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The Case of *Prunus africana* in Cameroon

Raymond Achu Samndong

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Access and Benefit Sharing
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Raymond Achu Samndong
rayasboy@yahoo.com

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Abstract

This paper provides some information and knowledge on *Prunus africana* as a case study of ABS capacity development. As a desk study, the paper discusses the intrinsic medicinal value of *Prunus*, its importance to the livelihoods of the locals and identifies local strengths as well as shortcomings in the existing ABS agreement related to *Prunus* in Cameroon that are important in the ongoing negotiation process of the international ABS regime. The case study draws attention to the gap that exists between genetic resources and biological resources in the ABS component of the CBD, and its implications regarding the negotiation process of the ABS regime.

Key Words:

Cameroon, ABS capacity development, *Prunus africana*, medicinal value, biological resource

Orders to:

Fridtjof Nansen Institute
Postboks 326
N-1326 Lysaker, Norway.

Tel: (47) 6711 1900
Fax: (47) 6711 1910
Email: post@fni.no
Internet: www.fni.no

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1 Introduction

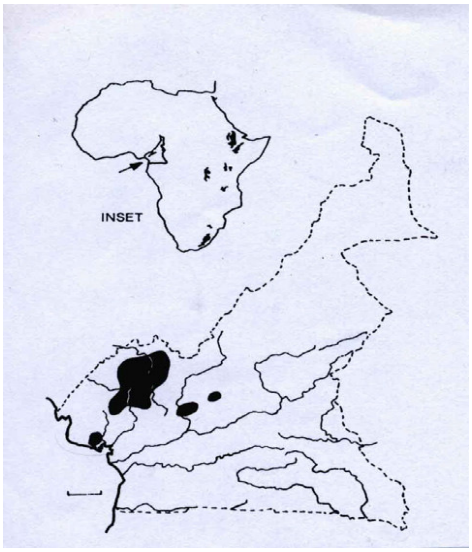
Prunus africana is a medium-sized evergreen hardwood species of the Rosaceae family with leathery leaves, deeply fissured bark and creamy white flowers (Page, 2003; Cunningham and Mbenkum, 1993). It is found in Afromontane forests[1] and is known by a variety of other names including *Pygeum africaum,* African cherry and red stinkwood (Stewart, 2003). Globally, this species is distributed mainly in the wild Afromontane forests of some countries in Central, East and Southern Africa, including the islands of Sao Tome and Madagascar (Ekane, 2005). It is a wild relative of the plum tree and occurs mostly at high altitudes (900-3000m) with low temperatures and in areas of favorable volcanic soil. It has a spreading crown and can grow up to 45m tall, producing cherry-like fruit that are consumed by many birds and animal species (Page, 2003; Tchouto, 1996; Sunderland and Nkefor, 1996). The tree takes about 15-20 years to produce seeds and 12-15 years to produce bark and hard woods that have multiple local uses. The tree bark is dark brown with rough black texture containing active ingredients of high medicinal potential as a remedy for prostate gland afflictions, which has brought the tree to international attention (Cunningham and Mbenkum 1993). Unsustainable exploitation of *Prunus* bark led to the species being classified by the World Alliance for Nature (IUCN) as a vulnerable species and it is listed in Appendix II of the Convention of International Trade in Endangered Species of Fauna and Flora (CITES). This decision stresses the need for sustainable use of this species, equity and fair sharing of benefits from exploitation (Ndam, 1996; Cunningham, 2006; Stewart, 2003).

This paper therefore offers some background knowledge on *Prunus africana* in Cameroon. It examines the utilization and importance of *Prunus* exploitation and the legal framework of commercial exploitation and trade. The paper also explores some developmental issues related to the ABS[2] agreement and domestication prospects for *Prunus africana* in Cameroon.

2 *Prunus africana* in Cameroon

Prunus africana is found in six major montane landscapes of Cameroon (Figure 2.1) namely: the Mount Cameroon region, the Adamawa plateau, the Bamenda Highlands in the Northwest region, the Littoral and Bakossi (Mt. Manenguomba) mountains, the Western highland and the Central Highland region (Page, 2003; Cunningham and Mbenkum 1993). These regions are over 900m in altitude and are characterized by rich volcanic soils, cooler highland climate with mean annual rainfall above 900mm. This favorable climatic condition and fertile soil have contributed to the dense population of *Prunus* in these regions (Ewusi 1998). The exploitation of *Prunus* in these regions, coupled with the presence of fertile volcanic soil and a climate favorable for agriculture has triggered an influx of people into the areas (Cunningham and Mbenkum 1993).

Figure 2.1: Maps of Cameroon and the whole African continent showing the geographical distribution of *Prunus africana*



Source: Adapted from Cunningham and Mbenkum, 1993).

Several independent inventories have been carried out to determine the population size and distribution of *Prunus africana* in Cameroon (Tchouto, 1996; Sunderland and Nkefor, 1996; Belinga, 2001; Betti, 2008). The recent inventory carried out by The Centre for International Forestry Research (CIFOR) together with other research organizations demonstrated that the species is concentrated in the dense tropical submontane and montane mixed forests of the Southwest and Northwest regions of Cameroon. In the Northwest it is concentrated around Bamenda, Fundong, Kumbo, Ndu and Oku areas; and in the Southwest, around the Mount Cameroon region of Buea and Mount Manenguomba and Koupe regions (Ingram et al, 2009). The inventory confirmed the continuous decline of the *Prunus* population in these regions due to over exploitation and inadequate harvesting techniques.

Several threats to the *Prunus* population have been observed in Cameroon. Although forest clearances leading to population fragmentation, slash and burn agriculture and habitat loss are potential threats, unsustainable harvest of the bark for international trade has been the fundamental threat to the *Prunus* population (Ndibi, 1996; Cunningham and Cunningham, 2000, Betti, 2008). These threats have raised huge concern at both national and international levels, about the need to regulate and control the exploitation and harvesting methods in Cameroon.

3 The utilization and importance of *Prunus africana* in Cameroon

Prunus africana is widely recognized for its medicinal value at both national and international levels (Leigh, 2000; Schippmann, 2001). This tree species is used in many ways, and is the fourth most popular medicinal plant used in the Montane forest regions of Cameroon. Locally, dry bark is either chewed or crushed into powder and consumed as tea for the treatment of several ailments (Stewart, 2003). Concoctions produced from the bark and leaves are used in the treatment of Malaria, stomach-ache and fever. Traditional healers in these regions suggest that a mixture of *Prunus* bark with bark of other species such as *Trechillia sp* and *Olea capeusis* has proven to be effective against syphilis. Other reports suggest that a concoction of *Prunus* bark can regulate blood pressure and purify blood, be effective against asthma, mental disorder and urinary problems (Cunningham et al., 2002; Laird et al., 1996; Hall et al., 2000; Dawson et al., 2001; Anon., 2002; Cunningham, 2006). The bark is not only used by traditional healers but also by the local population, who collect the medicinal plant for use as a purgative[3] for cattle (Nfi et al., 2001; Stewart, 2003).

