
Performance of tropical
production and processing
systems department

High Conservation Value assessment of the Ologbo forest

In the framework of the “Green Ologbo” project
initiated under SIAT/ CIRAD collaboration

EXTRACT



Summary

This report presents the findings of an HCVF (High Conservation Value Forest) identification process carried out on a local level, prior to oil palm development in the Ologbo area, southwestern Nigeria. It was part of an integrated assessment undertaken to complement a formal EIA. The ultimate objective was to provide elements for decision-making on land use planning and operational management in the oil palm estate, comparing agricultural capacity with ecological and social conservation value.

In the past, the Ologbo forest was not seen as a priority site for biodiversity conservation in Nigeria, either by government agencies, by NGOs or by independent experts. However, due to indiscriminate logging practices and forest conversion in most of the protected areas of southwestern Nigeria, and even on a national scale, very few relatively undisturbed forests remain in the country. The Ologbo forest, although quite degraded and of very limited area, due to very high land pressure, is thus now recognised by conservationists as holding potential value for biodiversity conservation if efficient protection is put in place.

Main findings of the HCV identification, as well as management implications, are presented in Table 1.

Table 1: HCV identification summary

Value	Component	Present	Potentially present	Absent	Management implication
HCV1 : Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g. endemism, endangered species, refugia)	HCV1.1: Protected area		The Ologbo forest may be important for maintaining the value within the adjacent forest reserve		Preservation of the residual Ologbo forest as a buffer zone to help maintain the integrity of the adjacent forest reserves, and as a refuge habitat for neighbouring species
	HCV1.2: Threatened and endangered species	Presence of chimpanzees, though population not viable in long term			Precautionary principle: protection of the required area (residual forest habitat & fauna corridor) in order to try to maintain or increase the populations of the identified species
	HCV1.3: Endemic species		Presence of the white throated monkey, but species not of special concern in fact		
	HCV 1.4: High critical temporal concentrations			No evidence of high critical temporal concentrations and no habitat characteristic leading to them.	
HCV2 : Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance				Highly disturbed and not a large landscape level forest	

HCV3: Forest areas that are in or contain rare, threatened or endangered ecosystems				Lowland rain forest and freshwater swamp forest: ecosystems both under threat nationally and in the region But at Ologbo: highly disturbed and not of significance size	Protection of swamp and riparian forests
HCV4 : Forest areas that provide basic services of nature in critical situations	HCV4.1: Forests critical to water catchments	Part of the forest area (riparian and swamp forests) are of critical importance to regulate flow rates for the streams on which some communities rely for drinking water			Protection of swamp and riparian forests
	HCV4.2: Forests critical to erosion control			No risk of serious erosion, landslides or avalanches	Protection of erosion hazard zones along watercourses
	HCV 4.3: Forests providing critical barriers to destructive fire			Low risk of uncontrolled destructive fire in the area Forest not seen as a barrier around any vulnerable area	
HCV5 : Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health)		Forest is critical as a source of medicines and cash income for some people of the local community (traditional doctors, and the poorest who have no / little other alternative income).			Regulation of exploitation of forest resources (hunting, fishing, collection of non-timber forest products) for sustainable use.
HCV6 : Forest areas critical to local communities' traditional cultural identity			Potential existence of shrines in the forest. Importance of some forest products for tradition.		No land clearing or felling of shrine/sacred sites; free access. Regulation of collection of forest products for sustainable exploitation.

The priority is to stop the Ologbo forest degradation process, in an effort to reverse the trend for natural resource and biodiversity loss. Thus, though some forest resources have been identified as very important for part of the local population, notably the poorest, the choice that has been made is very strict protection.

According to management objectives, measures to mitigate threats include:

- Landscaping: appropriate land use including setting aside of conservation areas (preservation of fresh water swamp, buffer zone around wetlands and along water bodies, fauna corridor, etc.).
- Management of non-productive areas: incorporate effective conservation measures into operations (protection enforcement, raising awareness, etc.).
- Cultural practices in the oil palm plantation: following the example of best practices (integrated pest management, maintenance of roads to prevent erosion, etc.).

