

Effect of Joint Forest Management Program on Community Forest Management in Odisha

Banikanta Mishra, Birendra Kumar Nayak

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*Professor of Finance, XIMB (Xavier Institute of Management – Bhubaneswar), Bhubaneswar 751013, Orissa, India (banikant@ximb.ac.in) and Professor of Mathematics, Utkal University, Vani Vihar, Bhubaneswar 751007, Orissa, India (bknatuu@yahoo.co.uk), respectively. The authors thank XIMB Research Associate Sagarika Mishra for her help in preparation of the questionnaire and analysis of the data, Sagarika Mishra, Sudhir Pattnaik, and Anita Mishra for accompanying the authors for the village-level surveys, Nadiya Chand Kanungo for helpful discussions, Brajabihari Mishra, Jitendra Patro, and Rajendra Patro for conducting the field surveys, and Brajabihari Mishra for conducting some village-level surveys.

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This paper analyzes the effect of the government's JFM (Joint Forest Management) program on community-forest-management (CFM) in three districts of Odisha: Dhenkanal and Anugul (industrial districts) and Nayagarh (non-industrial district). JFM is an initiative whereby both the state government and the local communities are supposed to jointly work towards protecting the forest in the community. This movement is said to be quite strong in Odisha, an agriculture-dependent-state with a huge tribal population. The process of and the attitude towards forest management in Odisha perhaps has undergone a significant change due to the industrialization in the recent two decades, which has, among other things, led to diversion of forest land towards mining and other industrial activities.

Key words: Community Forest Management, Joint Forest Management, industrialization, firewood, fuel need

In this article, we study the effect of JFM (Joint Forest Management) program on CFM (Community Forest Management) in three selected districts of Odisha: industrial districts of Dhenkanal and Anugul and non-industrial district of Nayagarh.

Traditionally, forests in Odisha have been classified into four categories. Reserved Class-A forests are considered absolute properties of the government and are controlled by strict regulations and penalties for violations. Reserved Class B forests are, however, partly "right burdened", which may be used to occasionally satisfy the emergency requirements of people. Protected (or Khesra) Forests are pretty much right-burdened that are allowed to satisfy annual bonafide needs of people, especially obtaining firewood, as well as small timbers for constructing and maintaining habitats and making agricultural implements. The fourth type, Village Forests, are to be maintained with the administrative and financial support of the government, but are to be deemed as absolute properties of villagers; these are, however, to be treated like reserved forests in the sense that they cannot be used regularly to satisfy needs of the villagers.

The state-level policies on forest management, which followed the National Forest Policy, 1988 and the subsequent 1990 JFM resolution, recognized the need to give the rights to local communities to protect forests in their areas (Extension Digest 1999). But, it also brought in the intervening role of the government, *supposedly* to work towards a sustainable forest management. Under JFM, villagers form a VSS (Vana Suraksha Samitee), the sine qua non of the concept. Usually, the local forester is appointed as the member-secretary of the VSS.

Odisha government has been quite irresponsible towards its responsibility of preserving its natural resources, including forests. As is reported, "if we look at forest area diverted for non-forest use, it went up from 789 hectares at the end of 1993-94 to 28,769

hectares as at the end of 2003-04, an average annual increase at the rate of 43%!" (Mishra 2010a); in fact, "according to figures released in early 2010 by the Ministry of Environment and Forests, Orissa has one of the highest rates of diversion of forest land" (*ibid*). "Besides, out of the total land of 79,339 hectares allotted for mining leases as on 31 December 2005, more than 50% is forest area" (*ibid*).

It is not just irresponsibility or callousness, but greed and power, which are at play. CSD, an organization fighting for the rights of tribals and OTFDs (other traditional forest dwellers) alleges that "authority and power of gram sabhas have been hijacked by the bureaucracy in determining and rejecting the forest right claims" (New Indian Express 2010). Pointing out that the government is playing with the forest rights of tribals in Niyamgiri (the site for the proposed Vedanta Alumina plant) and Jagatsinghpur (the site for the proposed Posco Steel plant), its national convener, Pradip Prabhu, further argues that the "VSSs should be immediately dissolved, as these have become irrelevant after FRA came into force in 2006" (*ibid*).