Apart from its medicinal use, the wood of this species is reported to be of high economic value. The wood is hard and durable and is used by the local population in these regions as construction material and in the manufacture of furniture, handles for farm tools and household utensils (Mburu et al., 2007; Tangem, 2008; Stewart, 2003; Ingram and Nsawir, 2007; Ewusi and Acworth, 2001).

The most important use of *Prunus* is the commercial use to relieve the symptoms of benign prostatic hypertrophy or the related condition of benign prostatic hyperstasia (BPH), both of which are swellings of the prostate gland that are common among older men (Page, 2003; Stewart, 2003; Cunningham et al., 2002). Some sources have documented that the presence of cyanogenic glycoside amygdalin in the bark of *Prunus* has been used internationally as a treatment for such symptoms since the mid 1960s, when the bark extract was patented by a French entrepreneur (Debat, 1966). Extracts in tablets or capsules are sold under different names such as Tadenan, produced by Laboratoire Debat in France; Pugenil, produced by Indena Spa in Italy; Prosca, produced by Merck and Dohme in Germany; and as Pugeum in a range of health food outlets (Page 2003; Ingram et al 2009; Betti, 2008). The great medicinal value of this species has triggered substantial international trade and undoubtedly unsustainable exploitation, with the resultant degradation of the wild stock (Betti, 2008; Page 2003; Cunningham, 2006).

4 Commercial exploitation and trade of *Prunus africana* in Cameroon

Commercial exploitation and trade of *Prunus africana* has been very pronounced, and started far back as the early 1970s (Cunningham et al., 2002; Ingram et al, 2009). Though the plant species has multiple uses, its bark has been the primary reason for commercial exploitation for cash income at the national level (Stewart, 2003; Ingram and Nsawir, 2007 Ewusi and Acworth, 2001). Reports from the assessment of *Prunus* trade in the markets of some major cities in the country confirmed that the national trade is small scale and low volume, usually an average of 1kg of dried *Prunus* bark available for sale by traditional herbs vendors. About 80% of traditional healers in the montane regions of Cameroon use *Prunus* as one of their most important commercialized plant species (Awono et al 2008; Ingram, 2007).

Internationally, Cameroon is the most important source of *Prunus africiana* (Cunningham and Mbenkum, 1993). Commercial exploitation for international use started in 1972 by Plantecam Medicam, a subsidiary of the French company Laboratoire Debat. This company obtained a monopoly for commercial exploitation and trade of *Prunus* bark and bark extract from 1974 to 1986 (Table 4.1). Plantecam recruited and trained its own workers from the Western region of Cameroon. These workers harvested *Prunus* bark from the Mount Cameroon region and other montane upland forest regions in the southwest, west and northwest regions of Cameroon. During this period (1974-1985), harvesting was managed and controlled by Plantecam Medicam with most tree species surviving (Ndibi, 1996). The company had an interest in protecting the existing resource, and provided recommendations to the forest department about harvesting techniques.

Table 4.1: Quotas of *Prunus africana* attributed to Plantecam Company between 1972-1986 (Ndibi, 1996).

Company	Qunatity	Year	Area
PLANTECAM	500	1976	NWP, SWP
PLANTECAM	500	1977	SWP
PLANTECAM	500	1978	NWP
PLANTECAM	500	1978	SWP
PLANTECAM	500	1979	NWP
PLANTECAM	500	1979	SWP
PLANTECAM	500	1980	NWP
PLANTECAM	500	1980	W
PLANTECAM	500	1980	SWP
PLANTECAM	1000	1982	NWP, SWP, W
PLANTECAM	800	1983	NWP, SWP, W
PLANTECAM	1300	1986	NWP, SWP, W

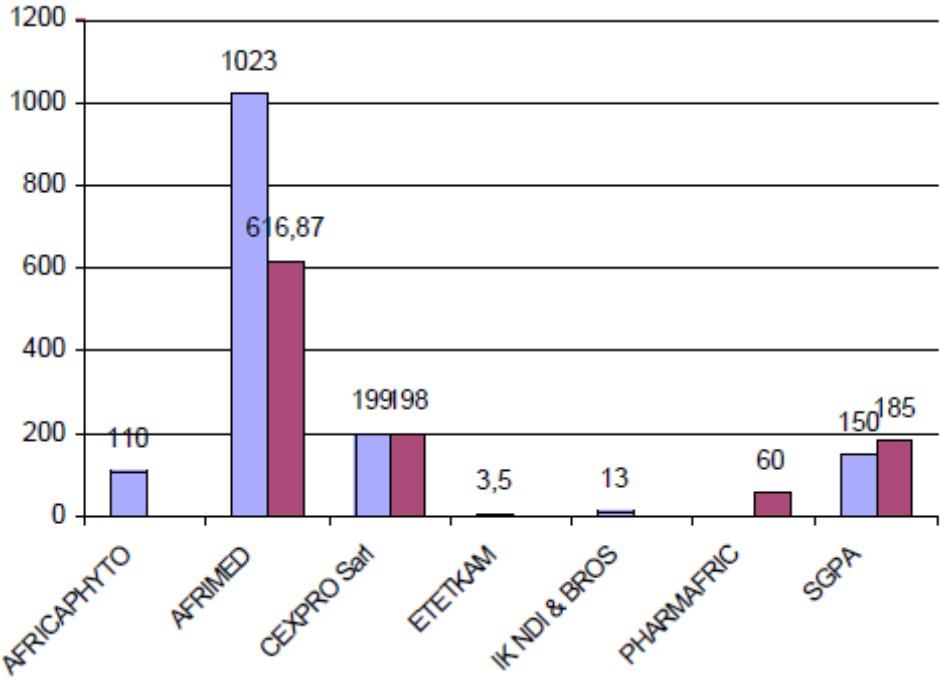
This system collapsed in late 1985 when the forestry department granted about 50 additional permits for *Prunus* bark exploitation to Cameroonian entrepreneurs (Cunningham and Mbenkum, 1993). Bark harvesting was no longer under the monopoly control of Plantecam Medicam, although the company remained the sole exporter of *Prunus africana* bark and bark extracts. These additional permits, coupled with the economic crisis in the late 1980s and the grievance expressed by the local population towards the company's employment strategy encouraged over-exploitation and unsustainable harvest of the wild stock and trade of the bark to middlemen at very low prices. During this period (1986-1992), over exploitation of the bark was experienced in the Northwest province of the country. Thereafter, harvesting became increasingly focused in the mount Cameroon region since the other sources were depleted. By 1994, there were about 70 permit holders in the northwest regions, each allowed to harvest 100 tons of bark annually. In 2000, up to 50 companies obtained licenses and between 2004-2007 a total of 33 companies were authorized to exploit *Prunus africana* in the country (Table 4.2), with some 6544 tons of bark granted to those companies (Betti, 2008). The number of companies decreased from 25 in 2004 to 9 in 2007 (Figure 4.1), as many of these companies were eliminated by the commission for not paying taxes for the previous years (Betti, 2008).

