



## **Collective Action for Natural Resource Management in the Western Ghats. Case Study of Chennayanakote Village, Kodagu District**

Marie Laval, Claude Garcia, Maya Leroy, Ajit Menon, Christelle Hinnewinkel, Chepudira G. Kushalappa, Sylvie Guillerme

### **► To cite this version:**

Marie Laval, Claude Garcia, Maya Leroy, Ajit Menon, Christelle Hinnewinkel, et al.. Collective Action for Natural Resource Management in the Western Ghats. Case Study of Chennayanakote Village, Kodagu District. International Symposium of the International Union of Forest Research Organizations (IUFRO) on “ Small-scale Rural Forest Use and Management: Global Policies Versus Local Knowledge ”, 2008, Gérardmer, France. 20 p. hal-01466566

**HAL Id: hal-01466566**

**<https://hal.science/hal-01466566>**

Submitted on 25 May 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/313650724>

# Collective Action for Natural Resource Management in the Western Ghats. Case Study of Chennayanakote Village, Kodagu District

Conference Paper · January 2008

CITATIONS

0

READS

10

6 authors, including:



**Claude A. Garcia**

Cirad - La recherche agronomique pour le développement

106 PUBLICATIONS 1,857 CITATIONS

[SEE PROFILE](#)



**Maya Leroy**

AgroParisTech

128 PUBLICATIONS 289 CITATIONS

[SEE PROFILE](#)



**Christelle Hinnewinkel**

Université de Lille

27 PUBLICATIONS 76 CITATIONS

[SEE PROFILE](#)



**Cheppudira Kushalappa**

University of Agricultural and Horticultural Sciences, Shimoga India

65 PUBLICATIONS 1,058 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



COFORTIPS [View project](#)



TRAMENOIRE - Programme d'étude et de recherche pour le développement de la trame noire de l'agglomération lilloise [View project](#)

# Collective action for Natural Resource Management in the Western Ghats. Case study of Chennayanakote village, Kodagu District.

Marie Laval<sup>1</sup>, Claude Garcia<sup>2</sup>, Maya Leroy<sup>1</sup>, Ajit Menon<sup>3</sup>, Christelle Hinnewinkel<sup>4</sup>, C.G. Kushalappa<sup>5</sup>, Sylvie Guillerme<sup>6</sup>

1. AgroParisTech-ENGREF; 2. CIRAD/French Institute of Pondicherry; 3. MIDS; 4. University of Lille; 5. University of Agricultural Sciences , Bangalore; 6. CNRS

**Abstract** Community forestry and participatory forest policies such as Joint Forest Management and Ecodevelopment in India have been largely studied. This paper proposes to investigate the same public policies not only with a deep attention to the complexity of forest practices and representations but also from a particular theoretical lense: the strategic approaches developed by the Sociology of Organized Action and the Strategic Environmental Management Analysis. An in-depth study of two types of management committees called Ecodeveloppement Committee (EDC) and Village Forest Committee (VFC), in a forest-fringe village of Kodagu district in the Western Ghats, was carried out to understand how the ruling principles of such participative natural resources management schemes were translated into field realities. The application of the theoretical frameworks mentioned enabled us to outline the effective systems of action developed inside and around both committees. A first assessment of the actions undertaken in Kodagu revealed the relative weak contribution of those participatory schemes to the sustainable management of forest resources. Then the analysis we draw from local governance aspects questions the extent of citizen power in the decision-making process over natural resources management. We described the type of participatory forest management promoted by the Forest Department as an ‘accepted’ participation in which villagers are not really involved in the decision-making process and in which their role is limited to provide information to the Forest Department and their ‘participation’ limited to a physical one (labour). Local realities call for the necessity to impulse another system of forest management that could integrate multiple of actors with multiple interests and who all pursue divergent and sometimes contradictory objectives.

**Keywords** Western Ghats, Joint Forest Management, Forest policies, Participation, Actors

## Introduction

For the last twenty years the international discourse on natural resources management (NRM) has promoted communities’ participation to achieve sustainable development (Barbault *et al.* 2002; Sheil & Lawrence 2004). Decentralization of NRM can assume different forms (Edmunds and Wollenberg, 2003; Ribot and Larson, 2005) but is generally expected to generate three major benefits: (i) improve the livelihood of rural populations; (ii) better preserve the forest resources and the biodiversity associated to the knowledge and know-how of native communities; and (iii) improve local governance by empowering communities and enabling them to democratically control their resources.

Many tropical countries have thus developed mechanisms integrating the participation of rural populations, making the transfer of power from the State to the local people feasible. This is in conformity with the global agendas of the donor agencies (Bratton and Walle, 1997; Agrawal, 2001; Ribot, 2004). In India, most of the forest lands are state-owned; only 10% of the total forest lands belong to either communities (about 6%) or private owners (about 4%)<sup>1</sup>.

---

<sup>1</sup> <http://www.fao.org>

The community-owned forest lands belong mainly to tribal communities settled in the northeast while the remaining ones are scattered in other parts of the country. Hence this area is “noticeably small compared to the large forest-dependant tribal and non-tribal population outside the north east” (*ibid*).

Joint Forest Management (JFM) and Ecodevelopment are two different but coexisting schemes of participatory forest management in India. JFM principles were established by the Ministry of Environment and Forests (MoEF) after the 1988 National Forest Policy (NFP). Its aim was to enable village communities to take part actively in forest management and to get a share from forest resources. The 1990 guidelines on JFM, revised in 2000, gave operational recommendations to all the State Forest Departments for implementing their new mission. The 1988 NFP marked a turning point in the Indian forest policy history by stating as main objective the “environmental stability and maintenance of ecological balance” contrary to the former commercial exploitation of forests for industrial purposes. Forest-dwellers’ needs on forest produces were to be satisfied first and the policy acknowledged that “[t]he rights and concessions enjoyed by [tribal people and other poor living and near forests] should be fully protected”. The Government of India (GoI) confirmed these engagements by signing and ratifying the Convention on Biological Diversity in 1994. Appearing in the 1990s as well, the Ecodevelopment seeks to conserve biodiversity by reducing local communities’ dependence on forest resources. For that, the main strategy is to foster local economic development through income generating activities and social welfare programs including the provision of drinking-water and irrigation facilities, village road-work, health care camps and the creation of employment opportunities for local communities in the vicinity of protected areas (Badola, 1999).

Focusing on one district located in the Western Ghats, we propose to analyse how these different schemes and initiatives based on the same overarching principles of ‘participation’ can co-exist in the same locality and what are their respective strengths and weaknesses.

