

A CONCESSION SYSTEM FOR PUBLIC FORESTS IN "MATA ATLANTICA" DOMINIUM, BRAZIL

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ABSTRACT

Political and administrative limitations are real factors for a Management System for National Forest in Brazil, but some actions need to be achieved. The concession system is economically feasible to create and manage National Forest in Atlantic area for sustainable timber production under actual wood world market condition. Brazil National Forest needs to be protected under correct management system. Our proposal is that a Concession System be implemented immediately for all Forest area in Atlantic basin, as well as, creating new areas for timber production to protect and multiply Atlantic Forest Species.

Key words: Atlantic Forest, concession system, national Forest

One of the ecosystems considered most critical for conservation efforts is the Atlantic Forest, and is found along the eastern coast of Brazil; growing along coastal mountain chain from the State of Rio Grande do Sul to Rio Grande do Norte. This forest ecosystems composed of tropical evergreen mesophyte broadleaf forest, with semi deciduous species occurring to the west of the coastal mountain system, and pine forest (*Araucaria angustifolia*) growing in the southernmost region of its range (Eiten, 1983). The Atlantic Forest has varied types of climates, which vary from the sub-humid (with dry winters), in the northeast, and the extremely humid (with hot summers) in the south part of the country. In the always humid areas the rain precipitations can achieve 4000 mm annually. In the Northeast area, where there is predominance of the sub-humid or semi-arid climates the humidity is brought from the sea by the trade wind and by precipitation the cold fronts of the south with intense precipitation in the littoral area and minimum in the

continent (Globalschool, 1999). The Forest is responsible for 56% of Humidity and the averages of temperature are from 14 to 21 Celsius degree, with the maximum in 35° C and the minimum in 1° C.

The Atlantic forest has a great variety of soils that, in general, are not fertile soils from the chemical point of view, being mainly its current fertility of the composition of the rocks, which they were originated. They are biologically quite rich due to the intense decomposition of the coming organic matter of its leaves, and they are humid and deep, generically well known as massapé or "terra-roxa".

Independent rivers have a group of species with high endemism degree from the hydrographic basins of the Southeast, East and Northeast. The extensive destruction in the Forest is decisive factor in the modification of the rivers that compose its hydrograph basin, with obvious damage for its environment. Perennial rivers, temporary or intermittent rivers, dams, waterhole are aspects related to Mata Atlantic hydrography (Globalschool, 1999).

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Most timber production in Atlantic forest is predatory, destroying many hectares of forest (Dean, 1995). To create rational use of forest resources, management goals should match site and stand conditions. In addition, there is a strong need for control of private sector forestry activities. However, this is a difficult task, requiring political interest and motivation, as well as large financial costs. Another problem affecting Atlantic area is the current very primitive practices of mining. Ores of lower quality are baked with mercury, a source of pollution, and we believe that no more than 15 percent of output is refined. It has caused strong effect on biota. The irresponsible and spendthrift reduction of the Atlantic forest and Amazon Basin to bare ground has given rise to international alarm and derision. To avoid more destruction of Atlantic Forest, a realistic sustainable forest management option is the creation of Public Forests for timber production.

The Brazilian Forest Code, established in 1980 by the Law number 477 1/1965, created public forests in the country. Up to 1998, none of the National Forests had been legally explored for wood production. With the increasing threats to forest resources, the Federal Government created the National Forest Program (2.473/98 Decree), with the objective of implementing the sustained management of forests and to promote the creation of new protected and managed areas.

The basic premise for this program is that sustainability can be reached without depletion of natural resource stock. The program aims to halt the pattern described by Margulis (1999) in which loggers and sawmills mine the forest for trees, trying to extract and process the timber in the quickest possible manner with no regard for the damage done to the surrounding forest. In the process of extracting the target trees, the majority of these operations destroy a great part of the surrounding trees and sub-canopy, interrupting the natural regeneration processes.

In the forests of the coastal plain of the Southeast and South areas is common to have

arboreal species close to 15 m, arboreal dense formations and abundant lianas and of the families: Bromeliaceae, Araceae, Orchidaceae, Cactaceae, among others. They stand out in the vegetation lowers t h e pacovás (*Heliconia*), the xaxim (*Cyathea*) and the Jequitibá Rosa (*Cariniana estrellensis*), that l-each up to 40 meters height.