Table 4.2: Exportation of *Prunus africana* from the Douala Seaport

Company	Quantity (tons)	Destination	Year
AFRICAPHYTO	50	France	2005
AFRICAPHYTO	60	Spain	
AFRIMED	361	France	
AFRIMED	662	Spain	
CEXPRO Sarl	139	France	
CEXPRO Sarl	27	Madagascar	
CEXPRO Sarl	18.5	Morroc	
CEXPRO Sarl	14.5	Spain	
ETETKAM	3.5	USA	
IK NDI &BROS	13	France	
SGPA	150	France	
AFRIMED	346.87	France	2006
AFRIMED	270	Spain	
CEXPRO Sarl	160	France	
CEXPRO Sarl	38	Madagascar	
PHARMAFRIC	60	France	
SGPA	185	France	

Source: COMCAM, adapted from Betti, 2008

Figure 4.1: *Prunus* bark recorded in CITES permits and per company in 2006



Source: Betti, 2008

These companies engaged in the exploitation and international trade of *Prunus* bark after the closing down of Plantecam Medicam in early 2000. Data recorded between 2005-2006 by the Trade forest products database (COMCAM) based at the Douala Seaport, and the CITES management authority between 2006-2007, confirmed that AFRIMED, SGPA and CEXPRO are the three main companies exporting *Prunus* bark from Cameroon. The main importing countries today are France, Spain, USA, Madagascar and China.

5 The legal framework and management measures for *Prunus africana*

In order to examine the legal framework of *Prunus africana* management in Cameroon, it is important to identify the major stakeholders or actors involved in the exploitation. The way the forest is used, which groups and individuals have access, what is extracted from the forest and the way it is extracted all have bearings in defining the management regime (Ostrom, 2005; Vatn, 2005). Management regimes are mechanisms that determine the future of the forest in question. How well the regime is conceived and how well it is implemented will determine how secure the future of the forest can be. The management regimes vary from state ownership to communal ownership and control, private forest to open access (de facto) (Vatn, 2005). The major stakeholders of *Prunus africana* exploitation and management include governmental agents as managers, commercial loggers including *Prunus africana* product harvesters, and the local people with the user rights. Also included in this list are non-governmental organizations (NGOs) with vested interest in scientific research and biodiversity conservation.

The Cameroon forestry sector has undergone a series of policy reforms starting from the pre-colonial to post-colonial era (Diaw et al, 1997; Bigombe, 1996). During these periods, the policy reforms were characterized by a legal absolute hegemony of the state over the country's forest lands. The local communities living within these forest lands were in a way excluded by an ownership system and property regime that only recognized their rights of extraction (Diaw, 2005; Oyono, 2005; Samndong, 2009).

Table 5.1: Some important official texts drawing the legal framework for the exploitation of *Prunus*

Reference number	Date of Signature	Observation
Decree No. 74/357	17 April 1974	(section 74, 97, 98) to regulate the exploitation of medicinal plants
Law No. 81-13	27 November 1981	To lay down forest, wildlife and fisheries regulations
Decree No. 83-69	12 April 1983	To lay down forestry regulations
Arrete No. 11/A/MINAGRI/DF/SEF	28 February 1991	To ban the exploitation of *Prunus* in Cameroon (except Plantecam)
Arrete No. 48/MINAGRI/DF	11 February 1992	To uplift ban on the exploitation of *Prunus* exploitation
Decision No. 0045/D/MINEF/DF	11 January	To ban cutting down (felling) in the exploitation of *Prunus*
Law No. 94/01	20 January 1994	To lay down forestry, wildlife and fisheries regulation
Decree No. 15/531/Pm	23 August 1995	To lay down forestry regulations
Decision No. 0336/D/MINFOF/DF	06 July 2006	To fix the list of special products of a particular interest

After independence (1960-1985), forest management was rapidly transformed, as the government introduced successive laws regulating forest and land (Forest Order No. 73/18 of May 25, 1973, Land Tenure and State Lands Order No. 74-1 and 74-2 of July 6, 1974, Forestry law No. 81/13 of December 27, 1981), (Table 5.1). These legal frameworks respected the colonial strategy of state hegemony over the forest lands. Commercial exploitation of *Prunus africana* started during this period (in 1972), and the exploitation right was granted to Plantecam Medicam as the sole exploiter of this plant species in Cameroon. Their activities were thus regulated by the above-mentioned laws.

However, this system collapsed in 1985 when about 50 additional licenses were granted to other Cameroonian entrepreneurs. The collapse was also due to the fact that the forestry legislation was under review as part of the Tropical Forestry Action Plan in 1987 when the government began drafting a new forest law. The adoption of the new forest law was part of the structural adjustment program. This process coincided with the economic crisis faced by the country during this period, political unrest, and the need for public freedom and general well-being all contributed to the collapse of the previous management system. Amongst these factors, there was also pressure from forest-dependent communities requesting secure and equitable access to financial benefits from the public management of the forests. All these factors coupled with the structural adjustment program prompted the government to reform the entire system by democratizing the nation through the creation of the law of freedom of association and of political parties as well as the general restructuring of the forestry sector (Brown et al 2002; Essama-Nssah and Gochowski, 2000; Ekoko, 1999; Oyono et al, 2006).