Our work is based on the district of Kodagu (75°25’-76°14’E and 12°15’-12°45’N), in the State of Karnataka (Figure 1). Located in the Western Ghats range, Kodagu (4106 km<sup>2</sup>) is part of one of the biodiversity hotspots identified by Conservation International (Myers *et al.*, 2000; Conservation International, 2008). Forests cover 46% of the total area of the district (Elouard and Guilmoto, 2000). Owing to a sharp gradient in rainfall pattern, the forests in the district range from wet evergreen forests on the western side to moist deciduous in the central-eastern part and dry deciduous forests on the eastern belt (Pascal, 1982a). Of those 46%, 30% are Reserved Forests (RFs) managed by the territorial division of the Karnataka Forest Department (KFD) under working plans prescriptions. The remaining 16% of forest come under a variety of management regimes, from government control under the KFD or the Revenue Department (Bon *et al.*, 2000) to community-based management in the *devarakadus* or sacred forests (Bhagwat *et al.*, 2005; Garcia and Pascal, 2006) and to private holdings under a multitude of land tenures (Uthappa, 2004). Since 1865, the official stewards of the forests are not the traditional forest-user groups, but the KFD. The forest-user groups are mainly former hunter-gatherer tribal groups (Kurubas and Yerawas) who became non timber forest products (NTFP) collectors and/or workers for the KFD or for coffee estate owners (Richter, 1870; Moppert, 2005). A second category of forest-users are the landowners, formerly paddy cultivators who have turned coffee planters for the last 100 years. Those belong essentially to two communities, the Kodavas and the Gowdas (Srinivas, 1951; Moppert, 2006). Traditional practices such as hunting, NTFP collection and timber extraction by local communities were and still are highly restricted by forest policies and strictly controlled by the Forest Department. There are provisions to allow people below the poverty

line (BPL) to harvest NTFP in reserved forests, provided marketing goes through the channels of the Large Scale Adivasi Multi-Purpose (LAMP) Societies (Bawa *et al.*, 2007). Timber felling and extraction are banned from reserved forests and highly restricted, even on private lands (Cheynier, 2006).

In this context of top-down, centralized command and control system of forest management, the concepts of decentralization and participatory management of natural resources dictated by the central and State guidelines have been translated into action. In 1993, Karnataka adopted the JFM policy by issuing a Government Order (G.O.) on Joint Forest Planning and Management (JFPM). Thus, the State provided its rules and norms to involve local communities and voluntary agencies in the protection and the management of degraded forests land with a canopy cover density upto 25%. Then, the area subject to JFPM was extended to any reserved forests irrespective of the density of the canopy cover if “predominantly inhabited by tribal people” or “in the vicinity of areas where forest-dependent tribal people live or which they traditionally depend upon for their livelihood or which they culturally identify themselves with”<sup>2</sup> (G.O. amendements, 1996 and revised G.O. on JFPM in Karnataka, 2002). It should be noted that JFPM is not applicable in any protected areas (national parks and wildlife sanctuaries). Ecodevelopment was initiated in Karnataka in 1993 with the Western Ghats Forestry Project (1993-1999) supported by the Overseas Development Agency and continued with the India Ecodevelopment Project (1997-2001) supported by the World Bank and the International Development Agency. The National Afforestation Programme (NAP) initiated in 2002-2003 has been promoting this type of community forestry too.

This paper aims to assess if the commitments announced in participatory forest policies were fulfilled in field realities. Our exploratory study provides a first assesment of the environmental and socio-political outcomes. Community forestry and participatory forest policies have been largely studied in tropical countries (Poffenberger, 1990; Agrawal and Gibson, 1999; Sarin, 2001; Lélé *et al.*, 2005).

## Materials and methods

In this paper, we present another way to explore these topics thanks to a combinaison of strategic approaches from social sciences and management sciences. The Sociology of Organized Action (Crozier and Friedberg, 1977 and Friedberg, 1997) provides a relevant theoretical framework to explore interactions between organizations and collective action in community forestry. Through the analysis of decision-making process, Crozier and Friedberg investigate the power relationships as well as the rules of the game among *strategic actors* who are interconnected into complex *systems of action*. Next, the Strategic Environmental Management Analysis (SEMA) is a framework for assessing effectiveness in the pursuit of ecological goals (Mermet *et al.*, 2005 and Leroy, 2006). “Despite the public commitments made (laws, international conventions, political statements) and the varied, ambitious and complex management systems set up (institutions, planning procedures, financial tools...), examples in all environmental areas (biodiversity, water management, air and varied pollution...) show that in many situations processes causing serious environmental degradation are out of control” (Mermet *et al.*, 2005: 1). Given this fact, the authors suggest that environmental studies should more than ever analyse and assess the coherence and effectiveness of actions in the light of environmental commitments.

---

<sup>2</sup> In addition to government waste lands and other lands under the control of the Revenue department transferred for the purpose of JFPM to the Forest Department as well as roadsides, canal banks and tank foreshores and other non-forest lands under the control of the KFD (Revised G.O. on JFPM, 2002).

We tried to identify in what extent the actors encountered in Kodagu could be *agent of change* in the system of action related to NRM. This notion refers to every person who acts intentionally in order to impulse a change in the social and ecological system as defined by the Resalliance<sup>3</sup> (Berkas and Folke, 1998) and described as *actor of environment* into the SEMA framework (Mermet *et al*, 2005 and Leroy, 2006).

In Kodagu, both JFPM and Ecodevelopment schemes have promoted the creation of committees through which village communities are supposed to become KFD's equal partner in the day-to-day management of specific, most of the time degraded, forest areas. We focused on Chennayanakote village, located on the fringe of Devamachi Reserved Forest on the eastern part of the district (Figure 2), where both participatory schemes were operational and where management related issues were described as critical by initial interviews with resource persons. The two major issues identified were the widespread teak plantations developed by the KFD and the high level of human-elephant conflicts.

In the light of the strategic approaches mentioned above, we analysed the executive committees called 'Managing Committees' (MCs) of one Ecodevelopment Committee (EDC) created under NAP and one Village Forest Committee (VFC) created in the framework of KSFMB<sup>4</sup> Project under JFPM guidelines. Data collection was performed from May to September 2007. Twenty-nine semi-structured interviews were carried out in English when possible or in local languages (Kannada and Kodava) with the help of a field assistant. Respondants from the MCs of EDC and VFC were systematically interviewed (15). A second phase consisted in expanding the sample of interviewees through snowballing (14). To protect the anonymity of our respondents the interviews coded 'I' are accompanied with letters related to their community plus a chronological number (Table 1), for example 'I.K1' for the interview with Kodava number 1, except Forest officers coded 'KFD' regardless of their community.

**Table 1:** Classifications of the interviewees per community and per position into the forestry schemes

Communities (+ codes) Positions	Kodava (K)	Gowda (G)	Scheduled Tribes		Scheduled Castes (SC)	Other Backward Classes (O)	Christian (C)	Lingayat (L)	Total
			Yerava (Y)	J. Kuruba (J)					
KFD officers	3	0	0	0	0	0	0	1	4
EDC members	5	2	1	0	1	1	0	0	10
VFC members	0	0	1	3	0	0	0	0	4
NGO members	2	0	0	1	0	0	3	0	6
Non EDC/VFC members	2	1	1	1	0	0	0	0	5
<b>Total</b>	<b>12</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>29</b>

The Kodava forester is registered as KFD officer, not as EDC or VFC member.

Scheduled Castes (SC), Scheduled Tribes (ST) and Other Backward Classes (OBC) are official denominations used by the Government of India<sup>5</sup>. The code for SC interviewees is similar to the official abbreviation to make the difference with Christians coded 'C'.

<sup>3</sup> <http://www.resalliance.org/>

<sup>4</sup> Karnataka Sustainable Forest Management and Biodiversity Conservation Project

<sup>5</sup> See the National Commission for Scheduled Castes <http://ncsc.nic.in/>. Members of the ST often refer to themselves as *adivasi* (the original inhabitants) and SC leaders often use the term *dalit* (oppressed). We choose

In addition to formal interviews, discussions with key informants, direct observation and secondary data collection (official documents collected with the permission of KFD, reports and scientific literature) were also used to analyse local realities behind participation. A final restitution presenting the analysis of the data was conducted on site on October 26<sup>th</sup> 2007, with 24 attendants from different backgrounds, including KFD officials, scholars, *Panchayat* representatives (elected villagers) and members of the EDC and VFC studied.