Monitoring is an essential component of management, both to guide actions and to ensure credibility. An ecological and socio-economic monitoring programme has thus been implemented. Research needs have also been identified.

HCV 4.3: Forests providing critical barriers to destructive fire

Definition / guidelines

According to the toolkit, forests are HCV if they naturally act as a barrier to fire in areas that are prone to fire and where the consequences are potentially severe for human life, economic activity or threatened ecosystems or species. Forests where fire is a part of the natural dynamics of the ecosystem, not being on a large scale and posing no great risk, are not included.

Findings

The region is not at risk from serious fire.

There is a low risk of uncontrolled destructive fire in the area: lowland rain forest, no large area of peat soil, a dense hydrographic network.

This forest area is not seen as critical for controlling potential catastrophic fires, neither is it seen as a barrier around any vulnerable area.

HCV5 : Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health)⁷

Definition / guidelines

The toolkit states that some forests are essential to human well-being. They can supply a huge range of products to local communities, such as fuel, food, fodder, medicines, or building materials.

This HCV is determined by actual reliance on the forest of the local communities to meet their basic need.

As defined by Proforest, a basic need is considered as fundamental to the local community if:

- A high proportion of the community's need comes from this particular forest,
- There are no readily available, affordable and acceptable alternatives,
- A community would suffer diminished health or well-being through the reduced supply of a resource.

The communities considered are both people living inside the forest areas and those living adjacent to it, as well as groups that regularly visit the forest. In our case, a community is defined as a village (or camp) unit located inside or around the Ologbo forest.

Apart from the two basic issues mentioned by the toolkit - what constitutes a basic need and what is fundamental for the communities? – another important issue is “how to decide what cannot be obtained elsewhere or be replaced by substitutes.” Or, in other words, what can be considered as an acceptable alternative (in terms for example of the distance to procure the alternative, of its cost, its quality, its correlative social attributes, etc.). Assessing the availability of alternative sources may not be easy. One should be careful and apply the principle of precaution as suggested by the Indonesian toolkit.

Moreover, to answer the question “What is fundamental for the basic needs of the local communities?”, there is a need to determine how to measure the importance of the forest for the local communities to meet their basic needs. And this raises the question of the threshold. When it is possible to quantify the importance of natural resources for the population, it will be considered to be critical if at least 50% of basic needs are fulfilled by the forest (following the example of the Indonesian toolkit). In that case, HCV will be considered to exist.

Lastly, the toolkit states that the identification of this HCV requires consultation with local communities; indeed, it is only through consultation on a local level that it can be determined whether HCV5 is actually present within a particular forest.

*Are there some communities living in or around the Ologbo forest using forest resources?
Is the Ologbo forest fundamental for those communities to meet their basic needs?
Is the resource use sustainable?*

⁷ The drinking water issue was tackled in HCV 4.1 (forest critical to water catchment).

Findings

➤ Existence of communities using natural resources and their livelihood patterns

The analysis of the territory occupied by the local communities shows that virtually all communities, whatever their characteristics (living in a village or a camp, inside or around the Ologbo forest, very remote or not) greatly use the Ologbo forest as shown in table 4.

Table 4: Territory used by the local communities (Source: adapted from Renevot, 2005)

	Ologbo	Obayantor	Imasabor	Iyanomo	Abuja camp	Ugbohibo camp	Erume "gari camp"	Erume	Ikara
Free area ⁸	+++	+++	+++	+++			++	+++	+++
Forest reserve	+++				+	+++			
WOC: forest area	+++	+	+		+++	+++	+++	++	++
Ex-Obasuyi concession		+++	++	++	+++				

+++ very important ++ important + little importance

These communities develop a multitude of farming and non-farming activities depending on the natural resources, however farming is always considered as the main activity. Based on these activities, three main livelihood patterns could be identified for the communities living in or around the Ologbo forest.