The proposed new forest law was established by the presidential decree No. 94/436/PM of January 1994 as the main law governing the forestry sector in Cameroon. Associated with this law is the decree No. 95/531/PM of August 1995 to determine the conditions for implementation of the forestry regulation (GoC,[4] 1994). This new forest law has three main components:

a) The regulative framework and national zoning plan

b) The concession policy

c) The decentralized forest management model

This law was based on the premise that Cameroon's forest is a unique natural resource that has been exploited in a non-sustainable way in the past, and was meant to regulate the relationship between the state and other stakeholders or key actors involved in forest management, harvesting, processing and commercialization of forest products in Cameroon (Karsenty, 2004; Amariei 2005; Cerutti and Tacconi, 2006). The main rationale of the law was to foster economic growth via the allocation of forest concessions for commercial exploitation (Ekoko, 1997; Ekoko et al, 2002).

However, the current forest law of Cameroon (1994 forest law) sufficiently describes policy concerning timber, wildlife and community forestry, but policy concerning non-timber forest products (NTFP) remains vague (Betti 2008). No adequate and precise management regime has been developed for NTFPs, although the government has recognized its importance as a means to improve livelihoods in the rural areas and to generate income for the national economy. The government thus distinguishes two categories of NTFPs; the first group is comprised of NTFPs where the government does not require any form of taxes from the harvesters, while the second group is comprised of products where the government requires tax from any person willing to harvest or commercialize them (Ingram et al 2009; Betti, 2008).

Prunus africana belongs to the second group, and its harvesting and commercialization is regulated by the Ministry of Forest and Fauna (MINFOF) as 'Special Forestry Products' through a process of annual, non-renewable, tonnage-based exploitation permits for dried bark harvested nationwide and/or from specific regions (zones) allocated by auction (GoC,[4] 1994). Two main directorates of MINFOF are concerned with the exploitation of these special forestry products. While the Directorate of forest is in charge of the management of the resources, the Directorate of promotion and processing is concerned with the valorization of the resources. The Ministry of Economy and Finance ensures the collection of taxes and fees through the Forest Revenue Enhancement Program (FREP). The only tax fixed to date by the national financial law for the exploitation of special products is called the regeneration tax, which is 10FCFA/Kg of the product (1 euro = 650FCFA), while the fee expected is 5% of any product exported (Ingram et al 2009; Betti, 2008). Permits are granted by an inter-ministerial committee, based on technical reports from the provincial chiefs of forestry, which should provide a recommendation of the species' quantities, exploitation areas and harvesting modalities. The delivery of a license is accompanied by a report book (Simple management) clearly describing the harvesting practices according to the vegetative structure to be extracted.

Article No. 2 of Decision No. 0336/D/MINFOF of the 6th of July 2006, giving the list of special forestry products with particular interest, states that these are products that are relatively less abundant in the forest or for which some additional measures are indispensible, due to the threatening caused by the non-sustainable harvesting methods employed by harvesters.

6 Development context of ABS Agreement on the exploitation of *Prunus africana* in Cameroon

Concerns about the future of *Prunus africana* led to it beinglisted in Appendix II of the Convention on International Trade in Endangered Species of wild Fauna and Flora (CITES) in 1994, becoming effective in 1995. The listing of *Prunus africana* by CITES has been partially effective in reducing threats because it has helped to raise awareness about the problems posed by international trade. Several non-governmental, governmental and international bodies were involved in programs to promote sustainable management of wild populations, their cultivation and monitoring of the trade.

In the Mount Cameroon region, the German Development Cooperation (GTZ) initiated a project in 1996 called the Mount Cameroon Project (MCP) to assist the villagers of this region and promote the sustainable management of *Prunus* in the southwest province. The outbreak of illegal exploitation of *Prunus* in 1994 in the Mount Cameroon region, fuelled by illegal buyers (middlemen) who had exhausted *Prunus* stock in the northwest and west provinces following licensing of additional contractors and the employment conflicts that existed between Plantecam Medicam and the local population, all prompted a negotiation process for Plantecam and the local communities to work together. The process was facilitated by the MCP and local forestry officials between local *Prunus* harvesters in Mapanji and Bokwoango communities and Plantecam Medicam. The negotiation process was based on the premise that: a) by developing partnership between local communities, government and commercial exploiters, sustainable harvesting of *Prunus africana* could be achieved, and b) for this to work in the long run, the benefits accruing from *Prunus* exploitation to local communities needed to be increased. After this intervention by MCP, *Prunus* harvesters' unions were created in these two communities. After a series of negotiations, an agreement was signed between representatives of the unions and Plantecam Medicam that allowed the local *Prunus* harvesters to operate legally under Plantecam's license. The agreement set forth terms which regulated the amount to be harvested per month, methods of harvesting and supervision, punishment for non-respect of norms, modalities for *Prunus africana* regeneration, and a system of benefit sharing to the community. All bark harvested was sold directly to Plantecam Medicam, thereby increasing income to the unions by at least three fold. To ensure that the system worked, MCP initiated and put into practice a participatory monitoring and evaluation (PME) system involving all stakeholders. The purpose of the PME system was to ensure that all the agreements reached so far continued to work to guarantee sustainable management of the resource. It permitted learning from experience and enabled stakeholders to improve the efficiency and effectiveness of the PME system.

Nine months after the agreements were signed, about 25,000,000 FCFA (USD 41,423.3) was raised by the Mapanja *Prunus* Harvesters' Union, of which only 1,580,000 FCFA (USD 2,218) went to the village development fund; 1,072,760 FCFA (USD 1,778) covered the union's running

costs and the balance of 22,347,240 FCFA (USD 36,996) was shared among the 60 members according to their individual harvests. As to non-monetary benefits, members of the harvesters' union were trained on sustainable harvesting techniques of *Prunus* by Plantecam Medicam. The village development fund contributed in two important development projects in the village including the water project and the electrification of the village.

With increased income and livelihoods, more houses were built in the village by the members of the union, and some members of the union got married and were able to send their children to schools. The members of the union and other community members became more conscious about the necessity to conserve *Prunus* and harvest it sustainably. Plantecam secured the supply of *Prunus* bark from the union, and the threat of local depletion of *Prunus* in the Mount Cameroon area was minimised as the unions engaged in the control of illegal and unsustainable activities.

With the closing down of Plantecam Medicam in late 2000, both the Bokwoango and Mapanja *Prunus africana* Harvesters' Unions joined together as a CIG[5] with the assistance of the MCP. The Mount Cameroon *Prunus africana* harvesters' Common Initiative Group (MOCAPCIG) is made up of 14 villages (Duone, 2008; Ekane, 2005). They intend to harmonize the management and harvesting activities of all the communities exploiting *Prunus africana* in the Mount Cameroon region. The main objectives of this CIG include:

- To become exposed to the international market
- Sustainable exploitation and regeneration of *Prunus*
- Improve the socio-economic life of each and every member of the group and the community as a whole through the support of income-generating activities (eco-tourism, bee farming, etc.)
- To promote savings and loans schemes
- To enforce the control of illegal exploitation
- To monitor exploitation of forest resources in the region in collaboration with MINEF.