## Results

The total population of the village studied is 6,946 people divided equally into male and female (Census of India, 2001). The population composition results from various phases of migration both external and internal to the district (Guilmoto, 2000). Table 2 presents more details on Chennayanakote village.

**Table 2:** Details on the Chennayanakote Gram Panchayat's population

POPULATION			FAMILIES		
	Number	Illiterate	SC/ST		Number
Male	2611	1401	1016	Landless	726
Female	2477	1010	977	Agriculture dependant	400
Total	5088	2411	1993	Total	1126

Data from Chennayanakote-Chennangi EDC microplan, 2003

Chennayanakote *Gram Panchayat* is divided into three inhabited zones –Chennayanakote, Chennangi and scattered hamlets- (Figure 3). SC and ST inhabitants who represent about 39% of the inhabitants (EDC microplan, 2003) tend to occupy different territories and seem mutually exclusive (Guilmoto, 2000). SC people have their own neighbourhood nicknamed Holamala in Chennayanakote; ST are mostly settled in hamlets within or at the fringe areas of the reserved forest either in Yerava *haadi*, Jenu Kuruba *haadi* or mixed-community *haadis*. Kodavas and Gowdas are mostly based in Chennangi (rather than in Chennayanakote) where most of the coffee plantations are concentrated (personal observation). Most of people's livelihood is based on agriculture (paddy, ginger), plantations (coffee, arecanut, fruit trees, cardamom, pepper, banana, etc) and a few people rear cattle. Yet it is worth noticing that out of 1,126 families, 726 are landless (EDC microplan, 2003).

In this village, both JFPM and Ecodevelopment schemes with their corresponding committees (EDC and VFC) were operational. Table 3 sums up the main components of the EDC and VFC. In the village, the groups of actors involved in both MCs were Kodava and Gowda coffee grower landowners, SC workers and ST workers and/or NTFPs collectors.

---

here to use the official one, well aware that none of those designations are neutral and that they all convey different political ideologies.

**Table 3:** Main features of Chennayanakote-Chennangi EDC and Chennangi VFC

FEATURES	EDC	VFC
Related programme or project	NAP	KSFMB Project
Funds origin	Centrally-funded programme	Externally-aided project
Period of extent	5 years (2002-03 to 2006-07)	8 years (2005-06 to 2012-13)
Area under MC management	Degraded parts of RF + sacred grove	≤ 100 ha of degraded parts of RF
Design document and method	Microplan (PRA)	Microplan (PRA)
Presence of a Facilitator	No	NGO staff (IBRAD)
Benefit sharing on forest products selling	No	Benefice sharing under JFPM
Number of member in MC	4 nominated ex-officio, 11 elected	4 nominated ex-officio, 11 elected

Now that the salient features of the EDC and the VFC have been presented, we suggest to examine each committee in details, starting with Chennayanakote-Chennangi EDC.

### 1. Ecodevelopment Committee (EDC)

Chennayanakote-Chennangi EDC was created in March 2003 for five years under the central guidelines of the National Afforestation Programme (NAP) designed by the MoEF. The KFD was in charge of the NAP's implementation. Contrary to other EDCs in the district, the EDC studied did not manage any lands within the protected areas but into reserved forests and *devarakadus*.

#### Principles

The NAP's main objective was to develop sustainable forest development “to meet the requirements of local people who live in a close vicinity and adjacent forest land” (KFD, 2002). According to official guidelines, the decision-makers behind that programme opted for a “participatory approach” associating local people and forest officials as follow. Villagers were expected to take part in forest management (i) by helping the KFD for the design of a microplan according to the Participatory Rural Appraisal (PRA) method; (ii) by forming an Ecodevelopment Committee (EDC), and (iii) by implementing the activities (KFD, 2002). By the creation of such management committee, programme-makers intended to better organise the collective action around a major activity: the afforestation of “degraded forests and adjoining lands”. As there is no formal definition for these types of lands, this is left to the appreciation of the KFD.

#### Microplan

The microplan is a 23-page document written in 2003 in Kannada and kept in a locked cupboard in the forester-secretary's office. The contents (Table 4) mention first the salient features of the NAP and a public welfare programme (6 pages) before providing details on the village (2 pages) and the formation of the EDC (1 page). It is indicated that in Kodagu circle, due to non-availability of forests area with less than 25% canopy cover density, no VFC could be formed (G.O. N°FEE 50 FAP 2000 dated 19.06.2002). Hence the existing Devarakadu Committees were modified and EDCs were formed. Yet as mentioned above, further to the 1996 G.O. amendements and the revised G.O. on JFPM in 2002 in Karnataka, the JFPM areas were extended to reserved forests inhabited by tribal communities regardless the canopy cover density.



**Table 4:** Headline contents of the Chennayanakote-Chennangi EDC microplan

<ul style="list-style-type: none"> <li>▪ Background of the NAP (salient features/concept and benefit of afforestation policy + village public welfare programme)</li> <li>▪ Details of the village</li> </ul>	<ul style="list-style-type: none"> <li>▪ Formation of the village committee</li> <li>▪ Duties and responsibilities of EDC members</li> <li>▪ PRA: resources, agriculture lands</li> <li>▪ Problem of Management</li> <li>▪ Evaluation</li> </ul>
---	--

Source: EDC microplan (2003)

The predetermined composition of the MC given in the G.O. is present in the microplan (1 page) with the corresponding name of the members. It counts fifteen members. Four ‘ex-officio members’ are nominated: the Forester of the area who is the EDC Secretary, the Accountant of the Revenue department, the village Panchayat Secretary and one representative of a NGO. According to a reservation system, the eleven elected members should comprise two women, two SC/ST, one artisan, one landless labourer, four persons belonging to any group and one President from any group. The election of the eleven non-nominated members is conducted during the first general body meeting.

The duties and responsibilities of the MC and general members are quite detailed (6 pages). We discuss them further as aspects of local governance. Then the microplan relates how the PRA should be conducted in the village (4 pages). Forest staff and villagers were supposed to prepare different maps (social maps, resource maps, etc.), to enumerate the trees with a general geographical description of the area before mentioning the problems related to forest. While the list of the trees as well as the survey on water and agriculture resources proper to the village is indicated, the microplan gives only a list of predetermined problems of fodder, fuelwood, wood and water availability. Therefore, as we will see further, the management of the human-elephant conflict, which is a daily issue for Chennayanakote inhabitants, is not mentioned in the document.

In Chennayanakote-Chennangi EDC, the total project area planned in the microplan is 49 acres of lands comprising one *Devarakadu* and various areas with low tree density (Table 5). In theory these data result from the PRA exercise conducted in consultation with the villagers.

**Table 5:** Planned project area as per the EDC microplan

PROJECT AREA			
Types of areas	<i>Devarakadu</i>	Marshy area	Plain area
Area in acres	5.16	24.00	20.00

Data from the EDC microplan, 2003

Even though the NAP guidelines have to be followed, the microplan should be site-specific and should express villagers’ priorities on local forest management. The main activity to be conducted to reach the objectives is afforestation work into the project area.

