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New face for traditional commons

Forest conversion and the redefinition of common property and individual rights through agroforest development in Sumatra, Indonesia.

by

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SUMMARY

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In Indonesia, conflicts between the State and local communities concerning utilization and control of forest resources are increasing. As a result of existing legislation, market regulations and financial policies, dispossession of local communities and deregulation of traditional common property systems are becoming common cases all over the archipelago.

But, parallel to the present dilapidation of misappropriated common property resources in natural forests, there is, sometimes for more than a century, a movement towards restitution of these resources in farming systems. In many areas, forest resources have been appropriated by local communities through special management systems which transfer them to agricultural lands and into agricultural systems but do not look like agricultural management. As pure forest reconstruction enterprises, these remarkable "agroforest" systems associate the ancient forest management systems with a logic of commercial agriculture. They overall allow farmers to escape the contradiction existing between a national institutional framework which sharply limits access to natural forests and an economic reality which pushes towards intensive utilization of their resources.

Through the history of an agroforest in Sumatra, through the analysis of interrelations between natural and social processes which shaped and sustain it, we shall discuss how this "agroforest" concept can contribute to debates on use and dynamics of common property resources in forest areas. emphasizing biological and human aspects which allowed more than the conservation of one or another forest resource, the restoration of the forest resource itself in all its biological and economic diversity, we shall discuss the validity of this "agroforest strategy" for re-appropriation of the ancient forest commons in a context particularly unfavorable to their maintenance in present resource management systems. Accent will be put on the special socio-cultural aspects -perception of forest resources, representation of the agroforest vs. representation of the forest- and local institutional characteristics -modes of access, control and transfer for different types of agroforest resources-, which make the originality of the agroforest management mode. Discussion will follow on the perspectives offered by the agroforest model for future negotiations between national government and local communities on the use of forest lands and resources.

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Introduction

Forest resources in the tropics have mainly been managed by indigenous communities as common property resources, but it is often acknowledged that these common property regimes presently tend to evolve into more privatized rights as deforestation and monetarization of subsistence economies proceed. It is also often argued that common property regimes remain successful as long as the main purpose of the forest is for subsistence, but that, as commoditization of forest resources occurs, private property is better adapted to efficiently and sustainably manage the forest for commercial purposes. Global economic and social changes presently affecting traditional forest communities, as well as large-scale ecological changes occurring in forest areas do induce mutation of local production systems that have important consequences on tenure rights and regulations. It is true that the spread of commercial strategies in forest management often leads to a more or less severe deregulation of traditional resource appropriation regimes and forces the evolution of both techniques and regulations governing resource management. However, relating subsistence strategies to common property and commercial strategies to private property is a far too simple dichotomy. "Domestication" and "privatization" dynamics of forest lands and commercial forest resources are far from being linear and universal. Variations and transformations of property systems refer to the variety of new technical choices and of new modes of production. They are also closely related to the evolution of social relationship and perception systems. Whereas the forest is being transformed and private land rights emerge more and more in the forest tropics, some original management systems tend to re-establish forest resources in agricultural lands and to give a new dimension to traditional community rights. Understanding the why's and how's of the evolution of these systems can help us redefining the concept of forest commons and common management of forest lands and resources.

Through the history of mutations that have occurred over the last fifty years in the management system of a given forest resource -damar resins- in Sumatra, we will try to highlight the interrelations existing between property systems, local economic structures and related production systems, social relationship, ecological conditions, as well as perceptions and representation systems. We will first show how ecological changes -in the form of forest conversion and rarefaction of the main economic forest resource-, and economic problems linked to the failure of traditional strategies in agriculture, have led to a total reorganization of landscape and of production systems. We will then explain how this induced a revolution in property and social systems: how the whole appropriation strategy helped the emergence of individual rights and efficient management practices for a privatized commercial resource through a complex agroforestry system, while simultaneously re-consolidating communal institutions and preserving common property resources. This will help us redefine the sociological, ecological as well as economic significance of private and communal domains in forest areas.