The present quota for yearly and daily harvest of *Prunus africana* was set by MINEF to ensure sustainability following the indiscriminate exploitation that caused the reduction of *Prunus africana* stock in the Mount Cameroon forest. The annual quota of *Prunus africana* bark for both the Bokwoango *Prunus africana* harvesters' union and the Mapanja *Prunus africana* harvesters' union was 100 tons, i.e. 50 tons per union. Each union member was supposed to harvest no more than 32 kg per day. The union members themselves came to a consensus that the least amount of bark each member had to carry per day should be 20 kg. The income and tax collections of both the Bokwoango and Mapanja *Prunus africana* harvesters' unions for the year 2004 are as follows:

- Annual tonnage – 100 tons;
- Annual income – 260,000,000 FCFA

- Annual *Prunus africana* regeneration tax – 1,000,000 FCFA
- Annual *Prunus africana* monitoring tax – 1,000,000 FCFA
- Annual contribution to the community development funds – 4,000,000 FCFA
- Annual contribution to the union funds – 2,000,000 FCFA
- Annual salary to harvesters in both unions – 180,000,000 FCFA

The management of both the Bokwoango and Mapanja *Prunus africana* harvesters' unions was organized in such a way that the money earned from *Prunus africana* harvesting assisted the members, their families and the entire community in one way or the other. For instance, these unions have the community development fund and the union fund. Both unions also made provision for *Prunus africana* regeneration and monitoring tax. These contributions were deducted from the price of each kg of *Prunus africana* bark that each member harvested. In both the Bokwoango and Mapanja *Prunus africana* harvesters' unions, deduction was done as follows:

- 10 FCFA/kg was deducted as regeneration tax
- 10 FCFA/kg was deducted as monitoring tax
- 40 FCFA/kg was deducted for the community development fund
- 20 FCFA/kg was deducted for the union fund.

This fund was opened to ensure that the benefits from the Bokwoango *Prunus africana* harvesters' union trickle to the entire community through the participation in community development projects. After all the tax deductions and contributions of each member to the union and community development, what was left was given to the members at the end of the month as their salaries. The salary of each member depended on the quantity of bark the member brought from the forest, which in turn was dependent on man power. Not all members were strong enough to bring 32 kg of bark per day from the forest, so they were advised to de-bark as much as they could carry without exceeding 32 kg.

However, it is important to stress that at the beginning of the year 1996 a kg of *Prunus africana* bark was bought by middlemen from the local *Prunus* harvesters at the price of 60 FCFA. The middlemen in turn sold the same quantity to Plantecam at a higher price. According to Cunningham and Mbenkum (1993), *Prunus* bark was bought for 150-170 FCFA per kg (US$ 0.6-0.7) in Cameroon by Plantecam Medicam, while this same quantity was bought in Kenya at a higher price of about US$ 2. This means that the middlemen were buying *Prunus* bark from the local harvesters at low prices and selling the same quantity of bark to Plantecam Medicam at higher prices. The harvesting at that time was environmentally unfriendly. The price of a kg of bark went down to 100 FCFA towards the end of the year 1996. The intervention of MINEF and MCP, which resulted in the formation of the *Prunus africana* harvesters' union

and the introduction of sustainable harvesting techniques in 1997, made it impossible for middlemen to continue their activities in the region. Direct transaction between the union and the exportation company was established and the price per kg of bark went up to 185 FCFA (Table 6.1). In 1998 some union members were caught carrying out unsustainable harvesting techniques. This resulted in the suspension of the union by MINEF. Harvesting resumed, however, in 1999 with MINEF's permission. During the period from 1999 to 2000, the price per kg of *Prunus* bark went up to 215 FCFA (Ndam and Ewusi, 2000; Ekane, 2005; Tieguhong et al, 2008).

Table 6.1: Price variation, daily quota and daily income of *Prunus africana* harvesters from 1996-2005

Year	Price/Kg (FCFA/kg)	Daily qouta (kg)	Daily income in FCFA (min. of 20kg to max of 32kg)
Early 1996	60	-	-
Late 1996	100	-	-
1997	185	32	3200-5100
1998 (under suspension)		-	-
1999	215	32	3200-6600
2000	215	32	3200-6600
2001	200	32	3200-6400
2002	200	32	3200-6400
2003	180	32	3200-5760
2004	160	32	3200-5120
2005	160	Not precise	8000-above

Source: Ekane, 2005

The same initiatives were conducted in the northwest province by Birdlife International. Birdlife initiated two main projects in the northwest province (Parrott and Parrott, 1989; Chi, 1999; Asanga, 2001). The first project took place from 1987 to 1992 and covered 10,000 ha in the Bui division, while the second project took place from 1992 to 2004 and covered the same area in the Boyo division. The project aimed to protect the mountain forests as the principal habitat of two birds that were endemic and threatened in the Mount-Cameroon area: Banded-wattled-eye and *Tauraco bannermani*. To do this, the project focused its activities on the conservation of *Prunus africana*, an important plant species for local people and for the two birds. The project adopted two main approaches: delimitating the perimeter of the 20 000 ha of the forest covering the two divisions by a *Prunus* hedge, and promoting the rural forestry. *Prunus africana* was planted together with *Podocarpus sp*, another useful plant species for local people, along the perimeter of the forest using a distance of 5 m between the trees (Asanga, 2001; Betti, 2008).

The strategy of the rural forestry consisted of encouraging villagers in the domestication and development of *Prunus* plantations in their own forests. For that, the project distributed seedlings or small plants of 8 months (50 cm high) to villagers. To encourage villagers to plant and conserve their *Prunus* against bush fires and against sheep (sheep eat seedlings and young *Prunus*), the project provided incentives to villagers who presented good results. The incentives were as follow: 25 FCFA/plant at the end of the first year, 15 FCFA/plant at the end of the second year, 10 FCFA/ plant at the end of the third year, and 5 FCFA/plant at the end of the fourth year. The idea here was to allow the young plants to attain a certain age and height so as to be able to resist some adverse conditions. The dead plants were not paid for, hence the villagers built fences to protect their plantations against bushfire, identified as one of the main threats to *Prunus* in the humid Savannas. The Birdlife project also trained local people on suitable techniques of harvesting *Prunus* bark such as: harvesting trees that were at least 17 years old, debark the opposite side, and return 4 – 6 years later to debark the remaining sides on the same trees.