## Activities

### *Natural Resources Management*

*Afforestation.* In conformity to the NAP guidelines, plantation work was the most funded activity. The EDC spent Rs.141,560.00 on afforestation work (about Rs.5,662.4 per hectare) indeed about 48% of the total amount utilised (Table 6). Until the 31<sup>st</sup> of March 2007, for the first five years, the EDC planted 25 hectares of lands including 3.76 acres of *Devarakadu*. When asked about the plantation work conducted by the EDC, all the interviewees to which

the question was asked (10) declared that the plantation work was not effective. For instance, one MC member declared: “we have to plant though the plants are going to die in one month” (I.K3). According to Forest Department officials themselves, the priorities of the microplan were not fit for the locality: wildlife (*Axis axis* or spotted deer amongst others) and cattle grazing put a lot of pressure on forest regeneration, yet no action was contemplated in the microplan to fence or otherwise protect the newly planted areas, therefore spelling their doom in a question of weeks.

*Soil and water conservation* is the second main activity of the NAP. For the first five years, the EDC spent Rs.84,256.00, or 28% of the total amount received, to build one check dam to combat soil erosion (Table 6). With the amounts they earn thanks to afforestation work (see further), the villagers chose to build two gully checks to provide water to wild animals within the forest. They were expecting that it would prevent wild elephants to come to the village in search of water from private tanks. Contrary to plantations, MC members were satisfied with this activity they have chosen to implement and forest officers were satisfied too.

*Human-elephant conflict.* The EDC received and spent Rs.9,58,269.00 to set up a solar fence of 10.8 Km to prevent wild elephants intrusions in private lands and tribal hamlets (about Rs.88,730 per Km) but out of the Rs.58,443.00 granted to the EDC for the protection of fence, nil amount was utilised (Table 6). All the MC members interviewed (10) about the fence in general expressed regrets that no provision was made for its maintenance, which is a critical element of the efficacy of the deterrent measures. As a result, not only the two watchers employed by the EDC for the purpose of maintaining it were not paid regularly, but they were dismissed of their job in 2008 when maintenance stopped due to the lack of funding (personal observation). According to the interviewees, if not maintained daily, the fence did not prove an effective means of mitigating the crops raiding incidents. We could identify existing weaknesses in the fence (bent or broken polls, damaged wires), points where the elephants had managed to fill up the Elephant Proof Trench and neutralized the electrical fence. Once this happened, the whole fence became inefficient.

### **Poverty alleviation**

Poverty alleviation was an indirect objective of NAP. As we already mentioned contrary to the JFPM, the Ecodevelopment guidelines do not provide financial benefit from forest resources. Over the five years, the EDC who was granted Rs.4,000 per hectare planted managed to obtain Rs.1,00,000.00 to develop ‘entry point activities’ (Table 6). Rs.71,744.00 (24% of the total amount utilised by the EDC) were spent to instal two solar lamps to overcome power shortage during monsoon and two gully checks to provide animals with water as we already mentioned. The remaining part was still locked up in the bank. Clearly this form of participation in NRM did not have a major impact on the economic condition of the households involved.

**Table 6:** Amounts granted by the KFD and utilised by the EDC over the five years.

Types of activities	Amount granted (Rs)	Amount utilised (Rs)
Plantation work	1,81,700.00	1,41,560.00
Entry point programme	1,00,000.00	71,744.00
Water and soil conservation	87,664.00	84,256.00
Protection of the fence	58,443.00	0
<b>Total</b>	<b>4,27,807.00</b>	<b>2,97,560.00</b>

Source: Chennayanakote-Chennangi EDC account, 2007

### ***Local governance***

*Representativeness.* One of the EDCs' ruling principles is that they should be established in a democratic manner. Our interviews suggest that the process of creating the MC exhibited a strong bias towards the landed coffee growers from the Kodava and Gowda communities who represented the majority of the members (at least 8 members of out 15). The Kodavas held the key positions in the MC: Secretary, President, Panchayat Secretary and NGO member. Yet, the interviewees did not express a real willingness or a special pride to hold their position as members. The position as president especially aroused hesitation: "in general body meeting they tell you to become the President but no one agrees" (I.G2). Interviewees often used the passive form "they have made us members" in which 'they' refers to the forest department. One woman declared: "they put my name on the list three years back" (I.O1). Of 15 members, 4 were women.

*Involvement.* EDC members were expected to attend meetings at regular intervals, at least once every three months, yet most of them did not. Out of 15 members, 9 missed regularly the meetings and at least 2 never showed (I.KFD1 and I.Y1). The burden of attending the meetings was heavier for the members of underprivileged communities (ST, SC and OBC) due to problems of availability and financial capacities, especially for daily wage laborers (I.Y1, I.SC1 and I.O1) who wondered why they should lose one day wage "just for one tea and one biscuit" (I. SC1).

*Decision making process.* As planned the members "cooperated" with KFD in preparation of the afforestation plan and actively took part in enrichment of forests by plantation work. Yet, when asked about the microplan, two respondents including the president expressed their dissatisfaction with regard to the participatory process. During the PRA sessions villagers were asked to express their views on so many aspects in such a short notice that they did not have the time to think and come to a conclusion whether the suggestions were 'good or bad' (I.K1). Two respondents went further declaring that they had "no word to say in planning" (I.K3 and I.G2); their role was: "seat in the meeting, nod the head, nod the head and say "yes go ahead". (I.K3).

*Training.* The training programme, workshop, educational tour and vocational training programmes that had to be organised to provide more information about NAP had not been conducted. According to the president, the lack of training and information had caused other EDC in the area locality to submit their accounts in a suitable manner, therefore jeopardizing the maintenance of the institution.

*Empowerment.* The sharing of responsibilities between the villagers and the KFD was quite ambiguous. The execution orders and the technical details for plantation work (pits size and number) were given by the KFD. The assessment of the realisations such as the check dam was done by Forest Department officials. One respondent felt this lack of responsibility given to the MC members was due to the forest officers' perception on villagers' capacities: "they think we are not technically competent" (I.K3). Moreover villagers' responsibility over finance was highly limited. The decisions to withdraw funds from the bank account of the Village Ecodevelopment Fund rested entirely within the hands of the Deputy Conservator of Forests (DCF), the highest ranking official in the *taluk* (county).

*Institutional resilience:* The Forest Department was supposed to fulfil the expenditures for the first five years and then to consider the future of the EDC according to the results obtained. The deadline occurred the 31<sup>st</sup> of March 2007. Six months later, despite several letters addressed to the DCF on that topic, the MC members still did not have a clear view of the future of the committee.

## 2. Village Forest Committee (VFC)

Chennangi VFC was created in June 2006 under KSFMB Project funded partly by the Japanese Bank for International Cooperation (JBIC) and partly by the KFD.

### Principles

The project guidelines were designed by KFD project-makers with JBIC approval. The KSFMB project's main objective was "reducing poverty and preserving biodiversity conservation" (KFD, 2005). Programme-makers who intended to organise a collective action by the creation of committees called VFCs chose JFPM as incentive for people's participation in the forest management and protection. Hence, the tribal populations living in the reserved forests subject to JFPM, were to be involved in the committee as well as their spouses since the 1996 amendments introduced co-membership. The Government made provisions for SC/ST, landless labourers and also NTFPs collectors and ladies especially (the committee should have at least 50% of ladies).

At least 100 hectares of forest lands were to be taken for treatment according to eight afforestation models predetermined by the KFD. The sharing of the total proceeds derived from the sale of NTFPs and other forest products was first set up into the 1993 G.O. on JFPM. In addition to the 50% share in forest products to the VFCs from JFPM areas (G.O., 1993), the benefice sharing was extended from 50% to 90% in respect of NTFPs and 75% in the plantation assets (revised G.O., 2002) (Table 7).