- The main activity is oil palm planted in the free area; but cassava and food crops are also cultivated for self consumption and sale of the surplus. There are several non-farming activities: traps are set in the cleared areas (farms) and the villagers also collect firewood. Some people in the village hunt with a gun in the forest and native doctors collect plant products. This livelihood pattern was found in two villages, Obayantor II and Iyanomo, located close to the tarred road, populated by natives and migrants settled in two different periods: 1960s and 1990s.
- The main activity is cassava cultivation which is, for many villagers, an important cash crop. Food crops are also cultivated for self consumption and the surplus is sold on the local or national markets. Firewood collection is the main non-farming activity for all the villages and camps with this livelihood pattern (Ologbo, Ogbekpen, Imasabor, Erume gari camp, Abuja camp). But other non-farming activities are also developed: in some villages and camps (Ologbo, Ogbekpen, Erume gari camp), some people fish; many villagers set traps and some hunt with a gun. The population is mainly made up of migrants, living in the village/camp during the week and going back to Benin City where they live for the weekend or, living permanently in the village/camp for the more recent migrants (settled in the late 1990s and since 2000).
- The main activity is subsistence farming although some farm products (gari, plantain) are sold. There are also a multitude of non-farming activities: hunting by setting traps or with guns, fishing, collecting firewood and other plants for food. Some villagers work for timber exploitation. This livelihood pattern was found in remote village and camps (Ikara, Ugbohibo and Erume camps) mainly populated by migrants who settled in the late 1990s and since 2000 (camps), or by natives (Ikara).

➤ Identification of the basic needs of these communities fulfilled by the forest

It appears from the description of the livelihood patterns found in the area, that the Ologbo forest is used by the local communities to meet several of their basic needs.

The forest provides *food* to the local communities.

The forest is a reserve of land for farming which is the main source of subsistence for the local communities in the area. Many farmers practise slash and burn agriculture although they also grow food crops in the free area and in the fallows. Indeed, high forest is considered as very fertile land and there is less weed development. Cassava (transformed into gari), yam and plantains constitute the staple food for the communities. Despite the HCV concept, which aims at identifying the value of the forest in order to provide recommendations for its protection and management, we did not take into account this role of the

⁸ The so-called "free area", although government owned (since the land use decree of 1978, all land is the property of government), is land with recognised customary rights.

forest (i.e. reserve of land for farming) as a potential HCV, given the fact that it plays its role only by clearing the forest, leading to total conversion of the ecosystem and thus annihilating its value.

The forest is also a source of animal proteins through hunting and fishing. However, few villagers hunt in the forest with guns or traps: most wildlife is caught in/around the farms, for example by setting traps. Bush meat is first consumed by the family. Hunting concerns several kinds of animals. Small mammals are the most hunted: grass cutters (*Thryonomys swinderianus*), antelopes (*Cephalophus* sp.), bush pigs (*Potamochoerus porcus*), porcupines (*Atherurus africanus*), pangolins (*Manis* sp), rabbits (*Cricetomys* sp.). Villagers also hunt deers (*Tragelaphus* spp.), squirrels (*Funiscurius* sp), bush cats (*Genetta* sp.), civettes (*Viverra civetta*), and bush bay (*Perodicticus potto*). Primates, mostly *Cercopithecus* spp., are caught. Reptiles (boas, cobras, tortoises) are hunted but to a lesser extent. Less disturbed lowland rain forest and swamp forest are considered by local communities to be richer in wild animals, though hunting pressure and other disturbances (logging, etc.) have led to a severe decrease in wildlife. Fish is another source of animal proteins much appreciated in the area. The inhabitants of the villages close to the Ossiomo river (Erume, Ikara, Ogbekpen) and Ogbo river (Ologbo) catch and eat different species of fish: (*Protopterus annectens*), catfish (*Clariidae*, *Schilbeidae*, *Bragidae*), tilapia (*Cichlidae*), electric fish (*Malapterurus electricus*), cutlass fish, and governor fish.

Lastly, different kinds of non-timber forest products are collected for food: fruits but they are few, some seeds used to prepare soups; mushrooms and snails are also consumed and appreciated.