However, some villagers did not feel responsible for the development of these plantations. They did not wait until the plants were 17 years old, as suggested, before engaging in harvesting their *Prunus*. This exploitation started in 1999 – 2000 (when the trees were 12-13 years old), so the product was not good in terms of both quantity (volume of bark) and quality (concentration of active component). By 2002, 15 years after the first plantations had been established (in 1987), the forest administration – working in partnership with the Birdlife project – initiated a circular letter asking villagers to await the control of the forest officers before harvesting their *Prunus* barks. The terms used in this letter were not appreciated by the villagers, who thought that the forest administration was trying to exercise a total control of their plantations. Also, the problem of distinction between the conditions of harvesting domestic *Prunus* and wild *Prunus* was not clarified by the forest administration. According to the current forest legislation, products of domestic origin are not subjected to the payment of the regeneration tax. This tax is only required for the wild *Prunus*. As a consequence of all these problems, villagers started engaging in negotiations with some companies to harvest their *Prunus* out of the control of the forest administration. Villagers sold their plantations to the companies, which harvested by felling down before debarking. The price of a tree varied from 4000 FCFA to 8000 FCFA, while that of a kilogram of the bark oscillated between 60 FCFA and 100 FCFA. For the *Prunus* hedge strategy, the trees were destroyed very early, at 8-10 years old, than the rural forestry strategy had planned. Villagers knew that the *Prunus* hedges did not belong to a specific person, but to the forest administration or to Birdlife. They therefore decided to destroy these plantations and sell the products to companies. This illustrates once again the problem of lack of responsibility observed for these *Prunus.* In this way, all the *Prunus africana* trees planted by the Birdlife project and villagers were destroyed in the North West province.

By 2000, Birdlife profited from the clauses of the new forest law (GoC, 1994; 1995) and the publication of the manual of procedures for community forests to develop a third strategy, which was community forestry. This strategy aimed to enhance the participation of villagers in community forest management, to secure their rights to the planted *Prunus* trees, and to facilitate the transition between the project management phase and the local community management phase (Asanga, 2001; Fotso, 2005). To make the villagers feel more responsible for their trees, Birdlife divided the 20,000 ha of forests into 17 community forests, with the *Prunus* exploitation being the main activity in those forests. As an international NGO, Birdlife financed and assisted local communities in the development of the simple management plans for those community forests. The first management plans were developed in 2002, the last in 2003. The inventory conducted for drafting those plans were the multi-resource inventories type, consisting mainly of prospecting the forest. The beginning of the activity in the community forests was dependent upon the approbation of the simple management plan and the signature of the management convention by the forest administration. Birdlife pressured the forest administration to quickly approve those management plans and sign the convention. But the condition made by the forest administration was that Birdlife should assist communities in the realization of a fair and rigorous systematic inventory (at 100%) in each forest, before the villagers began to harvest. This was possible, since the Birdlife project was planned to end by 2008. The five-year management scheme drawn up in each simple management plan was as follow:

- Year 1 (2003): organization of the community
- Year 2 (2004): systematic inventory (100%) of the community forest
- Year 3 (2005): research of the market, waiting for the forest administration to approve the inventory
- Year 4 (2006): beginning exploitation of *Prunus* bark in the forest
- Year 5 (2007): exploitation of *Prunus* bark continues.

However, in 2004 the Birdlife project was closed. Villagers faced a lack of funds to realize the systematic inventories. The Birdlife community forest management initiative was then enforced by the traditional institutions in the regions with support from MINFE, and three community forest management associations (CIGs) were created to follow up the management plan and activities instituted by Birdlife in the region (Fotso, 2005). These associations include: 1) Association of Oku Forest Management Institutions (ASSOFOMI); 2) Association of Kom Forest Management Institutions (ASSOKOFOMI); and 3) Bihkov community forest institutions (BIHKOV) (Table 6.2).

Table 6.2: Community forest management institutions in the Kilum-Ijim Mountain Forest Area of Cameroon

Chiefdom	No. of community forests	Number of village communities	Name of community forest association	Name of community forest management institutions
Oku	06	22	ASSOFOMI	Upper Shinghe, Emfveh Mii, Kedjem Mawes, Nchiiy, Mbai and Ijim
Nso	01	06	BIHKOV	Bihkov
Kom	11	12	ASSOKOFOMI	Mbi, Juambum, Laikom, Ajung, Yatimuvco, Mbessa, Muteff, Abuh, Akeh, Anyajua, and Afua/Djichami

Source: Fotso, 2005

By 2005, some companies that exploit special products were informed of the departure of the Birdlife project. The companies therefore put pressure on the forest administration to obtain permits to exploit *Prunus* bark in these zones. By February 2006 the forest administration issued four special permits to the following companies: CEXPRO, CATRACO, NNA & SONS, and FONGANG. Harvesting of *Prunus* bark began well, and the funds generated from the exploitation were used to develop community projects.

Despite this success, some villagers who were not satisfied with the way the funds raised from the exploitation of the community forest were used, returned to the forest by night and debarked on the sides left by legal harvesters during the day. The poachers sold their products to the two companies (FONGANG and NNA & SONS), which was detrimental to the conservation of *Prunus* in the Northwest province. Also, most of the legal permit holders stayed far from the harvesting sites, often in the city of Kumbo. Thus some poachers used to come to Kumbo to sell their products to these permit holders illegally. The permit holders were not often in the field to control and monitor the harvesting of bark. Due to the weakness observed in the realization of the systematic inventories, many communities were therefore involved in illegal exploitation of *Prunus* bark before the approval of the management plans (Betti, 2008).

7 The lesson learned from the local ABS experience and the way forward

The main intention of these efforts made by both the Mount Cameroon Project in the Southwest province and the Birdlife project in the Northwest province was to ensure that future supplies of *Prunus* bark are harvested in sustainable ways. The closing of these projects could have an impact on the harvesting of *Prunus* bark in the future. Many lessons could be learnt from these projects. It is important to acknowledge that attempting to exclude rural communities from the commercial exploitation of their resources can lead to unsustainable use of such resources, thus increasing the threat of local depletion. Involving rural communities in legal exploitation of the biological resources occurring in their areas can contribute to the improvement of their living conditions as well as promote sustainability. Inviting local communities to establish community forests is not enough. The government needs to assist these communities in the development and implementation of their management plans, which is difficult in Cameroon. Local agreements between corporate bodies and rural communities can prove instrumental in the establishment of a benefit-sharing scheme in relation to the commercial exploitation of valuable biological resources at the local level, thus contributing to the implementation of the third objective of the CBD.