**Table 7:** Sharing of the total proceeds derived from the sale of forest products in Karnataka

Types of Products	Government share (in %)	VFC share (in %)	Remarks
NTFPs	10	90	None
	25	75	Case 1
Other Forest Products	50	50	Case 2
	50	50	Case 3

Source: data from the *Revised GO on JFPM in Karnataka*, 2002

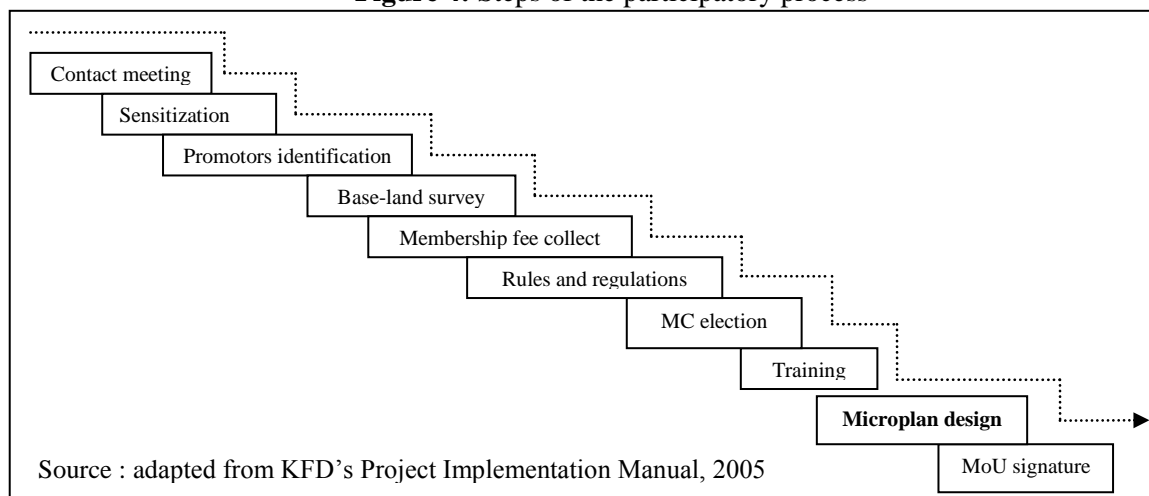
In Case 1, the proceeds come from the assets created with the help of VFC (plantations). In Case 2, they come from the assets created prior to the VFC formation including other fuelwood, fodder and small timber plantations but excluding teak plantations. In Case 3, they come from the natural growth prior to the formation of VFC excluding valuable species as Sandalwood, Teak, Honne (*Pterocarpus Marsupium*), Matti (*Terminalia tomentosa*) and Nandi (*Lagerstroemia lanceolata*) subject to the Working Plan prescriptions. For all the produces in all the cases, a minimum of 50% of the VFC share should go to the Village Forest Development Funds. The balance will be shared by the VFC members as dividends or will go to the VDF as decided by the VFC.

In Kodagu, the KFD was in charge of the project's implementation with the assistance of IBRAD<sup>6</sup>, a national NGO. The phases of the VFC's formation are presented in Figure 4. The driving principle of the process is villagers' participation in all the steps. The analysis of the effective system of action around people's participation is presented further. At the end of the

<sup>6</sup> Indian Institute of Bio-Social Research and Development.

process, a Memorandum of Understanding (MoU) signed between the KFD and the MC members sets the seal on the joint management of the target area.

**Figure 4:** Steps of the participatory process



### Microplan

The VFC microplan is a 84-page document written in 2007 in Kannada and kept in a locked cupboard in the Forester-Secretary's office and a copy with the Range Forest Officer. Certain headlines sections are quite similar to the EDC microplan (background of the project, details of the village, formation of the committee, duties and responsibilities of the members) and some paragraphs identical (Table 8). The PRA results are detailed at length (22 pages). Two additional sections describe first the eight afforestation models (9 pages) and then the 'By law rules and regulation' that have emerged from the consultation with the villagers (16 pages).

**Table 8:** Headline contents of the Chennangi VFC microplan

<ul style="list-style-type: none"> <li>▪ Background of JBIC JFPM (salient features/ concept and benefits of JFPM prog. + soil water conservation + income generating activities)</li> <li>▪ Details of the village</li> <li>▪ Formation of the VFC</li> <li>▪ Duties/ responsibilities for the MC</li> <li>▪ Village Development Fund</li> </ul>	<ul style="list-style-type: none"> <li>▪ PRA: resources, agriculture lands, etc.</li> <li>▪ Objectives of the VFC</li> <li>▪ Problems of management</li> <li>▪ Evaluation</li> <li>▪ Forest development models</li> <li>▪ Data from the PRA</li> <li>▪ By Law rules and Regulations</li> </ul>
--	--

### Activities

#### *Natural Resource Management*

The committees created by the JBIC-assisted project are relatively new institutions, less than 10 years old, often much less, and it proved difficult to assess long term ecological dynamics in that time-frame.

*Afforestation.* The KSFMB Project's target was the afforestation of 1,85,000 ha and the development of farm forestry (76 million seedlings, plantation of 2,150 ha with 500 t. of seeds). These quantitative indicators do not necessarily inform us on how effective these activities are to match the objectives of biodiversity conservation. In the village studied, the plantations conducted in Devamachi Reserved Forest by the VFC were not protected by any fence, the only protection was a watcher patrolling on the site for the first month. This

measure may not be effective in the long run. The MC members interviewed about the plantation work (4) expressed dissatisfaction about the project's quantitative target and methods of afforestation. No data were available on the percentage of plant surviving after one month but the same interviewees declared it was very low.

*Soil and water conservation.* Chennangi VFC dealt with water and soil conservation in the areas under the MC's management (parts of RFs) only. The pieces of information on that topic were not thorough enough to provide a first assessment.

*Human-elephant conflict.* The VFC did not implement direct solutions to manage the conflict with wild animals. This environmental issue was briefly mentioned as a "problem in agriculture" listed by the villagers. The 'possible' solutions cited were solar fencing (already existing) and scaring the animals.

### ***Poverty alleviation***

The KSFMBBC Project's guidelines presented an important commitment for poverty reduction. The main strategies employed by project-makers were benefit sharing of forest products and microfinance. Chennangi VFC was a 'Scheduled Tribes VFC' extended over six hamlets inhabited by 92 ST families over 142 (Chennangi VFC microplan, 2007). Almost all the tribal families lived on forest lands and did not have property nor tree rights.

*Benefit sharing of forest products.* It was too early to assess the impact of such measure on people's livelihoods. Yet fieldwork revealed that benefits were vague and uncertain for the participants. Tribal interviewees were doubtful on the reality of the sharing at the time of the harvest: "every five years law keeps changing [...] how can we trust that?" (I.J4).

*Microfinance.* Provisions were made for BPL members to access loans with low rate of interest to develop Income Generating Activities (IGA) through the formation of Self Help Groups (SHGs). Each VFC will be granted Rs.1 lakh (Rs.1,00,000) in three payments. Up to September 2007, Chennangi VFC received Rs.30,000 distributed among 5 SHGs with 1% interest. This amount is low (Rs.700 per person about 14€) and does not provide for big investments (I.J3). Undertaking actions in common to get higher amounts and more effective results is a strategy to overcome this problem, as suggested by the VFC President. But it has yet to be put into effect by the villagers. Therefore at present, people use microfinance as consumption loans not as income generating activity. This does not help them to improve their livelihood in a sustainable way.