The forest provides *materials for house construction and for domestic uses*. Raffia and bamboo are used for house construction, raffia for roofing and bamboo for the structure of the walls made with clay. Bamboo is also used to make benches or to stake yams. Non-timber forest products (fibre from raffia or willow/wine cane) also provide the material to make fishing nets. They are used to prepare food that is wrapped in "ebewa" (sp. unidentified) leaves to be steamed. The villagers use firewood for cooking and to make gari; it is mainly collected on farms after slashing and burning, or on the edges of the forest.

Traditional medicines are collected from the forest. All the villagers know some plants to treat health problems, such as headache or fever. Sometimes, they go to see a native doctor who uses natural resources to prepare medicines. Different parts of plants can be used: leaves, seeds, tree bark, sap or rhizomes. Wild animals (or part of them like the head of the boa) can also be included in the preparation of traditional medicines.

Finally, natural resources from the Ologbo forest generate *cash income*. Hunting is a source of income, especially for villagers hunting with a gun. There is a high demand for bush meat, which is much appreciated for its taste and nutritional qualities. Bush meat, fresh or smoked, is sold on the markets (in the villages or in Benin City), locally to neighbours, to restaurants or at the roadside. Some fishers (in Ologbo) derive cash income from selling most of the fish they catch to the markets in Ologbo, Koko and Benin City. Some villagers are specialised in this fishing activity (Itsekiri ethnic group). Timber is another source of income: the villagers sell the woodcuts or are employed by private enterprises specialised in timber exploitation or by illegal loggers (for felling and/or cutting planks). Non-timber forest products are also a source of income. For native doctors, curing people with medical herbs they collect from the forest is their main source of subsistence. Lastly, the forest is a reserve of land for cash crops: cassava is planted the second year after forest clearing, following one year of food crops for subsistence and illicit crops planted just after forest clearing.

➤ *Evaluation of the importance of the forest for the communities to meet their basic needs*

From the previous section it is clear that the forest has a value for the local communities since it is used to meet many of their basic needs. Now the question is to try and define whether that value is really fundamental (or critical) and so define if HCV5 exists and for which kind of basic need.

According to the local communities, the forest is the most important area to meet their basic needs considered as a whole, except for the Itsekiris in Ologbo who specialise in fishing and so give more importance to the river.

Though it cannot be considered as an HCV because it entails replacement of the native vegetation, it is important to point out the major importance of the forest as a reserve of land to grow their staple food. Almost all the villagers surveyed in 2007 grow food crops and all of them practice slash and burn agriculture. For almost all the villagers (99%), the food crops eaten by the family are equally produced and bought from the market. So, producing food crops is critical for the local communities since they get

50% of their food from farming. Unfortunately, there is no data available on the proportion of food crops produced from slash and burn agriculture (so indirectly from the forest) and the proportion from fallow, home gardens or the free area. However, the local communities consider that they need to keep the forest for shifting cultivation. The interest of the forest that provides more fertile land, according to the villagers, seems to be clear since farmers do not use fertilisers or chemicals.

The Ologbo forest does not seem to have such importance for providing animal proteins to the communities. Almost all the villagers (96%) eat bush meat and 37% of them eat it at least once a week. However, only 41% catch animals, and not specifically or exclusively in the forest habitat (setting traps, hunting or killing the animals they see in/around their farm or during forest clearing). And only 40% of the villagers catch at least 50% of the bush meat consumed by the family. Only few villagers (14%) fish, which means that the fish consumed by the family is mainly bought.

On the other hand, the forest seems to play a critical role in providing other forest products for food. 74% of the villagers use forest products to prepare between 5 and 8 meals in a week (which means that, on average, they consume those products every day). And these forest products are mainly collected for 72% of the people (and always at least equally collected and bought). The results from the survey are different from the first information collected during the consultation of the local communities in 2005. During the consultation, fruits and seeds collected did not appear to be very important for the communities, maybe because many villagers get fruits from their home gardens.

Some alternatives to the forest exist for the local communities to meet their basic needs since they could get food (bush meat, beef, chicken, fish, fruits...) from the market or from livestock breeding. But this assumes that they have the money to pay for it, which is not the case for the poorest. So the alternative to the forest may not be readily available. Therefore, we can assume that the forest plays a critical role in providing some kind of food for the local communities due to its importance for the subsistence of the poorest population.