Changes in ABS regimes at the local, national and international levels could make a significant difference in benefit-sharing and poverty alleviation. At the international level, the 1992 UN Convention on Biological Diversity (CBD) introduced significant changes in the legal and ethical aspects of biodiversity exploitation, conservation and sustainable use. The convention set a scene by calling for fairness and equity in the sharing of the benefits derived from the utilization of genetic resources among stakeholders. As *Prunus* is exported in bulk as a biological resource (not genetic), the CBD does not apply directly to this case, hence it is difficult to say whether there was fairness and equity in the sharing of the revenues generated from *Prunus* exploitation between Plantecam and the harvesters' union. However, as we shall see in section 8, the utilization of *Prunus* at later stages seems to question this division between biological and genetic resources.

At the national level, the ratification of the CBD convention by Cameroon in 1994 stimulated environmental and biodiversity policy processes that took into consideration the access and benefit sharing provision of the CBD and the need to involve rural communities in forestry-related activities that may improve their livelihoods. The 1994 forest law and its 1995 decree of implementation have specific provisions on these issues. At the local level, the agreement signed between the harvesters' unions and Plantecam Medicam was very critical in the development of the benefit-sharing mechanisms for the revenues generated from *Prunus* exploitation. However, the creation of the two *Prunus* harvesters' unions facilitated the signing of such agreements because the commercial company could negotiate with organized groups. The local communities are still requesting additional improvement in the legal framework. They

request the establishment of ABS legislation that must provide that they are legally entitled to apply for an exploitation permit and to exploit their resources themselves, rather than doing exploitation under a company's permit. Such an approach could enable the communities to secure greater benefits and more sustainable use.

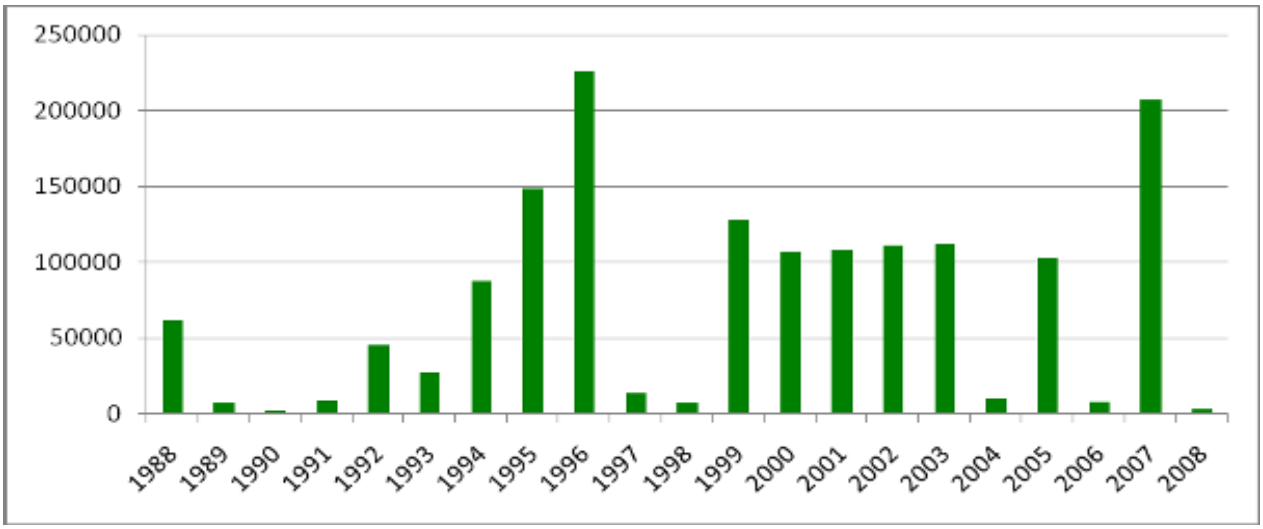
Regarding the above lessons learned, it is therefore worthwhile to investigate the present situation of the ABS mechanism in Cameroon and the role of the government in sustaining this mechanism. It should be noted that the decentralized forest management model of the current forest law provides a potential blue print for local communities to derive more benefits from the forests, but the way that this model is implemented and enforced could impact the sustainable use of the forests.

8 Domestication of *Prunus africana* and the development of a national management plan

The domestication of *Prunus africana* is the most efficient way to guarantee sustainable and long-term harvesting and trade of this species that will not threaten the available wild stocks. Although domestication is important, regeneration by reforestation in managed natural forest is also important for the sustainable management of the *Prunus* population. The domestication of *Prunus* started far back in 1976, and over 1,610,000 *Prunus africana* trees have been planted across the montane regions of Cameroon from 1976 to 2008 (Ingram and Nsawir, 2007).

Ingram et al (2009), have documented a number of project-based initiatives that have promoted the domestication of *Prunus africana* in Cameroon. The majority of trees planted due to these projects were planted in community forests and communal spaces like watershed areas (Faohom, 2001). *Prunus* trees are also planted in plantations and family areas which are notsupported by projects. Documents from the project-based initiative confirmed that the highest domestication was carried out in 1996 and 2007 (Figure 8.1). This could however, be linked to the over-exploitation of *Prunus* bark in the Mount Cameroon region in 1996 and the EU ban of *Prunus* bark export in 2007. Over 4200 farmers were reported involved in planting *Prunus africana* between 1995-1996 across the Western highlands of Cameroon (Franzel et al, 2009). Other sources have acknowledged that about 433 farmers or groups owned about 143,290 trees of planted *Prunus africana* in 2008 (Foaham, 2001; Awono et al., 2008; MINFOF, 2008; Tangem, 2008).

Figure 8.1: *Prunus africana* planted in Cameroon 1988-2008



Source: Adapted from Ingram et al, 2009

Although the domestication of *Prunus* is important, there have been some regeneration activities in the northwest province in response to the over-exploitation of *Prunus* bark in that region (Ingram et al, 2009). These regeneration activities were promoted by the Birdlife Bamenda Highlands

Forest Project from 1987 to 2004. The project aimed to avoid the loss of some highly important biodiversity in the habitat such as the Banded-wattled-eye, *Tauraco bannermani* and Grey-necked Picathartes birds (*Picathartes oreas).* This project also supported the domestication of fruit trees (agroforestry) and Api-farming (honey production) (Abott et al., 2001; Franzel et al., 2009). About 15,000 *Prunus africana* trees were planted within community forest as boundary markers during this project.