1. Clearings for rice, forest for cash : the traditional use of the forest commons in the Pesisir

Resins, which are sticky plant exudates found in various families of forest trees, are among the oldest traded items from natural forests in Southeast Asia. Dipterocarp resins, collectively known as "damar", form the commonest resin type in Western Indonesia. *Damar mata kucing* are clear to yellow damar of high quality, obtained by making incisions in the bark, and provided by about 40 species, from the genus Shorea and Hopea, among which the best are Shorea javanica and Hopea dryobalanoides.

Before the 19th century, damar were traded as bases for incenses, dyes, adhesives and medicines, but also locally served for caulking and lighting purposes (Burkill, 1935). The first damar exports to Europe and America started at the beginning of last century, with the development of industrial varnish and paint factories. Until 1920, commercial harvesting of damar represented one of the main income-generating activities for many communities in Sumatra and Borneo. Nowadays, Indonesia is the only damar producing country in the world. The main producing area is the Pesisir, the coastal area of the southernmost province of Sumatra (Lampung).

Traditional agricultural economy in the Pesisir combined subsistence strategies, with swidden rice production dominating until the end of the 19th century, and market-oriented strategies, associating the production of copra along the coast, pepper, coffee and cloves on the hills. Pepper, coffee and cloves were grown in the forest clearings -*ladang*- after upland rice. These commercial agricultural activities were complemented by commercial gathering of forest products: gutta percha, wild rubbers, rattans, bird nests and damar. Collection and trade of *damar mata kucing*, already mentioned by the British historian Marsden in the last half of the 18th century (Marsden, 1783) used to be a major economic activity that raised

important profit (Sevin, 1989). At the turn of the century, damar was one of the four main exports of the Pesisir (Collet, 1925).

According to the ancient customary tenure system, forest lands and resources were managed as common property by the village community *-marga-* and designated as *hutan marga*. Individual claims over economic resources in the *hutan marga* were acknowledged for certain species as damar or latex producing trees, and through certain technical processes. However, nobody could claim rights over a piece of unmanaged, pristine forest. Only the irrigated lowland fields permanently developed for rice production, as well as some fruit tree gardens immediately surrounding villages, were subjected to definitive and irrevocable appropriation by individuals. Access to land for subsistence and cash cropping was usually gained through clearing a piece of land in the communal forest and cultivating it. Distribution of access rights between the different families of the *marga* consisted of long term individual usufruct rights. The land itself remained the property of the *marga*. These individual usufruct rights were in fact tacitly maintained long after the crops were abandoned, and the same family could recultivate the land after a fallow period without asking any permission to the *marga*. However, customary rights strictly forbade to plant perennials on these communal forest lands, except for short-lived perennials like coffee or pepper. Tree plantation was indeed considered a major investment for land development, which was likened to labor invested in irrigation works for ricefields. As it was acknowledged for ricefields, this labor investment would have legally led to private appropriation of the land itself.

Transmission regimes for land properties -ricefields and fruit tree gardens- were strictly patrilineal. A land, once acknowledged by the community as the private property of the individual who "created" it through irrigation work or plantation of fruit trees, remained in the lineage of the "creator" through a particular inheritance system that transferred these properties to the eldest son. This constituted an unbalanced inheritance system through which the youngest branches of families were virtually excluded from land property, at least in all those villages where natural conditions limited the establishment of wet ricefields. In fact, only the eldest branches of the families who founded the village could claim private land property. These families constituted the highest social class with a strong land foundation. Other families without any land patrimony formed less considered domestic groups and lived mainly if not solely on the forest territory reserved to shifting cultivation (Mary, 1987).