All villagers use firewood for cooking and for 76% of them this is the only source of energy for cooking, though it appears that most of the firewood is not collected inside the forest but on the farms⁹. The interest of firewood is not only its low cost but it is also appreciated for the taste it gives to cooked food and also because it is well adapted to needs (preparation of gari and festive meals in large quantity). However, for construction material, as well as for other domestic uses, it does not appear to be so important (for instance, only 31% of the houses are made with wood and 25% have a thatched roof). These results of the survey confirm what had been observed during the consultation of the communities in 2005. So, in terms of material for house construction and domestic uses, the forest only plays a fundamental role for the communities in procuring firewood, which is important in meeting basic needs (prepare food and gari). As for food, the possible alternative to the use of firewood (kerosene stove) requires money and it is not adapted to all the needs of the community. It is therefore considered that there is no ready alternative to firewood. However, it seems that the amount of firewood collected in the forest, compared to that collected on farms, is small and the forest would thus not been considered as critical for firewood collection.

Most of the villagers (84%) equally use traditional and "modern" medicines when they are sick (and 3% mainly use traditional medicines). Traditional medicines are considered to be essential for treating certain illnesses. These traditional medicines are mainly collected for 70% of the villagers. Many medicinal plants are cultivated in home gardens. However, some species need to be collected from the forest; that is the case for example of *Thonningia sanguinea* or *Rauwolfia vomitoria*. For now, many villages have no health centres, and when there is one the cost of modern medicine may not be affordable for some people. All these results indicate that the forest is of critical importance for the local communities in procuring medicines.

It has already been mentioned that local communities also get cash income from the forest.

Some villagers derive their main source of income from natural resources; such is the case of the villagers who specialise in fishing or hunting (with a gun). However, this probably concerns a minority of the local communities: it is mainly the Itsekiris who specialise in fishing and it seems that only a few families derive their main income from hunting. About 7% of the villagers derive their main source of income from bush meat or from fishing.

⁹ In fact, firewood is collected on new farms after forest clearing, but even if one could consider the importance of the forest ecosystem for firewood collection, it cannot be considered as an HCV for the same reason as that mentioned previously for farming (forest as a land reserve for farming).

However, for many villagers, natural resources are a complementary source of income to farming (or possibly non-farming) activities. They sell part of the bush meat they obtain even if for many villagers who catch animals (67%) bush meat is not a source of income (consumed by the family or sometimes given to family and friends). On the other hand, most if not all fishermen sell at least some of the fish caught. Collection and sale of non-timber forest products are a complementary and occasional source of income when they need money: 30% of the villagers sell some of the products collected. Generally, the dependence of the local communities upon natural resources is linked to the level of income and access to land (other than forest) for farming. Since some villagers, although few, derive their main source of income from natural resources and most of them derive some additional income from activities linked to natural resources, it can be said that the forest plays a critical role for the local communities.

Finally, even if the forest is important for the communities to meet their basic needs, it can be concluded that HCV5 exists in the Ologbo forest only for medicines and for cash income and only for a small number of people (traditional doctors, and the poorest of the communities which have no -or little- other alternative income). For some points, it was seen that the results from the survey conducted in 2007 are different from what was observed during the consultation with the communities in 2005. This suggests that the precautionary principle should be used and that these issues might need to be looked at in more detail.

HCV6 : Forest areas critical to local communities' traditional cultural identity

Definition / guidelines

Some forests play an important role in the cultural identity and the religion of the local communities living inside the forest, living adjacent to it or regularly visiting it. To be considered as an HCV, a forest must be critical to the cultural integrity of the communities. Such forest contains or provides values without which a local community would suffer an unacceptable cultural change and for which there is no alternative. As for the previous HCV, and maybe even more, it is not easy to determine if the role is really critical. This can only be done by consulting the local communities, with an adequate anthropological approach.

Is the Ologbo forest fundamental for the traditional cultural identity of the communities (sacred site located in the forest, natural resources from the forest used in worship, etc.)?

Findings

Local communities in the area are usually traditional worshippers and Christians at the same time. Natural resources from the forest are used in worship, for instance wild animals and kola nuts for ritual sacrifices; leaves, herbs or tree bark are used to clean shrines.