It should be noted that the genetic diversity of *Prunus africana* is very significant for its domestication and regeneration. The major medicinal extract of *Prunus africana* is known to vary according to its geographical source and the genetic similarity corresponding to that geographical distribution. Most studies have revealed that there is considerable phenotypic, genotypic and chemical variation among and within *Prunus africana* populations across countries and within countries, and their extracts also vary (Hall et al., 2000; Dawson et al., 2001; Avana et al., 2004; Muchugi et al., 2006). Cameroon's position as the largest exporter of *Prunus* bark worldwide has been partly explained by the fact that the *Prunus* extract from Cameroon is used in combination with *Prunus* extract from other countries to produce the most efficient pharmaceutical treatment (Dawson et al., 2001). A better understanding of the link between the genetic diversity, geograpic location and extract is important for domestication based on genetic management of the most commercially valuable cultivars. Most of the domestication process in Cameroon has not actually considered the genetic diversity of this species. The selection criteria for domestication include: fast growth, resistance to disease particularly at lower altitudes, ease of bark removal and the concentration of 12 active ingredients for treating BPH (Ingram et al, 2009).

Some schorlars have assessed the genetic variation of *Prunus africana* in Cameroon from four different sites: Mount Cameroon, Mount Kilum, Mendakwe and Ntingue (Dawson and Powell, 1999). These schorlars examined the genetic variation within and among the populations in these areas where the species is heavily exploited. The result of their study revealed less differentiation among stands but high significant genetic difference when the other three populations were compared with the Mount Cameroon site. This difference, according to these schorlars, reflects the geographical and ecological isolation of the Mount Cameroon site and portrays the direct relationship between genetic and geographical distance (Dawson and Powell, 1999). Futher research on genetic variation in Cameroon compared to Kenyan *Prunus* revealed more significant variation among the Kenyan population than in Cameroon (Muchugi et al., 2006). This information supports the concern for genetic management and domestication of *Prunus africana* in Cameroon.

9 Discussion and conclusion

The ABS capacity development initiative is meant to generate information and knowledge that could assist African countries in the on-going negotiation process of the international ABS regime and its domestic implementation by member countries. The *Prunus africana* case study discussed above clearly reflects this intention. The case study identifies and discusses some general and specific issues essential in the establishment and implementation of appropriate ABS regime in the negotiation process relevant for African countries. The main issues identified in this paper relevant for the negotiation process are the need to develop effective institutional structures and capacity building that will effectively address ABS issues both at the national and local level.

As discussed in this paper, the intrinsic value and ready international market for *Prunus africana* cannot be overemphasized. A lot has already been mentioned about the lucrative nature of the trade in *Prunus africana* bark and the devastation of wild stock in most regions where it occurs. There is, however, increasing interest in the exploitation of *Prunus africana* despite its reduced resource base. The lucrative nature of the trade of this species is substantiated by the increasing interest in its exploitation and the scramble for the diminished wild stock. The local harvesters of *Prunus africana* in Cameroon and other parts of Africa depend on the earnings from sales of *Prunus* bark. It is therefore important to know whether the income they get from *Prunus africana* exploitation really satisfies their needs, and to what extent the benefits derived from *Prunus* harvesting have affected their livelihood and general well-being?

The logic behind the ABS mechanism of the CBD is actually to create a link between the environment and poverty, in that: 1) poverty alleviation should not damage the environment of the poor, which would only substitute gains in one area with losses in another, and 2) improving environmental conditions can help reduce poverty. Environmental conditions have major effects on the health, opportunity, and security of poor people. Environmental activities could also provide effective ways of empowering the poor (Swiderska et al, 2008). As an income-generating activity, the trade in *Prunus africana* bark should at least bring some changes in the well-being of those involved in its exploitation.

The local ABS agreement discussed in this paper undoubtedly provided some encouraging changes in the well-being of the local *Prunus* harvesters in the Mount Cameroon area. Despite these positive changes, some possible negative trends could be noticed at the local and national level, such as weak institutional capacity of authorities to effectively control natural resource management activities and conflict of interest between these authorities and communities, as well as different interests among community members. The introduction of community forest management by the new forest law provides a potential blue print to enhance local governance structure and capacity to handle issues like the ABS agreement at local level and sustainable exploitation and harvest of *Prunus africana*. The major problems are the transaction costs of creating a community forest, and the ineffective implementation and enforcement of

the forest law. The access and benefit sharing of *Prunus africana* exploitation at both the national and local level depends largely on the institutional structures set in place and the capacity of communities or groups to be organized as a legal entity.

It is essential to clearly distinguish what is plant a genetic resource and what is a biological resource. The ABS component of the CBD is focused on genetic resources, which by its definition is different from biological resources. The *Prunus africana* case is not a direct use of genetic resources as defined in the CBD. Depending on future utilization, this case could be classified as an indirect use of genetic resources, since it is only some components of the bark and bark extract that are important for bioprospecting, not necessarily the gene component directly. Such classification should be emphasized in the ABS negotiation process, as many communities in Africa depend on such products for their livelihood. The lack of such classification could create an imbalance in the regime and might restrain most member countries from the south from ratifying the regime.

To conclude, all the information discussed in this paper clearly reflects the importance of *Prunus africana* as both a medicinal plant and a source of livelihood to the locals. This case study has illustrated the importance of effective institutional structures and capacity building mechanisms to address access and benefit sharing of both direct and indirect use of plant genetic resources as stipulated in the CBD. This evidence is important to support the negotiation process of the international ABS regime.

Notes

[1] Afromontane forests are a rare type of evergreen mountain forest found in tropical African area where local climatic conditions causes cloud and mist to be regularly in contact with the forest vegetation. These forests support ecosystems of distinctive floristic and structural form and contain large number of endemic and threatened species of plants and animals.

[2] ABS: Access and Benefit Sharing component of CBD.

[3] Purgative is a medicine that causes evacuation of the bowels. It stimulates peristaltic action and causes defecation so as to get rid of unwanted substances from the body

[4] GoC; Government of Cameroon

[5] CIG; Common Initiative Group

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FRIDTJOF NANSENS INSTITUTT
FRIDTJOF NANSEN INSTITUTE

Fridtjof Nansens vei 17, P.O. Box 326, NO-1326 Lysaker, Norway

Phone: (47) 67 11 19 00 – Fax: (47) 67 11 19 10 – E-mail: post@fni.no

Website: www.fni.no