In fact, a recent news item (Patnaik 2010) quotes environmentalist Biswajit Mohanty, a member of the National Board of Wildlife, as claiming – referring to information obtained through RTI (Right to Information) Act - that "there has been willful suppression of vital information by the office of the principal chief conservator of forests (PCCF), Orissa", who failed to report to MOEF that JSPL (Jindal Steel and Power Limited) had been issued a show-cause for violation of Forest (Conservation) Act, 1980 (the FC Act). How important is this error of omission, only time would tell us.

But, that should not be surprising, given the strong "interest" Odisha's bureaucracy has in the state's forests. A report in *Dharitri*, edited by a prominent MP from the ruling-party, points out that more than 15% of the state's forests (which amounts to 9000 square kilometers) is under the illegal possession of the mafia and timber merchants, perhaps with the knowledge of the forest-department bigwigs (Dharitri 2010). Shockingly, the government neither has account of the forest land under forced possession nor any plans to free those of the illegal possession (*ibid*).

A lot of study on Odisha's JFM have been conducted (Panigrahi and Rao 1998, Singh 1995, Singh et al 2001a and 2001b, Sutar 2003, Ojha 2006). It is reported that, of all the people in India that live below poverty-line, almost 40% depend on forests partially or fully (Ojha 2006). It says that the first instance of JFM in Odisha dates back to 1936, the state's formation-year, in Sambalpur district. It also points out that Nayagarh, Mayurbhanj, Keonjhar, Deogarh, Angul, Dhenkanal, Sambalpur, Bolangir and Phulbani have been the districts where JFM has made a good headway (*ibid*). Research suggests that, in Odiha, "strong community based forest management system testify that communities can effectively manage local resources" (Singh 1995). have reported that "Though there is hardly any doubt about the strengths of indigenous wisdom in effectively managing local natural resources, its acceptance and recognition in the public law framework still leaves a lot to be desired" (Ojha 2006). "A simple demystified forest management plan where the locus of decision making remains in the local communities has to be evolved. The principles of conservation and benefit sharing

should be well defined in order to meet the criteria of sustainability and equity. Resource-raising is a key element of operationalising the forest management plan. The options and availability of internal resources as well as the dependence on external funds need to be carefully decided by CFM groups” (Ibid). “The identity and focus of CFM has been natural regeneration and assisted natural regeneration whereas the spur in JFM is plantation” (ibid).

“In mineral rich states like Orissa, the forest and mineral maps coincide. A development strategy according highest priority to mineral based industries coupled with a renewed international demand for minerals and mineral based products puts forests and forest based livelihoods on the backburner. This is being cited as the biggest threat to CFM” (Ojha 2006).

“In JFM, local communities are motivated to protect and conserve forests. Some years later, the same community realizes that the resource they toiled hard to regenerate is not going to be with them for sustenance and livelihood. The same piece of land is handed over for mineral extraction” (Ojha 2006).

JFM is also replete with other shortcomings. “The powers vested in the forest department like the ability to resolve disputes, disband a badly functioning committee, cancel membership, nominate NGOs for membership, provide for an unequal relationship between the FD and the VFC which further strengthens the need for a legal backing for the VFCs. Legal recognition is also becoming essential for the many self initiated committees which are increasingly getting replaced or pushed aside by State evolved and recognized VFCs. However, this issue needs in-depth examination” (TERI 2001).

“Substantial village/community funds have been generated by VFCs from voluntary contributions, money obtained in lieu of protection, membership fees, voluntary labour contributions, the sale of surplus forest produce and of timber harvests, fines generated through social fencing activities, revenue generated against the use of the committee’s forests, etc. However, norms for their creation, structure and utilisation need to be evolved to ensure transparency, accountability and efficiency of use in both village development and forest regeneration activities” (ibid).

JFM may also be ushering in more inequality. “The kind of tree species that are grown under the JFM areas will have a bearing on the unequal distribution of benefits among the participants, between poorer and richer sections of the community” (Behera 2003). A study on JFM (Kumar, 2002) shows that “due to silviculture practices for timber by the Forest Department in JFM areas with strong influence of large farmers in the communities, the poor, who are mostly dependent on NTFP, are deprived from their subsistence needs” (Behera 2003).

JFM’s failure to also bring farm-forestry into its ambit properly also has drawn flak. “The government also must not dilute its focus on farm forestry projects on private lands,

...as JFM and farm forestry programmes are complementary to each other (Balooni 2002).