Natural resources are also related to the culture of the local communities. Some taboos exist and local communities use natural resources collected from the forest for rituals. Kola nuts are a symbol of hospitality and welcoming. Some natural resources (leaves collected from the forest) are essential for annual festivals.

However, no sacred site or area of importance to their traditions and culture was highlighted by the communities during the participatory mapping exercise¹⁰.

And it did not appear during the social surveys that people were likely to have a strong cultural or spiritual association with the Ologbo forest and its natural resources, as might exist in other areas. From a consultation of the population in 2005, it seems that the forest does not play a very important role since it was almost never mentioned by the communities. And the survey conducted in 2007 shows that only a few villagers worship shrines (17%) and/or use natural resources from the forest for traditional festivals (17%). These results could confirm the limited importance of the forest for culture.

¹⁰ It should be noted that one shrine (on the northern boundary of the WOC) was identified by a man as a sacred site during an interview. However, it was not possible to locate it precisely and this information was not confirmed by the other members of the community. It seems that this information was not reliable (issue of money to bring us to the place).

However, this point needs to be looked at in detail, particularly to determine whether or not the value is fundamental for the communities. Since the existence of shrines was systematically mentioned in the villages visited, though not located in the Ologbo forest, and since some natural resources are essential for tradition, a precautionary approach has been adopted and it is assumed that the Ologbo forest is of potential HCV for the socio-cultural identity of the communities.

5. Main threats and implication for management

External threats (coming from outside Presco operations) and forecast impacts of Presco development, considering different scenarios, have been analysed and are described in other reports.

Management proposals are developed in operational documents such as the management plan (Verwilghen, 2008), which contains the proposed land-use map, detailed conservation and social action plans, as well as recommendations for monitoring (objectives, parameters to be measured -operational and strategic indicators- and thresholds to be achieved).

This report only summarizes the main threats, develops the land-use map proposal, based on agronomic, ecological and social values, and gives general management considerations (including those yet to be implemented in accordance with the action plan).

5.1. Main threats to the integrity of the Ologbo forest and impacts of Presco new development

On a national scale, land conversion, logging and hunting have severely reduced the number, extent and quality of forest areas. Forest loss is of major concern: Nigeria has one of the highest deforestation rates in Africa at 3.3 per cent per year - between 2000 and 2005 - (FAO, 2005), and, according to UNEP (2008), roughly 90 percent of its original forest cover has already been lost. Patterns of resource use point towards an increase in degradation. FAO (1999) has concluded that if the deforestation rate is maintained, the remaining forest area in Nigeria will disappear by the year 2020.

On a local level, the Ologbo forest is not an exception and, despite its status as a forest reserve, management weaknesses and high human pressure (demography, migration, etc.) combined with easy access (rivers on the western and southern boundaries, main expressway along the eastern side) have led to land conversion and uncontrolled exploitation of timber and wildlife.

The demand for land is high: as the area is recognised as fertile, it attracts migrants, notably from the southern states (Delta state, etc.). Many migrants have also settled at Ologbo as a direct result of employment opportunities (oil drilling, timber exploitation, oil palm and rubber plantations, etc.). The livelihood patterns of those migrants increase the pressure on natural resources. Moreover, as companies closed up their operations in the area, ex-employees turned to farming as the major activity to sustain themselves.

Analysis of satellite imagery and field surveys have shown that the rate of deforestation at Ologbo is alarming. Figure 15 shows the advance of the agriculture/forest frontier from 1987 to 2005.

Satellite image interpretation carried out by G. Vandersmissen and C. Féau revealed an encroachment of the Ologbo forest (loss of forest cover) of about 1,500 ha from 1987 to 2003, of which 12.6% was in the first ten years (between 1987 and February 1998), 52.6% over the following three years (February 1998-January 2002) and about 35.7% in the last two years (January 2002-December 2003). When Presco acquired the land in 2003, it was already widely farmed by the local populations: mostly subsistence farming on the agriculture/forest frontier in the West Ologbo concession, while the Ex-Obasyui concession was completely cleared and exploited, mostly for food cash crops.