2. Trouble in the commons : from crisis to the redefinition of rules

When the forest resource gets scarce... or the weakening of communal control

At the turn of the century, extractive systems for wild damar encountered growing difficulties, which deeply affected the global balance of farming systems as well as the evolution of the forest commons.

The extension of cultivated lands was probably an important factor in the collapse of traditional extractive systems. Population growth and resettlement schemes established by

the Dutch colonial administration increased pressure on forest lands, and the lowland primary forests where the damar trees were growing became depleted. Productive damar trees were usually spared in the slash and burn process but, if the survival of forest individuals in the clearings did not seem to be a problem, their regeneration under "opened" conditions appeared more difficult. Even if mother trees survived, the resource itself was vanishing.

However, the major reason for the depletion of the resource was certainly overcollection. The high increase of resin prices after 1900 entailed intensification of damar tapping. In addition, a disturbance of the balance between subsistence and commercial strategies in cropping systems induced by the spread of a violent disease which affected pepper plantations (Levang, 1989) increased the reliance of farmers upon wild commercial resources, and specially damar. The combination of these factors generalized overharvesting of all available damar trees, while leading to the disintegration of traditional regulation systems concerning access to and control of the damar resource as a whole. Traditionally, exclusive usufruct rights to a tree were acknowledged by the community to the first individual who discovered it in the forest and started to tap it. But when the tapping movement increased, the communal control did not appear able to protect the interests of legitimate owners against external, unauthorized tappers. Serious conflicts burst between villages, whereas quarrels also developed inside village communities, concerning appropriation and control of the remaining wild damar trees. The generalization of thefts lead everybody to harvest what he could from even the young trees traditionally judged "immature" for production. In 1935, a Dutch forester visiting the area did not hesitate to predict the imminent exhaustion of the wild damar resource throughout the remaining forests (Rappart, 1937).

This obvious imbalance between decreasing availability of natural resources in a context of increased farmers' dependance on commercial resources, and weakening traditions that were not able to regulate access to and use of common property resources led to a drastic evolution of both resource management systems and their regulating institutions. The loss of the damar resource stimulated technical and strategic changes in production systems that, in turn, led to the mutation of land and resource appropriation systems.

Changing the rules, and the resulting switch in farming systems

Damar cultivation, that was successfully experimented by some innovative farmers, emerged as one of the potential answers to the global forest resource exhaustion. However, this solution came up against an important institutional impediment: the prohibition to plant perennials on communal forest lands and the related reluctance of the customary systems to acknowledge any form of individual property right on these lands. Planting a tree that will start producing more than twenty years later obviously constitutes a long term investment, that will not benefit the planter, but the second generation. As the plantation process was conceived in a context of a relative failure of common property systems, its success required the insurance that the planter's children would effectively enjoy the right to harvest the trees, which implied that not only usufruct rights are acknowledged and enforced, but that transmission rights are also secured. As more people gained interest in damar cultivation,

the assembly of *pasirah*, responsible for the customary law, accepted to formally remove the prohibition of planting perennials in the *marga* lands, which boosted the generalization of the plantation movement and led to drastic land conversion process in the former domain of slash and burn agriculture. In barely several decades, the traditional fallow land had changed into a succession of damar gardens. In 1935, Rappard mentioned 70 ha of productive damar gardens. In 1994, mature gardens cover more than 10 000 ha whereas several other thousands of hectares of young plantations will turn productive in the next 10 to 20 years (Dupain, 1994). Almost exhausted at the turn of the century, damar trees presently dominate the Pesisir landscape. It will have required less than fifty years to switch from an apparently irreversible disappearance of the resource to a massive restitution, which, in terms of forest dynamics, is noticeably fast.

3. Replacing the communal forest by tree plantations : ecological and economic consequences

From the forest to damar gardens : an ecological change ?