### ***Local Governance***

*Representativeness.* In the VFC, the first beneficiaries targeted were underprivileged people (SC, ST, OBC). The president as well as half of the MC members were Jenu Kuruba (ST). The key positions were held by different community members: the President was a Jenu Kuruba, the facilitator was a Christian and the Forester-Secretary was a Kodava. Out of the 11 elected members, 5 were women.

*Involvement.* The few VFC meetings (3) we attended were postponed. Not only because of the members' availability, capacities and needs (attending meetings was still a problem especially for workers) but also because the forester had other priorities to handle (elephant intrusions) and the NGO facilitator had logistical difficulties. Besides we noticed that above the forester, no forest officer showed up (RFO, ACF, DCF). MC members regretted these absences (I.J3 and I.J5) as well as IBRAD NGO members (I.C2 and I.C3).

*Decision making process.* In the planning phase, villagers should help the KFD in site selection, selection of tree species, protection measures, etc. But the role of the villagers in the decision making process was curtailed by the afforestation models predetermined by the KFD. During the phase of execution, MC members' participation seemed artificial too. The decisions proposed by the Forest officers were hardly if ever questioned (I.J4, I.Y2 and I.J3). The reason behind this passivity may be related to the power relationships between tribal communities and forest officials: "We can question them but we do not: by questioning we will spoil our relation" (I.J4).

*Training.* Trainings on JFPM for KFD officers occurred at the beginning of the JBIC-assisted project. Yet, due to logistical constraints (monsoon), the trainings for villagers that were to take place before the design of the microplan were postponed afterwards indeed a little bit late compared with the normal procedure (Figure 4).

*Empowerment.* With regard to finance, the devolution of responsibilities to villagers was highly restricted. MC members expressed their dissatisfaction with regard to the fund flow managed by the KFD: "money is in their hands" (I.J4) and pointed out delays in the payment: "they say they will put money in our account but they are not coming" (I.Y2). Even the IBRAD facilitators had to face difficulties to obtain pieces of information from the KFD (I.C3).

*Institutional resilience.* The microplan designed for ten years will be reviewed at mid-term. The president and MC members are elected for five years. Since the VFC was one-year old, we can only expect that it will last eight years at least, the length of the the JBIC-assisted KSFMB project.

## **Discussion**

Any discussion on *participation* is definitely political and, politics contains a dimension of power. Power is not one actor's attribute but an unequal relationship among several actors (Crozier and Friedberg, 1977). Before the advent of participatory forest management in Karnataka, the KFD was the main power holder actor in the game. The JFPM and Ecodevelopment schemes that we have presented do not seem to have changed significantly the power asymmetry among the actors. Following other studies<sup>7</sup> on village committees conducted by Lélé *et al*, 2005 and Sarin, 2001, our fieldwork demonstrates similar drawbacks on democracy aspects of planning and implementation both in EDC and VFC. Due to the top down planning, villagers' role in the decision-making process of 'participatory' forest management is limited to provide information for the design of microplans and provide workforce for forest work. We noticed that in both microplans a few paragraphs on forest ecological state and MC members' duties were copied and pasted. While the local situation is quite thoroughly described in the VFC microplan, we have some doubt with regard to the EDC's diagnostic. Local priorities were not always considered while writing the microplan. In both systems, the KFD decides which lands are to be assigned to the committees. With regard to the representativeness of the members, the presence of the forester as ex-officio member of both committees extends the KFD's control over the MCs functioning. Prior approval of the DCF is necessary for every action. The KFD controls all the steps from planning, implementation and checking of the activities. Financially the committees are not autonomous bodies. Information is not transparent neither circulated freely within the MCs and out of it. The commitments with regard to public empowerment (information, trainings, etc.) were not

---

<sup>7</sup> For a study on VFCs in the eastern plains of Karnataka see Lélé *et al*, 2005 and for a study on village forest joint management (VFJM) replacing former *Van Panchayats* in Uttarakhand see Sarin, 2001.

fulfilled in the EDC yet we noticed a good start in the VFC for women empowerment specifically.

The type of participation occurring in EDC and VFC is characterised by ambiguous discourses of the participants moving back and forth between conflict (criticism) and cooperation (acceptation of the rules of the game). We described this process as ‘accepted participation’. First, the cooperation is conducted by constraint because of the rules’ rigidity. The participants obey with more or less agreement to the rules dictated by external actors. Next, the local populations are object to an action of development, they are only the ‘beneficiaries’ targeted by a top-down project and hardly become equal partners of the KFD. Those participatory schemes do not change the rule of the game: the power holders remain identical. But, without redistribution of power, participation is an empty and frustrating process for the powerless which “allows the powerholders to claim that all sides were considered, but makes it possible for only some of those sides to benefit [and] it maintains the status quo” (Arnstein, 1969: 2). For Arnstein, participation is a strategy which enables the powerless citizen to be deliberately included in political and economic processes introducing a social change where benefits are shared. Following Arnstein’s ladder of participation, the extent of the citizen power in Kodagu’s EDC and VFC denotes rather ‘non participation’ indeed their manipulation or therapy (we educate them).

Nevertheless, if the institution survives, that means the system of action must satisfy at least a few interests of the participants. Intermediate-level and local forest officers may seek an opportunity to get workforce, to delegate some of their duties and eventually appropriate financial resources (I.C3) (EDC, VFC). MC members may seek an opportunity to get a share of the benefits (VFC), financial assistance (VFC), responsibilities in forest management however meagre (EDC, VFC), a means to get access to forest resources (VFC) as well as an arena to negotiate with the KFD on property rights (VFC) or issues on private lands (EDC). Village committees offer a platform for members to express themselves and talk directly to Forest department’s official.

But, cases happened when intermediary-level officers (RFOs, ACFs and DCFs) tend to escape their responsibilities with regard to the project management and refused to play the game. They disrupted the participatory process by their absence during meetings, by keeping secret the fund flow, etc., as individual strategies of non cooperation. In general, JFPM activities were not a priority for forest officials (I.C3). Sood and Gupta (2007) highlighted that “the primary aim of FD officials is to have power, authority, social standing, job security and facilities; the orientation as a facilitator is secondary”. Yet, the JFPM Coordinator from KFD made clear that “if forest officers wants Forests to remain an important sector in society there is no way except accepting the participatory management”. Thus, the KFD is in a transitional phase where forest officers are trained and requested to change their beliefs to accommodate for people’s participation in forest management. Yet a main obstacle for *another forest management* is the KFD’s hierarchical organisation and rules that gives policy decision-making and project design solely to senior officials remote from the field (discussed also by Sood and Gupta, 2007 quoting Poffenberger, 1990). This system imposes great constraints to frontline officers in charge of the implementation and prevents them to be creative in problem-resolution. They have no leeway to test freely alternative solutions. In such a system, although fieldstaff hold a strategic position, how can they take a key role as *agent of change*?



## Conclusion

We have shown that power asymmetry is very much in favor of the KFD and therefore we wonder how tribal communities living on government controlled forest lands could develop sufficient capacities and deploy strategies to become *agent of change* in forest management. In addition, tribal communities and forest dwellers have also to deal with Kodava and Gowda coffee grower landowners, some of them having voluntarily gathered into conservation NGOs such as Coorg Wildlife Society (CWS) and Kodagu Model Forest Trust (KMFT). Their collective action intends to develop a local forest management attuned to the environmentalist concerns for biodiversity conservation and compatible with their private interests.