One of the drawbacks of many policies pertaining to commons-management is perhaps their failure to take into account some serious truths about the livelihood preferences of people. “Users of common property resources – just like academics and NGO activists – do not easily enter into completely new areas of enterprise or activity; but find it easier to expand and modify their existing livelihood strategies to diversify and increase their income, build resilience and explore new opportunities” (McIntosh and Renard 2010) Odisha government, obsessed with industrialization of the wrong kind, is a glaring example of this ignominious failure. Ignoring the wisdom of the local people and their age-honored traditional practices is also another mistake. “Traditional systems of forest management have often been ignored or summarily dismissed as forest departments in most states are keen to implement more recent Joint Forest Management (JFM) schemes” (Gokhale 2004).

DATA

We employed field-investigators to collect household data based on a questionnaire provided by us (Appendix – I). We chose two different districts, Dhenkanal and Nayagarh. As per the classification of Odisha’s districts by Mishra (2010a), Dhenkanal is an industrial district and Nayagarh non-industrial. In each district, blocks, villages, and households were randomly chosen; data was collected from 260 households. We also went for village-level discussions to selected villages and spoke to villagers. That apart, village-level surveys were conducted in Anugul, which is an industrial district as per the classification by Mishra (ibid). Profile of some villages is given in Appendix – II.

ANALYSIS

Table-1 presents some summary statistics of the household surveys done in Dhenkanal and Nayagarh. As we see, wherever villages are far away from the forest, they have no CFM or JFM. Moreover, as seen from the mean monthly income, JFM villages have higher income. But, we can categorically say whether high-income villages are more prone to go for JFM or JFM leads to high income. That apart, so far as the average quantity of firewood used is concerned, there is not much difference between the two districts, except that villages where there is no CFM or JFM use a bit less. But, the data on the amount spend on firewood throws some interesting light. Villages with CFM that have not embraced JFM spend far less on obtaining firewood than the JFM villages. The data for “no CFM, no JFM” villages is still more interesting. For such villages, in industrial Dhenkanal, people spend a lot of money on obtaining firewood, but, in Nayagarh, it is less than even what the CFM villages spend.

Table-2 gives some very fascinating information about the extent of afforestation and deforestation (measured by growth of forest density) in the two districts. In non-

industrial Nayagarh, JFM villages do far better than JFM villages. But, in Dhenkanal, CFM villagers do much better than the JFM villages. Could it be that, then, in this industrial district, JFM is some kind of façade for passing on forest resources to the local industries? Village-level surveys in Anugul district would throw some light on that.

Table-3 gives some summary statistic for the Anugul survey. It shows that CFM villages are much closer to the forest than JFM villages are; this may be because, unlike that found in Dhenkanal and Nayagarh, villagers in this heavily-industrialized district are far more conscious of the need to protect forest and are “willing to walk those extra miles”. But, CFM villagers – who are much more dependent on forest than the JFM villages - use less firewood, but spend more on it; whether price drives the demand is hard to say. The data on afforestation and deforestation presented in Table-4 corroborates what we had seen in Dhenkanal. CFM villages have seen a 15% increase in the forest density, but JFM villages have seen almost no change. Not surprisingly, CFM villages have seen an increase of around Rs.200 in their average income per month due to afforestation, while JFM villages have overall lost around Rs.50 per month due to deforestation. So, as we have wondered above, is JFM indeed a façade?

OBSERVATIONS

In one village in Dhenkanal, villagers said that a forest-officer pushed them to create the VSS (Vana Suraksha Samiti). The local forester was appointed as the Member Secretary of the VSS. It started functioning according to JFM principles. VSS-members (villagers) took turn in guarding the forest round the clock. But, after a while, the VSS members realized that their personal safety was at a threat from the jungle mafia. In fact, often when they would catch a person stealing timber from the forest and hand him over to the authorities, the thief would get away within hours by bribing the officials. They also found that, in some occasions, people outside the village were given the work that should have been assigned to the villagers; but the job-card of the villagers was taken away by the officials and returned after recording a certain amount as payment to the job-card holders. Despite the fact that VSS constrained villagers' access to forest produce, they all preferred the participatory forest management, as they recognized its long-term value towards sustainability. But, after weighing the costs and benefits and suspecting that the forest they protect may one day be handed over or sold to a private company, they felt that JFM was no more worth it. Thus, the JFM in that village got dismantled. Thereafter, there has been huge degradation of the forest, and forest-theft has increased.

