323). Although, the Jaladapara Wild Sanctuary (4540) is fifth highest member of JFMCs in the following table no-5.

Table-5: JFMCs in West Bengal

Sl.	Division	Number of JFMC	Area Under Protected (ha.)	Number of Member (in Population)
1.	Buxa Tiger Reserve	50	34926.89	7996
2.	Cooch Behar	25	4102.9	3141
3.	Jalpaiguri	62	20148.16	11302
4.	Jaladapara Wild Sanctuary	25	7020.79	4540
5.	Darjeeling	76	14456.988	4418
6.	Birbhum	198	9008.23	17221
7.	Baikunthapur	66	14023.78	6323

Source: State Annual Forest Report 2014-2015

6. ECO DEVELOPMENT COMMITTEE (EDC)

The EDC concept came across when the co-operation of the fringe people in protecting and managing the forest resources was needed. The initiative that taken by the Government was launched at that time and a centrally sponsored scheme in 8th plan with Rs.20.20 corers. The EDC developmental work is not just one time to realizing the sustainable using of resources. It is an ongoing process in which people in the area

getting opportunities to participate in the programme and sustain their livelihood. The best-known programme is JFM that already Government was launched but with the initiation of the EDC was came across in 1996. The objective is to promote conservation, but this, in turn, should mean better lives for local people and a more satisfying occupation for forester at all levels (Management plan: 2006-2017). The following steps are to Planning the Process of EDCs for generation and development of Micro plans by WBSFR(2014-2015):

- Reconnaissance and Familiarization.
- Socio-economic and Resource Survey.
- Identification of Impact Zone.
- Prioritisation and Selection of Target Villages.
- Writing Preliminary Eco Development Plan.
- Discussion over Preliminary Plan-Participatory Planning.
- Writing Eco Development Micro plans.
- Submission and Approval of Micro plans.
- Consolidation of Micro plans into Division or District local Micro plans.

6.1 Eco Development Activities:

According to Annual Forest Report of West Bengal (2014-2015), there is different development progress in fringe areas which is listed in the following manner:

1. Drinking water facilities for EDC villagers
2. Cooking gas distribution to EDC members
3. Pump installation in fringe villages
4. Supply of paddy thrasher machines
5. Organizing training unit centre
6. Supply of horticulture seeds to villagers
7. Renovation of village schools
8. Organizing Medical camp
9. Repair/reconstruction of damaged forest village huts
10. Construction of community halls
11. Development of Eco-Centre
12. Construction of sanitary latrine etc.

6.2 Duties of the EDC by West Bengal Forest Department (Dated 26th June, 1996):

- A. (i) To ensure protection of the forest and wildlife inside the forest and those straying outside, through members of the EDC jointly with Forest Department Staff;
- (ii) To inform forest personnel about any person or persons attempting trespass and willfully or maliciously damaging the forest(s) and/or wildlife therein;
- (iii) To prevent such trespass, encroachment, grazing, fire, poaching, theft or damage jointly with Forest Department staff;
- B. (i) To assist Forest Department staff in smooth and timely execution of all Forestry works taken up in area protected by the EDC;
- (ii) To involve every member of the EDC in the matter of protection of forest and wildlife as well as other duties assigned to the EDC;
- (iii) To assist the concerned forest officials and the Panchayet in the matter of selecting/engaging laborers required for forestry works.
- C. (i) To ensure implementation of eco-development programme so that the members of the EDC get maximum benefit;
- (ii) To ensure that eco-development funds provided by Govt. and usufructory benefits by Government are not in any way misused by any of the member(s) & Forest/Plantation sites are kept free from any encroachment whatsoever.
- D. (i) To prevent any action in contravention of provision of the Indian Forest Act, 1927 and the Wildlife (Protection) Act, 1972 as amended from time to time;
- (ii) To report about activities of a particular member which are found prejudicial and detrimental to the interest of forest/wildlife, to the concerned Beat Officer/Range Officer, which may result in cancellation of membership of the erring member.
- (iii) To assist the forest officials to take action under Indian Forest Act, 1927, the Wildlife (Protection) Act, 1972 and the Rules made there under, against the offenders, including any erring members of the EDC.