The diversity of the endemic flora is huge. The species of larger prominence are from genus: *Ocotea* and *Nectandra* (canelas), *Melia* (cinnamons), *Cedrela* (cedars), *Melanoxylon* (braúna), *Ficus* (figs j), *Vochysia* (the stick-of-toucan), *Tabebuia* (ipês), *Schizolobium* (guapuruvu), *Tibouchina* (quaresmeiras), *Mimosa* (bracatinga), *Cecropia* (embaúbas), and the palm tree *Euterpe edulis* (palmitreiro). In the south of the state of Bahia and north of Espírito Santo, the açai (*Euterpe oleracea*), type of Amazon palm tree, is very common. One of the species that practically disappeared of its natural atmosphere, due to the intensive handling was Pau Brasil (*Caesalpinia echinata*). In the "swamps" of the northeast area: the trees might reach 30 to 40 meters height, with good occurrence of native conifers (*Podocarpus sellowii*) and (*Podocarpus lambertii*). In the seasonal and semideciduous forests has trees with 25 to 30 meters of height, and among the most important wood species are: *Cedrela* (cedar), *Balfourodendron* (stick-ivory), *Hymenaea* (jatoba), *Myroxylon* (cabreuva), *Dalbergia* a n d *Machaerium* (jacarandas), *Cassia* (canafistula), *Nectandra*, *Ocotea* (cinnamons), and the palmetto tree (*Euterpe edulis*). In the humid and pine trees mixed forests there are two genders of native conifers (*Araucaria* and *Podocarpus*). Both happen in the Atlantic forest. The most notable pine tree is the Pinheiro-do-Paraná (*Araucaria angustifolia*). The *Podocarpus lamberti*, the pine tree or pine tree-brave is common in the South areas, Southeast and in the "Morro do Chapéu" (Bahia). In the humid forest, the soil has a good layer of organic rests. The most common species are: jatobá (*Hymenaea martiana*), pau-pombo (*Tapira guaianensis*), oiticica (*Clarisia racemosa*) among others. The *Caesal*

pinia echinata (pau brasil), *Cordia trichotoma* (freijó), *Tabebuia chrysotricha* (pau d'arco amarelo), and *Enterolobium contortisiliquum* (timbaúva) are the most common species in Dry Forest, the formation that occurs between the humid forest and the Caatinga. It has two arboreal extracts: an arboret with large size. In the mountain forest, inside of the caatingas, called "altitude" swamps has garlic (*Galezia gorazema*), ingá (*Inga subnuda*), cedar (*cedrela odorata*), maçaranduba (*Manilkara rufula*), jatoba (*Hymenaea courbaril*), Pau roxo (*Tabebuia avellanadae*) and pau amarelo (*Tabebuia chrysotricha*) among the most common species (Globalschool, 1999).

National Forests are administered by IBAMA, the Brazilian Institute of Environment, under the supervision of the Ministry of Environment (1298 Decree, of 27/10/1994). Each National Forest is required to have a management plan, including action programs, ecological-economic zoning, and guidelines and goals for a 5 year period. However, several central issues for the administration of National Forests are not defined, primarily regarding ownership and rights and responsibilities associated with use and management of forests and land. Several models for the ownership and use of public forests have been used in the world, giving government and private entities a range of rights and responsibilities with regard to forest resources. Those models include an assortment of systems, varying from the total privatization of the forest and land, as in Chile, to the sale of the extracted wood for private companies, and complete state control of those trees and land, as in Indonesia.

In the case of Brazil, a recent survey has shown that many timber companies operating in the Amazon support forest management. Barreto (2000) revealed that 80% of timber company managers approved the idea of forest management in public forests of the area where they are operating. Only 3% of the managers disapproved this idea, while 17% did not have a formed opinion on the subject. In that same group, 57% of the interviewees would like to have concession rights of a longer time period

(30-40 years). 34% preferred concession of rights of shorter period (5 years), or simply to buy the extracted wood: while 9% did not indicate preferences. Regarding to the degree of involvement in timber extraction and management of forests, most managers (54%) prefer that government be responsible for those activities, while 37% of the companies demonstrated interest in private management of the forests. The other 9% of interviewees did not have preferences.