When we then visited another nearby village, their story was almost the opposite. There, despite continuous coaxing by the villagers, the forest department had not taken any initiative to start JFM. The villagers asserted that there has been no major theft or tree-felling during the preceding five to seven years. Villagers are not allowed to cut trees even for their own use. Yet, they lamented that many varieties of jungle food are no more available for the last ten years due to improper maintenance of forest as a whole in that region. When we asked them why they are so keen on JFM when a

nearby village has given up JFM due to its frustration with it, especially theft, they told that theft depends upon the type of trees in the jungle. They said that there would be thefts at night if there are teak trees, not for all types of trees. Moreover, they added that, even though they are guarding the forest, they feel very insecure about their rights on it, since they do not have official right or titles in the name of the village. They hoped that once JFM starts there, they would be given a clearly-demarcated part of the forest in the village's name. This subjugation to JFM due to the perceived power of the state is not a healthy sign. As some researchers, who look upon JFM as an "instrumentalist intervention for obtaining local cooperation in improving forest condition according to traditional Forest Department criteria" - , apprehend, "Instead of facilitating holistic forest-lands use and planning, which integrates sustainable livelihoods of forest-based communities, they are extending and consolidating state appropriation of limited remaining common lands" (Sarin *et al* 2003).

CONCLUSION

Chomsky (1991) expresses a concern that organizations that claim to be working towards betterment of agriculture in the world are following approaches that are hurting farmers quite badly: "the U.S. Aid program, the Ford Foundation, and others have sought to deal with the plight of the rural population by 'refining the largely discredited trickle-down technology and knowledge transfer process' ... and trusting in 'competition, private property, and the mechanism of the free market' - a system in which 'the big fish eats the small one', as one poor farmer observes". Therefore, Mishra (2010b) argues that, given the discredit won by IMF and World Bank, "one does get alarmed at such apprehensions". Since Ford Foundation has also been supporting organizations that are working on CFM in Odisha, this apprehension naturally extends to that arena too.

Overall, we found that results, through "appear" to be mixed, point in a clear direction. Villages not exposed to JFM are excited about getting into it, as they expect a clearly-demarcated forests that the village owns; funds to be received from the government is also an attraction. Those who have been with JFM for a while are frustrated with JFM, as they have seen the true characters of it (like thieves still getting away). They also apprehend that "joint" in JFM may later mean "government and corporations" or, perhaps, forcibly, "villages and corporations" (possibly under the guise of PPP).

While we wonder whether JFM is an attempt to take attention away from FRA (forests rights act), we surely feel that JFM is a strategic move by the government. Wherever CFM is there, it speaks of community leadership. Such leadership, whether or not anti-establishment, often has the potential to stand up to the establishment. Any such potential, to the establishment, possibly could pose a threat. Could it be that the establishment – the government – in order to blunt this potential future opposition, particularly when forest is under the predatory eyes of the corporate, is using JFM to co-opt such forces and soften the bitterness of the opposition? The participation by the government creates a lure for funds and "official" forest-ownership that the JFM promises. Isn't this strategy also a way of what Chomsky would have called "manufacturing consent" (Herman and Chomsky 1988)?

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Appendix – I

Questionnaire

Joint Forest Management and Community Forest Management

Name of Village/Block: _____

Panchayat: _____

District: _____

Gender: Male/Female

Age: _____

Profession: _____

Monthly Income: _____

1. Since when are you living here?

2. Which of the following do you use for cooking (*and other purposes: pl specify what*):
 - L P G
 - Kerosene
 - Firewood
 - Biogas
 - Cow Dung

If answer is Firewood, Biogas, or Cow dung

- I) Which place(s) do you get it from?

- II) How much quantity do you get/obtain per month?

- III) How much money do you spend per month on obtaining/acquiring it?

- IV) How much time (in hours) do you spend per month on obtaining/acquiring it?

- V) Do you at all rely on forest for the above? Did you rely on forest in the past?

3. How far is the **community-forest** from your house? *(If more than one, please talk about the one with which you are involved.)*
4. Since the time you are living here, has the forest area and the total number of trees *changed*? Y/N

If Y (yes), then

Has it increased or decreased and by what proportion (one half, one third, $\frac{1}{4}$, ... 1/10)?