Our work suggests a first answer: the alliance between tribal groups and empowerment NGOs such as Budakattu Krishikara Sangha (BKS) and Coorg Organisation for Rural Development (CORD). Such an alliance reflects locally the worldwide ongoing movement for indigenous rights' recognition. Government of India just adopted *The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2008* giving property rights on forest lands to "forest dwelling Scheduled Tribes" and "other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded" (GoI, 2008). We have seen on the field that this Act has already empowered the tribal groups in their discussions *vis-à-vis* the Forest Department and other communities even before its implementation.

We can see that the crucial point is to understand what type of participatory management is advocated by each group of stakeholders. Each of them develops its own vision and rationale of the problem. In the KFD-promoted community forestry, the dominant vision remains: "It is ultimately people who are destroying the forest: they should be educated and involved in forest management with sharing profit" (I.KFD4). For the Kodava-led environmental NGOs, core forests should be free from human habitat and left to the wildlife. They ask to bring tribal groups at the periphery of the forests. Jenu Kurubas and Yerawas supported by empowerment NGOs demand the right to live in their homelands by obtaining property rights within the forest, claiming stewardship of the ecosystem. Whether this claim is genuine or constructed to fit the global romanticized vision can and is still debated.

This multiplicity of actors with multiple interests and who all pursue divergent and sometimes contradictory objectives spell the recipe of a *wicked problem*, with "no definite formulation, no stopping rule and no test for a solution" (Ludwig, 2001). Beliefs, values and the notions of equity and social justice are integral part of it. Adaptive management, involving true partnership between management agencies, local agencies and researchers, is needed to handle such a wicked problem. It involves risk sharing between the stakeholders, and requires mutual trust, collaboration, transparency and accountability (Berkes, 2004). This approach is fundamentally different from the command and control style that we have described above.

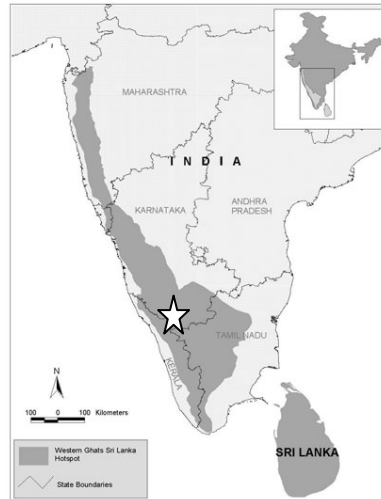
The concept of *domestic forests* that "pushes towards more equitable relations between forest agencies and farmers managing forest resources" could thus be an avenue to explore within this model of management, ensuring not only that "production and conservation are compatible" but also that "no choice [has] to be made between people and nature" (Michon *et al.*, 2007: 1). Or to put it in terms more apt to the locality, "It needn't be tigers vs tribals" (Sekhsaria, 2007) or in Kodagu's case, elephants vs tribals.

## References

- Agrawal, A.**, 2001. State Formation in Community Spaces? Decentralization of Control over Forests in the Kumaon Himalaya, India. *Journal of Asian Studies* 60: 9-40.
- Agrawal, A., Gibson, C.C.**, 1999, Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation, *World Development*, 27, 4 : 629-649.
- Arnstein, S.R.**, 1969. A ladder of Citizen Participation. *Journal of the American Planning Association*, Vol. 35, No. 4, July 1969: 216-224.
- Badola, R.**, 1999. *People and protected areas in India*. Wildlife Institute of India, Dehradun, Uttar Pradesh, India.
- Bawa, K.S., Joseph, G., Setty, S.**, 2007. Poverty, biodiversity and institutions in forest-agriculture ecotones in the Western Ghats and Eastern Himalaya ranges of India. *Agriculture, Ecosystems & Environment* 121: 287-295.
- Berkes, F.**, 2004. Rethinking Community-Based Conservation. *Conservation Biology* 18: 621-630.
- Berkes, F., Folke, C., (Eds)**, 1998. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge, UK: Cambridge Univ. Press.
- Bhagwat, S., Kushalappa, C., Williams, P., N., B.**, 2005. The role of informal protected areas in maintaining biodiversity in the Western Ghats of India. *Ecology and Society* 10, 8.
- Bon, E., Moppert, B., Kalam, M., Thanuja, M.**, 2000. The Dynamics of Land Use. In: Ramakrishnan, P.S. (Ed.), *Mountain Biodiversity, Land Use Dynamics and Traditional Ecological Knowledge*. Oxford and IBH Publishing, New Delhi, pp. 78-119.
- Bratton, M., Walle, N.v.d. (Eds.)**, 1997. *Democratic Experiments in Africa: Regime Transitions in Comparative Perspective*. Cambridge University Press, Cambridge.
- Cheyrier, L.**, 2006. *Emergence of a private forestry sector in the Western Ghats*. CIRAD, 49p.
- Conservation International**, 2008. Biodiversity Hotspots - Western Ghats - Overview.
- Crozier, M., Friedberg, E.**, 1977. *L'acteur et le système. Les contraintes de l'action collective*. Collection Points, Essais, Editions du Seuil, 500 p.
- Edmunds, D., Wollenberg, E.**, 2003. *Local Forest Management. The Impacts of Devolution Policies*. Earthscan Publications, London, UK.
- Elouard, C., Guilmo, C.**, 2000. Vegetation Features in relation to Biogeography. In: Ramakrishnan, P.S. (Ed.), *Mountain Biodiversity, Land Use Dynamics and Traditional Ecological Knowledge*. Oxford & IBH Publishing, New Delhi, pp. 25-155.
- Friedberg, E.**, 1997. *Le pouvoir et la règle. Dynamiques de l'action organisée*. Editions du Seuil, collection Sociologie.
- Garcia, C., Pascal, J.P.**, 2006. Sacred Forests of Kodagu : Ecological Value and Social Role. In: Cederlöf, G., Sivaramakrishnan, K. (Eds.), *Ecological Nationalisms: Nature, Livelihoods, and Identities in South Asia*. University of Washington Press, Seattle and London, pp. 199-229.
- KFD**, 2002. *Revised Government order on Joint Forest Planning and Management in Karnataka (2002)*. CCF (Social Forestry). Aranya Bhavan Malleswaram, Bangalore, 30 p.
- KFD**, 2002. *Creation of the Forest Development Agency in Madikeri Forest Division 2002-2003 to 2006-2007 under National Afforestation Programme (NAP)*. DCF Madikeri Division
- KFD**, 2003. *NAP. Microplan Chennayanakote Chennangi village*. Chennayanakote Chennangi Ecodevelopment Committee, Thithimathi Range, Virajpet Forest Division.