Since 2003 the pressure on the remaining forest area has greatly increased, consecutively, notably, to Presco acquisition (the WOC concession seen as a "free area", no longer a forest reserve) and to the closure of Piedmont Plywood industries (ex-employees turned to farming, moreover chainsaws previously used for timber felling were recycled for land clearing, which increased the deforestation potential compared to manual felling).

Given the deforestation rate, it is considered that the Ologbo forest could disappear in less than 5 years (apart from the inaccessible and unsuitable swamp areas).

Other major threats to the Ologbo forest include uncontrolled exploitation of timber and wildlife. Indiscriminate and intense illegal logging has led to severe degradation of the habitat. In the dry season, loggers' reach the forest through logging roads from the east side, and in the rainy season, they use the Ogba and Ossiome rivers and tributaries on the western and southern sides.

It seems that there are no strict rules either for social control of the use of animal resources in the Ologbo forest: local communities do not practise selective hunting and the area was under severe commercial hunting pressure, notably by migrants, until recent times. Information from the interview and field observations (occurrence of commercial hunting camps) suggests that it is now no longer economically viable, due to overexploitation of the wildlife population.

Direct and indirect impacts of oil industry activities are also additional pressure on the environment. Many oil-wells are located inside or in the vicinity of the Ologbo forest. The pressure may even increase in the future, with the rehabilitation of oil-wells in the area (due to social conflicts in Delta and River states, part of the oil exploitation activity is moving to other areas) and to the plan of NPDC (Nigerian Petroleum Development Company) to build a tarred road to Ikara / Erume. At the moment, that area is not that developed due to its remoteness (very bad dirt road: inaccessibility in the rainy season); if the road is rehabilitated, it will facilitate access to Ologbo and Benin for the transportation of farming products and it will also become the major means of access from the town of Koko from Ologbo.

People settled in the area also use other non-timber forest products, such as leaves, fruits, barks, etc. for medical, food, construction or other purposes. Occasional collection for subsistence does not represent a threat, but some products such as "chewing-sticks" are collected for commercialization purposes and it may then lead to overexploitation of the resource.

All those threats are independent of Presco's new development.

If the company expands its plantation in the Ologbo area, even with no direct deforestation for oil palm planting (land use plan setting aside the residual forest patch as a conservation area), it will definitely have an impact on the livelihood patterns of the local communities, differently for each type of population (see details in impact assessment reports¹¹), and have an effect on forest resource exploitation. It will surely increase the pressure on the Ologbo forest and the adjacent forest reserves, due to a reduction in land availability for the farming activities of local communities (the "foot print" of Presco in the area will definitely be substantial, as there is a plan to plant about 7,000 hectares) and due to the increased population attracted by employment opportunities. One could argue that if the company employed those people who have actually no job income and who are relying mostly on farming activities, illegal logging or non-timber forest product collection for their subsistence, it might, on the contrary, reduce pressure on the forest. But in any event, those people will need to sustain themselves and, even if they do not farm themselves, they represent market opportunities for farm and forest products. Indeed, experience has shown that, unless alternatives are put in place (e.g. livestock or game breeding to reduce hunting, intensification to reduce land demand, etc.) and adopted (depending on their social acceptability and economic viability), local development usually leads to increased pressure on natural resources.

On the other hand, given the degradation process of the Ologbo forest under past management (occurring before Presco acquisition), one might think that only private management of the forest might succeed in effective protection and enforcement. Thus, if the company sets aside from its oil palm plantation the remaining forest within its concession, and takes the necessary steps to protect it efficiently, it may be the only way to reverse the degradation process. HCV 1 to 4 related to biodiversity conservation and ecosystem services enhancement will thus be preserved. But a strict protection policy implemented by Presco casts doubt on HCV 5 and 6: What kind of forest access regulation for the local people is needed for sustainable use of forest resources?

¹¹ In their reports, Renevot (2005) and Soengas (2005) discussed the provisional evolution in the area, with or without Presco's extension project. They notably detailed the forecast impact of Presco on the different types of people within the local community (based on a typology of the system of activities).