Increased/decreased (*strikeout whichever is not applicable*)

a) If increased, then

i) Which types have been added now?

ii) Who is planting the new varieties (villagers or government)?

b) If decreased, then

i) Which types are missing now?

ii) Who is taking them away?

iii) Are thieves/mafia stealing or cutting away trees?

iv) Are rare varieties just getting lost because of climatic change?

v) Are you cutting trees for firewood?

vi) Are you cutting trees for making furniture?

vii) Is mining or industrial activity the cause for this?

viii) If answer to the above question (vii) is yes, then: Do you expect to get employment or any other (please specify) benefit from the mining/industrial activity?

5. What has been your major source of income till now?

- A) Depend only on Forest
- B) Depend only on Agriculture
- C) Depend only on Fishing, Livestock, etc.
- D) Depend on both Forest & Agriculture
- E) Depend on both Forest & Fishing/Livestock
- F) Depend on both Agriculture & Fishing/Livestock
- G) Depend on Other (e.g Small Business etc.)

If Answer is A

- I) What are the things that you get from the forest?
- I) To whom (middleman, customers?) and where (hat?) do you sell them?
- II) Do you know what the fair price is for these things?
- III) Do you feel that you get a fair price when you sell the things?
- IV) Have you recently moved from agriculture to collection of minor-forest-produce (or NTFP)?
- V) What was your income a few years back?
- VI) Because of deforestation (afforestation) how much income have you lost (gained) per year?
- VII) Has an increase/decrease in rainfall decreased/increased your dependence on NTFP?
- VIII) Has an increase/decrease in irrigation reduced/increased your dependence on NTFP?
- IX) Has any other factor led to your increased/reduced dependence on NTFP?

If Answer is B or C

- I) Since when are you depending on this sector?

- II) If you were depending on forest earlier, why did you move to agriculture?
- III) Is the land you currently use for agriculture used to be forest land? What fraction?
- IV) Have you ever diverted any agricultural land of yours towards community forest land?
- V) Is there a rule in your locality that a specific proportion of total land area should be kept for forests?

If Answer is D, E, or F

- I) Which of the sectors is your main source of income?
- II) What percent of your income comes from this main source?
- III) Does this percent change much over time? (If yes, a little or a lot?)

6. Was there a firewood shortage in your locality during the last few years?

If yes, then

- A) Was the crisis due to degradation of forest land?
- B) How did you cope with the crisis?
- C) Were you spending more time collecting firewood from commons?

If yes, then

How much time do you spend per week on this?

How much firewood do you collect?

- D) Did you then move towards firewood collected from your own land or towards alternatives like dung and crop residue?

If yes, then

How much firewood did you get from your own land?

From animal dung?

From agricultural residue?

E) Are you planting more firewood trees instead of fruit trees in your land to cope with the crisis? How much of land have you diverted from fruit-trees to firewood-trees?

F) How has JFM affected the onset of the crisis?

G) How has JFM affected your ability to cope with the crisis?

7. How long has been Community Forest Management, if any, there in your area?

8. Was any Joint Forest Management program *proposed* in your area?

A) If yes, when and by whom (your villagers, neighboring villagers, or the government)?

B) Did the villagers accept the JFM idea?

a) If yes,

i. What benefits did they expect out of JFM?

ii. What threats, if any, had they perceived from JFM?

iii. Who actually manages the forests now, the village or the government?

iv. Since government has the right to decide about utilization of forest areas, what power does the JFM or CFM has in this regard?

- v. If joint, how are the responsibilities shared evenly between the villagers and the government officials?

- vi. Are decisions regarding forest use and management taken in the CFM meetings attended by villagers OR does the CFM committee merely ratify decisions taken elsewhere (inside or outside the village, but not involving all the villagers)?

- vii. Who has the final say in JFM: villagers, local government, state government, or some other agency?

- viii. Has JFM made CFM weaker (that is, do you feel that the villagers now have less autonomy in managing the forest than they had before JFM came in)?

- ix. Has industrialization in your area made CFM or JFM weak?

If yes, how?

If no, how has CFM or JFM coped with (or plans to cope with) industrialization, if any?

b) If no,

- i. What threats did they perceive from JFM?

- ii. What benefits, if any, did they expect from JFM?