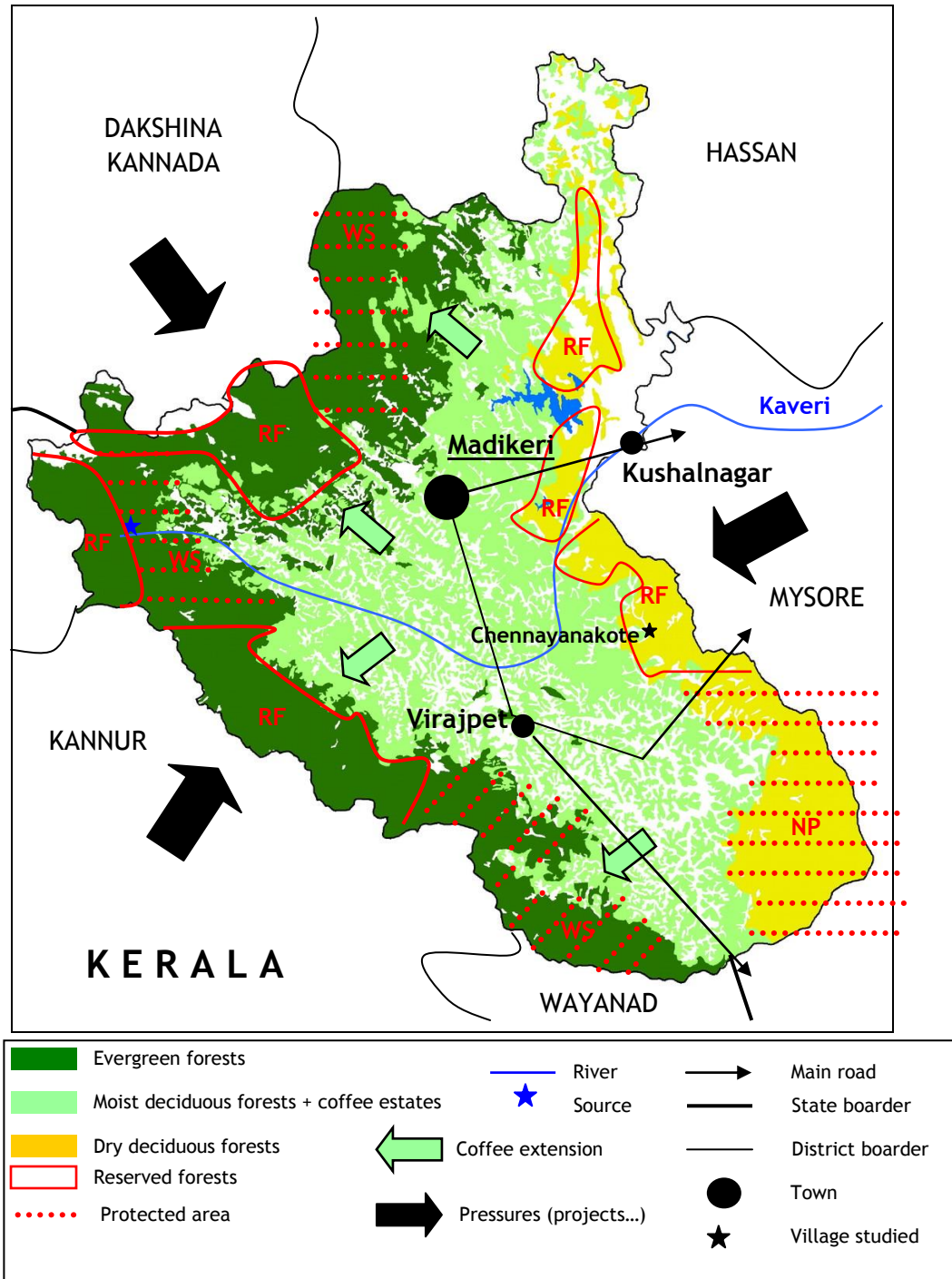
- KFD**, 2005. *JBIC-Assisted Karnataka Sustainable Forest Management & Biodiversity Conservation (KSFMB) Project. From 2005-06 to 2012-13. Project implementation Manual*, Project Management Unit, Aranya Bhavan Bangalore, 150 p.
- KFD**, 2007. *KSFMB Project. Microplan Chennangi village*. Chennangi Village Forest Committee, Thithimathi Range, Virajpet Forest Division.
- Laval, M.**, 2008. *People Elephants and Forests. Collective action to manage an environmental wicked problem in Kodagu, Western Ghats*. MSc Thesis, AgroParisTech-ENGREF, CIRAD, 150 p.
- Lélé, S., Kumar, A.K., Shivashankar, P.**, 2005. *Joint Forest Planning and Management in the eastern plains region of Karnataka: a Rapid Assessment*. Technical Report, CISED, ISEC, 63 p.
- Leroy, M.**, 2006. *Gestion stratégique des écosystèmes du Fleuve Sénégal. Actions et inactions publiques internationales*. L'Harmattan, Etudes africaines, 624 p
- Ludwig, D.**, 2001. The Era of Management Is Over. *Ecosystems* 4, 758-764.
- Mermet, L., Billé, R., Leroy, M., Narcy, J.-B., Poux, X.**, 2005. L'analyse stratégique de la gestion environnementale: un cadre théorique pour penser l'efficacité en matière d'environnement. *Natures Sciences Sociétés*, 13: 127-137.
- Michon, G., De Foresta, H., Levang, P., Verdeaux, F.**, 2007. Domestic forests : a new paradigm for integrating local communities' forestry into tropical forest science. *Ecology and Society* 12 (2): 1.
- Moppert, B.**, 2006. *Entre café et forêt: dynamiques paysagères et gestion de la biodiversité dans le Kodagu (Karnataka, Inde du Sud)*. Thèse de Géographie. Université Bordeaux 3, 238p.
- Myers, N., Mittermeyer, R.A., Mittermeyer, C.G., Fonseca, G.A.B.d., Kent, J.**, 2000. Biodiversity hotspots for conservation priorities. *Nature* 403, 853-858.
- Pascal, J.-P.**, 1982a. *Bioclimats des Ghâts Occidentaux*. Pondicherry, FIP.
- Poffenberger, M.**, 1990b. Facilitating change in forest bureaucracies. In Poffenberger, M., (Ed.). *Keepers of the forest*. Kumarian Press, West Hartford.
- Ramakrishnan, Chandrashekara, Elouard, Guilmo, Maikhuri, Rao, Sankar, Saxena**, 2000. *Mountain Biodiversity, Land Use Dynamics and Traditional Ecological Knowledge*. Oxford & IBH Publishing. New Delhi, Calcutta, Oxford
- Ribot, J.**, 2004. *Waiting for Democracy: The politics of choice in natural resource decentralisation*. World Resource Institute, Washington, D.C.
- Ribot, J., Larson, A.M.**, 2005. *Democratic Decentralisation through a Natural Resource Lens: Cases from Africa, Asia and Latin America*. Routledge, Oxon, UK.
- Richter, G.**, 1870. *Gazetteer of Coorg*. Low Price Publications, Delhi.
- Sarin, M.**, 2001. Disempowerment in the name of 'participatory' forest? Village forests joint management in Uttarakhand. *Forests, Trees and People*, newsletter n°44, 17 p.
- Sekhsaria, P.**, 2007. Conservation in India and the Need to Think Beyond Tiger vs. Tribal. *Biotropica* 39: 575-577.
- Sood, K.K., Gupta, H.K.**, 2007. Implications of Indian Foresters' Perspectives of Joint Forest Management. *Small scale Forestry* 6: 291-308
- Srinivas, M.N. (Ed.)**, 1951. *Religion and Society among the Coorgs of South India*.
- Uthappa, K.G.**, 2004. *Land Tenure, Land Holding, Tree Rights of Kodagu*. Shobha Printers, Mysore.

**Figure 1:** Localisation of Kodagu in the Western Ghats Sri Lanka Biodiversity Hotspot



(source: [www.cepf.net](http://www.cepf.net))

**Figure 2:** Synthesis map of Kodagu's natural resource management stake



**Figure 3:** The different types of areas of Chennayanakote village