6.3 BENEFITS:

6.3.1 From Wildlife Protected Area:

(i) The collection or removal of forest products of a protected zone(s) should necessary to improve and management of wildlife; although the permission may grant by Chief Wildlife Warden. Members of the EDC shall be eligible for getting in equal proportion such forest products free of royalty but on payment of collection cost, when collected by Government agency, as follows: (a) 25% share of poles (up to 60 cm b.h.g. for teak and 90 cm b.h.g. for other species) obtained from drift and overwood removal; (b) 100% share of firewood (obtained from drift and overwood removal), thatch/amlisho/other grass (obtained from firelines and fire prone zones), specified non-edible fruits, pods, flowers, seeds, decorative fungus and leaves.

(ii) Each member of the EDC will have to protect and manage the protected area to the satisfaction of the forest officer for a minimum period of one year to become eligible for 25% share of Government receipts on account of tourist and transport entry and photography and such other related activities in the protected area.

(iii) Usufruct sharing, as mentioned above, will be subject to restrictions imposed from time to time on wildlife management and other related consideration.

6.3.2 From Non-Forest Area:

(i) The Production that obtained from plantations raised on public lands as village eco-development activity will be shared as follows : (a) 100% share of intercrop to identified members of EDC who raise the crop(s); (b) 100% share of thinning produce & firewood obtained from final harvest to each member of EDC in equal proportion; (c) The forest officer shall deduct the cost of re-afforestation from the sale value of final harvest 380 of timber and poles for deposit in the EDC fund. Balance amount will be distributed to each member of the EDC in equal proportion.

(ii) Each member of the EDC will be enjoying for Goods and services generated by community benefits-oriented village eco-development activities that also be enjoyed by each member of the EDC in equal proportion. Those activities generated by individuals benefit oriented eco-development activities will be enjoyed by the individual concerned.

6.4 Status of EDCs in North Bengal:

The northern portion of West Bengal has the maximum number of forest areas. Most of the area in West Bengal are (3772 sq.km) protected area with very dense forest cover. About 4300 Forest Protection Committees and 115 Eco-Development Committees are present in the state of West Bengal. It comprising 510000 members who provide protection to about 6560 sq.km of forests that is about 54% of the total forest area of the state. Among 115 Eco-Development Committees, more than 100 committees comprising 69,860.7ha. are present in the Northern part of West Bengal.

The number of EDCs in Jaldapara forest area is 33(as on 2015) which is amongst high in the West Bengal. The number of People is involving also high in Jaldapara area. Although the Buxa Tiger Reserve has very much area under protected (table-6).The number of female participation is in the Gorumara Sanctuary.The participation of both male and female making a strong programme in these areas.Different development activities and management with sustainable tools have been using to make an excellent social reliability between the authority and forest fringe people. Although, if there is increasing in a number of committees, would be possible to serve the protection of forest resources. The Eco-guides who are the youth generations of EDCs and those are to trained up to act as guides in the conducted tours. About 40 people are working as Eco-Guides in Jaldapara North Range and Madarihat Range. They are getting some percentage of shares for the particular tours.

Table-6: Status of EDCs in North Bengal

Division	Number of EDC	Area Under Protected (ha.)	Number of Member (in Population)
Gorumara Wildlife Sanctuary	18	13396.56	5016
Buxa Tiger Reserve	14	23534.97	1627
Jaldapara Wild Sanctuary	33	15611.07	7789

Source: State Annual Forest Report 2014-2015

6.5 Role of EDC to Conservation of Resources in Jaldapara:

There is excellent wilderness, beautiful but dangerous and risk at every footstep in the Sanctuary. The forest-based products and wild animals are going to hamper by different illegal activities. The Man-Animal

Conflict, Poaching, Illicit felling of trees, Non-co-operation of the authority etc. are responsible for destroying the stability of diversity. Although, the Ministry of Environment, Forest and Climate change (MoEF) has to provide some legislative consideration to protect and manage the forests as subject to environmental perspectives. With the initiation of JFMCs, EDC has formulated to gives rise to execute charge for monitoring, evaluation, and cooperation for the management of forests. The members of EDC and volunteers may occasionally work as patrolling at the forest fringes to reduce the man-animal conflict, poaching and illegal trading of forest wood etc. People strongly communicate with the forest authority to protection for uneven activities inside and outside the forests. They get a significant share in the returns from timber both for self-use, as well as for reinvestment in the forest. The northern portion of Jaldapara National Park is merged with the boundary of Bhutan that prone to poaching of wild animals. Many poaching activities were given the evidence of such kind of activities in the past few years. The lankapara, Tithi, Dalsingapara etc. are lying with this region. Before some years, there was active in poaching problems. But the incidence of poaching is reducing in the recent years. The strong networking, Night patrolling, elephant back patrolling, protection of forest fringes etc help to reduce the incidence and to conserve the resources substantially.