Appendix – II

Profiles of Some Selected Villages

Dist: DHENKANAL

Block: Parajang

1) Muktaposi village is situated under Parajang block in the district of Dhenkanal. It is 45 kilometers away from the district headquarters. This village is itself a panchayat headquarters village consisting of seven wards. There are 529 households living together and around 4000 population resides eleven sahis, which are scattered in nature. It is a mixed village consisting of various castes such as OBC (other backward castes), SEBC (), SC (scheduled castes), and general. Male represent 55% of adults. Mostly, the villagers depend on agriculture and allied activities. SC persons do agricultural and non-agricultural labor work. There is no wide-canal irrigation system in this village. All the farmers depend on rain water. Due to climatic change, it creates drought-like situation.

Before 1999, the RFA (reserve forest area) was managed through CFM norms. At that time, the forest decreased due to lack of proper guidance and protection as well as illegal tree cutting by mafias. So, the villagers got united under the village-leader, Shri Pranabanhu Dehury, and decided to form VSS (Vana Suraksha Samiti or Forest Protection Committee). With the help and cooperation of the departmental authorities, one committee consisting 30 members was formed. The authorities appointed the local forester as the member-secretary in that committee.

This VSS was approved by the government in 2001. The forest department has allocated 500 hectares of forest to the VSS. After that, the villagers and the VSS members have properly guided and protected the forest, providing 'PALI' system (whereby, households take turn in guarding the forest). The VSS has also decided to allow households to obtain firewood from the forest once in a month paying Rs.5-6 per cart-load or head-load (approximately five to six quintals). In 2006-07, the VSS received four lakh rupees, and the same amount was spent for soil conservation, plantation, and cleaning.

2) Rahaberani village is four kilometers away from Muktaposi village. There are 95 households consisting of 500 people; OBCs account for 95%. There is no irrigation facility except rain-water and ground-lift. So the villagers depend on agriculture and labour work.

Before formation of VSS, the villagers depended on the forest for their livelihood. They collected firewood, NTFP, and timber for their domestic use. Gradually, the forest decreased due to massive tree-cutting by the mafia. So, the villagers decided to form

VSS. In 2004, the VSS consisting of 15 members was officially formed. The forest department has allocated 158 hectares of forest to the VSS. Now, the villagers guard the forest, as a result of which the forest is growing. Villagers get only firewood as their fuel. The VSS has received 2.5 lakhs rupees for forest cleaning grant by the department. Through this the villagers are getting employment.

3) Basoi village is itself a gram-panchayat. It is six kilometers away from Kamakhya Nagar. Around 3000 people reside in this village. It is a village of mixed classes and tribes. The people depend mostly on agriculture and allied activities. One-fifth of the people do labor work in agricultural and non-agriculture sector.

There are 850 hectares of forest, protected by two groups of people. The villagers are want to form two VSS, but the forest department has not agreed to this proposal, as it insists on only one VSS per village. So, the VSS has not yet been formed. But the villagers are protecting the forest very well.

4) Badajhara has no forest now. The land which belongs to Revenue Department is empty and barren. So the government has leased out the land for Cashew cultivation.

Block: Kamakhya Nagar

1) Jantribol is situated under Kamakhya Nagar Block. It is two kilometers away from Kamakhya Nagar NAC (Notified Area Council). There are 108 households bearing 1250 persons. The villagers depend on cultivation, livestock, and labor work. They use firewood, cow-dung and agri-residue as their fuel. There is no canal irrigation facility in large number. Farmers cultivate their land by using rain-water and water from ponds.

The VSS was formed in 1997 and protected the reserve-forest till 2004. After that, the villagers were divided into several groups due to purely social and political reasons. So, opportunistic groups joined hands with the mafia for stealing valuable trees from this forest. The forest is now ruined and the evil relation between the mafia and the department officials has made formation of any VSS meaningless.

2) Sibulposi is eight kilometers away from Kalinganagar, the proposed steel hub of Odisha.

The main source of Income is agriculture. Though this village has been declared as an irrigated-village (by canal Irrigation), the minor and sub-minor canals are in defunct condition. So, farmers do not get proper irrigation.

There are 160 households with 750 persons in them. Most people depend on labour work. For their fuel needs, they collect dry branches and leaves from the forest once a month, paying to the village-committee twenty rupees for a cart-load of timber and ten for a cart-load of dry branches.

The villagers claim that Chandragiri, Gunjargodi, Kadabania forests have been forcibly occupied by the villagers of Banspal, who do not want to form any VSS. They also added that, if the forest department demarcates the forest area, then the formation of VSS may be possible. Now the villagers have occupied 150 acres of land out of 500 acres.