The economic sustainability of timber extraction in National Forests will depend on the ability of the industry to pay the necessary minimum value of management and still receive profits. Barreto (1999) compared the minimum value that should be paid for the management of standing trees, with the median prices of markets associated with the National Forests of Jamari and Bom Futuro (State of Rondonia), Caxiuana and Tapajos (State of Para) and Tefe (State of Amazonas). The minimum value included the management costs, forest protection, administration, and a 15% profit over the costs. The minimum value should be between US\$ 2.80 and US\$ 4.3 for one m³ of standing tree wood, depending on species. Our study was concentrated in Atlantic area. Economic sustainability of timber was analyzed and new National Forests areas will be necessary to be created.

In the concession system of forest management, the concessionaire acquires the right to extract wood available in a given area, and becomes responsible for implementing silvicultural treatments under the government control. Since the concessionaire is responsible for management, the period of concession should be at least equal to the time between harvests, that is, around 30 to 40 years. However, the concession should be subject to renewal every five years. That guarantees the possibility canceling the contract if the concessionaire does not execute the management plan.

The concession size area should be based on the capacity of sustainable production in the concession. For example, if the cutting cycle is 30

years and the size of the available total area for a given National Forest is 1.50 thousand hectares. the area to be extracted annually should not exceed 5 thousand hectares (150 thousand/30 years).

The area to be granted should be compatible with the demand for saw material and adapted to the concession system. Part of the extracted area should be allocated for smaller companies to avoid domination by large companies in timber extraction in the National Forests.

There are three mechanisms to motivate management actions by the concessionaires: a) **Sanctions** – the contracts should establish fines and penalties. in case the concessionaires do not execute the management plan or other contractual items; b) **Temporary Licenses**-the need to renew the licenses (every 5 years for concession of longer periods, and annual for short period concessions); c) **Payment of Reimbursable Deposits**- in addition to the payment of the concession rate for extraction, the concessionaire should make a deposit to be reimbursed after a certain period (ex. at the end of the year of extraction). when the concessionaire meets all management responsibilities. All three mechanisms require that the Government define methods evaluation of management actions and establish reliable mechanisms of monitoring (Veríssimo et al. 2000).

To guarantee the success of concessions allocation. Gray (1997) recommends that the process be executed according to the following phases: a) obtain guarantees that the area to be granted does not put infringe on areas designated for other uses, or that there is no conflict between multiple uses; b) inventory the productive potential of the National Forests. complete market studies to guide the decisions in the concession process. inviting all interested parties to participate in the process; c) Demand technical competence of selected companies with demonstrated ability to manage forests prior to qualification; d) follow the legal procedure for bidding processes; e) ensure that the proposals contain, besides the value to be paid, the detailed results of the forest inventory, utilization

and forest extraction plan, the degree of processing to be used, number of jobs to be generated, a community development plan; and measures to avoid and to mitigate environmental risks.

The creation of more flexible institutions and with larger administrative autonomy is necessary for the success of the administration of National Forests in Brazil. In order to create management systems for National Forests that are based in the sustainable production of timber: these institutions will need to be responsive to the needs of private companies, but firmly rooted in managing the forests according to ecosystem structure and dynamics. This balancing act will require an institution that simultaneously can respond to market demands and forestry management demands. There is a large potential for the use of National Forests to meet timber demands in Brazil, while helping to move timber production from unmanaged to managed systems. The Atlantic Forest ecosystems in Brazil are the most threatened ones due to deforestation and transformation, enhance by their richness in valuable hardwoods. We are proposing a concession system for Atlantic Forest area in Brazil based on Veríssimo & Barreto (2000) study for Amazon, creating new areas for timber production to help to preserve and multiply actual Atlantic Forest residual. In our research we have demonstrated that is economically feasible to create National Forests in “Mata” Atlantic Dominion for sustainable timber production under a concession system. As private interests in Brazil are generally “diametrically opposed” to the public interest, some actions are necessary to be politically and administratively achievable.

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