7. FINDINGS

The paper is to analyze the way in which the member of JFMCs and EDCs has been working and their particular duties with the share of income. The different tables that are actually listed in the paper, are very important to know the current condition and activities of these kinds of programmes. The paper related data, which are using in the paper, is collected from different books, journals, and management plan of Jaldapara etc. The data collection was possibly hard to collection because of some laws, regulation and mostly the matter of protection including it. But it is not possible to gather more information on Jaldapara National Park as a strong restriction to gather the information. The Management plan of Jaldapara (2006-2017) is helped to take away various conservation strategies and analyzing data. The SHG, JFM, and EDC are actively working in the Jaldapara Sanctuary. The number of Self Help Group is more in the area than others national park in the northern part of West Bengal. The participation of Woman in JFMCs and EDCs is increasing in the recent years significantly. Different conservation methods or measures have been listed in the paper also.

8. CONCLUSION

The new approaches and developmental strategy have come up with changing the traditional perception into new ways of working through Joint Forest Management and Eco-Development. The sharing of the cost is resource based on equity among all members. The formulations of these kinds of groups have to give an opportunity to regenerate of the degraded areas and sustaining their livelihoods with depending upon it. JFM should be pursued mainly in the densely forested areas and with a tribal zone. The organizational co-operation for the making of interest to doing such activities for the people and their tremendous effort has led down to increasing plant diversity and biomass production in recent years. The management of degraded areas with proper pre-planning and post-planning has given to success over during the last ten years. The large degraded areas may become transpired into economic and ecological needs of local communities. In root management of the many communities are acquiring the forested lands as forest managers. The forest lands should also be priority as high potential growth i.e. actually for rubber plantation, coppice, local various valuable species as subsistence and marketable products. The jaldapara forest area is located in the foothill of Himalaya just the southern part of Bhutan. In and around of the area, there are 32 villages with 14 tea garden. The participation of people in the area is increasing recent years for their awareness, for the economic condition, for the way of life, for their transformation into new world. People should help in fire fighting and its prevention by minimizing the chance of spread from their locality in Jaldapara. Local NGOs can be helpful regarding the awareness generation as the workshop in Jaldapara. People are now participating in the tourism activities such as Eco-Guides, Tribal Dancer, Mahut, Driving of Jeep Safaris etc. Sometimes the authority can be employed to the EDC members to participate as the guard along the fringe areas. Various plantation fields across the fringe areas are managed by the forest department of Jaldapara at a particular fund allotment but as mention that no any fodder plantation do not raise in fringe areas. This grass can only rise on private and community lands those are not situated in the fringe areas. These areas are also be managed by the participation of Department and Eco-Development Committees. In jaldapara, about 180 hectares may be available for such plantation. People are co-operate to prevent illicit gazing of cattle in the Sanctuary. The communities are involving to reforestation in the areas

of Sissamara and Dhaidhaighat Beat, Torsa Block, Joygaon and Dalsingpara etc .these areas must be brought under vegetation cover rather any plantation.

It is revealed that most micro planes are prepared without the knowledge of the village communities thus not to incorporate with them. The government should use the interest among the people to develop their own land. The jaldapara area has Wilderness zone (64.77 sq.km) Habitat improvement(146.62 sq.km) zone and Eco-tourism Zone (about 25 sq.km), These zones may be deployed monitoring ,research, habitat manipulation for hospitable habitat of Rhino and others wildlife and other is for tourism activities in where tourists can be enjoyed riding, lodging etc. There is also the restriction on the grazing animals inside the forest. But it is required for sometimes rather for longer times. Although authority can prepare particular grazing fields whose those do not have any grazing fields. Also, firewood collection and man-animal conflict in Jaldapara major issues. But it is defined or prescribe at what stage people can extracting firewood and what mood and rate of extraction are sustainable and from where they can collect-it is not as explain in guidlines. Jaldapara should be managed agro-ecological zones for some extraction with particular parameter and managing by the department with community members. The government has to promote the adaptive forest management approach in different locations and judge by it with experience. There is a promote integrated village ecosystem in the JFMC or EDC programme and develop the harvest practices for the commercial and subsistence needs is required. It is concluded with that if the management and protection is well suit up, will be ultimately helped us as well as our Environment.

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