Block: Bhuban

Mathakaragolar is a united village of people having good social relation with each other. There are 1075 household having 3600 people. Most people belong to general (not OBC and SC/ST) caste. Half of the villagers depend on agriculture. One-fifth do government jobs and one-tenth business. Rests are laborers in agriculture and allied activities as well as in activities like house construction.

The VSS was formed in the 1994 according to the guidelines of the government. 500 hectares of forest was under the control of the villagers. The VSS members and village committee have been taking good care of the forest.

The villagers on their own effort (25 ST households near by the reserve forest which have migrated from different places of Dhenkanal and Anugul districts) are performing round-the-clock duty to protect the forest. A concrete house has also been constructed in the midst of the forest where the villagers stay while doing their guard duty on a rolling basis to stop illegal tree cutting by the mafia. Now the forest has grown dense and is due for cutting.

The President of the village held a meeting to decide how much firewood (except teak, timber, and NTFP) a family can take and how much it should pay. With the help of the forest department, the VSS has done check-dams, plantations, roads, cleanings of the forest, and proper utilization of the government funds.

Table-1										
Summary Statistics										
Village type	District	No of respondents	Mean age	Mean monthly income (000)	Average quantity of fire wood used	Average amount of money spent on obtaining firewood	Average number of hours spent on collecting firewood	% of cooking need satisfied by forest	Average distance of the community forest (km)	Average years of dependency on forest
CFM	Dhenkanal	81	48	1763	5.9	5.8	7.0	100.0%	0.31	43.9
CFM	Nayagarh	40	46	1303	8.8	5.5	5.6	100.0%	0.50	19.9
CFM	Dhenkanal and Nayagarh	121	47	1611	6.8	5.7	6.5	100.0%	0.41	36.0
JFM	Dhenkanal	125	48	2190	6.5	24.9	7.2	96.8%	0.15	43.7
JFM	Nayagarh	194	46	1796	6.5	21.3	5.5	98.4%	0.28	27.2
JFM	Dhenkanal and Nayagarh	319	47	1949	6.5	22.7	6.2	97.8%	0.21	33.7
CFM-JFM	Dhenkanal	206	48	2021	6.3	17.4	7.1	98.1%	0.22	43.8
CFM-JFM	Nayagarh	234	46	1711	6.9	18.6	5.5	98.7%	0.32	26.0
CFM-JFM	Dhenkanal and Nayagarh	440	47	1856	6.6	18.0	6.3	98.4%	0.27	34.3
No JFM or CFM	Dhenkanal	54	47	1951	5.5	102.9	7.8	85.0%	4.63	38.8
No JFM or CFM	Nayagarh	26	46	1077	6.5	4.2	10.2	100.0%	2.25	14.5
All	Dhenkanal and Nayagarh	80	47	1663	5.8	69.6	8.6	90.9%	3.8	24.9

Table-2				
Relationship between duration of JFM or CFM and increase in forest density				
Village type	Districts	Average duration of introduction of JFM	Average duration of introduction of CFM	Increase in proportion of trees in the forest.
CFM only	Dhenkanal		23.8	24.41%
CFM only	Nayagarh		16.4	18.75%
CFM only	Dhenkanal and Nayagarh		21.3	22.54%
JFM	Dhenkanal	11.4	19.8	15.82%
JFM	Nayagarh	5.1	14.0	28.81%
JFM	Dhenkanal and Nayagarh	7.6	16.3	23.72%
CFM-JFM	Dhenkanal	6.9	21.3	19.19%
CFM-JFM	Nayagarh	4.2	14.4	27.09%
CFM-JFM	Dhenkanal and Nayagarh	5.5	17.7	23.39%

Table- 3		
Summary Statistics for Anugul		
	CFM Only	JFM
No of villages	5	13
Average number of households	162	290
Total number of households	809	3765
Average number of people using firewood	151	281
Average quantity of fire-wood used	4	7
Amount of money spent on collection of firewood (rupees)	43	34
Time spent on collection of firewood (hrs)	23	20
Number of households depending on agriculture	86	142
Distance of the nearby forest (kms)	2	5
Forest dependency	94%	79%

Table-4		
Effect of JFM and CFM in Anugul		
	For villages under CFM	For villages under JFM
Average duration of CFM	22.00	21.58
Average duration of JFM		6.46
Average gain/loss per month due to afforestation/deforestation (Rs)	182.00	-52.50
% Increase/ Decrease in the forest density	15.00	-0.67