Damar gardens are established as specialized tree plantations. However, because of the technical conception of the plantation process, the structure of the plantation becomes more complex over years as the consequence of a particular management mode that maximizes the use of natural production and reproduction dynamics in order to minimize the rarest economic factor: labor. In the young damar plantation, plant species carried from the neighboring forests through natural dispersion can establish while forest animals find shelter and feed. Through selection, the planter favors economic resources, but non-resources are allowed to reproduce as well as they are not considered as "weeds". And after several decades of such a balance between free functioning and integrated selection, the biodiversity levels are fairly high. The mature phase of the damar garden, that begins to stabilize after 40-50 years, resembles more a forest than a conventional tree plantation. Apart from major tree species that form the frame of the agroforest, the spontaneous component represents up to 50% of the tree stand alone (Michon and Bompard, 1987 ; Michon and de Foresta, 1994). For herbaceous plants, liana and epiphyte, the spontaneous component is totally dominant. Most forest mammals of the area are also present in the gardens - several rare species such as gibbons and siamang, Sumatra goat or the Sumatran rhino, considered as threatened species, are either permanent or temporary dwellers in the gardens (Sibuea and Herdimansyah, 1994). Birds richness reaches 60% of that encountered in neighboring forests (Thiollay, 1994). More than an ecological change, the spread of damar gardens can be understood as the restitution of a particular forest facies.

Efficiency of resource management : managing a commercial tree plantation... or reestablishing former traditions of forest utilization ?

Damar gardens are managed mainly in a perspective of sustainable commercial production, like any agricultural smallholder plantation. Damar resin, harvested on a regular basis, represents between 45 and 100% of the mean household cash income (Mary, 1987 ; Levang, 1992 ; Dupain, 1994). Damar activity is far more lucrative than any other agricultural activity in the region, and it generates a series of associated activities that raise additional income for the village: harvest, transportation from the field to the village, stocking, sorting and transportation to wholesalers. Altogether, damar production and marketing represents a mean of 80% of village income. The recent development of commercial fruit production with the opening of Java urban markets has extended the role of damar gardens production in household budget and village economic activity. For the last productive years, marketing of fruits has allowed to multiply the total agroforest income by two (Levang, 1992). Commercial management of the gardens' timber is also developing. In addition, garden development represents a true process of capital formation. Gardens can be managed as safety assets: a garden, or a part of it consisting of several selected trees, can be "pawned" through special agreements called *gadai*¹. As any other agricultural unit, gardens can also be engaged through tenant farming or sharecropping agreements.

In the same time, as the forest biodiversity re-established upon the biological structures of the damar plantations, so did the "forest function" upon the economic use of the gardens. Planters have managed to restore a whole range of economic products and functions originally offered by the forest, which is a striking feature of the land conversion process in the Pesisir. Wild resources support a whole range of gathering activities that were formerly typically linked with the forest commons, including hunting and fishing and provide important items for direct household consumption². Damar gardens also represent a source of products that are potentially marketable commodities at a larger scale through commercial gathering: timber, rattan, medicinal and insecticide plants. They have indeed taken over the essential role traditionally devoted to the communal forests in household economy: a place opened to subsistence gathering and extractivism and used opportunistically, according to the family's immediate needs.

1 "Pawnbrokers" (any villager with funds available can become a pawnbroker) may provide loans of several hundred thousand rupiah (several hundreds US \$) for one garden for an undetermined period (at least one year). Tree production serves as yearly interest for the creditor, who for the whole period of pawning can use the garden for his own convenience, except for selling or transforming it. The agreement ends as soon as the owner repays all the money to the creditor .

2 These include various fruits, vegetables and spices, game meat and fish, firewood as well as other plant material.

The "agroforest" paradigm

Therefore damar gardens, that constitute a forest in its own, a complex community of plants and animals and a balanced ensemble of biological processes reproducible in the long term on its own dynamics, undoubtedly have been established not as a forest but as an agricultural production unit. They are part of lands that are agriculturally claimed by local people and are managed mainly as an agricultural enterprise, which has allowed the success of resource restitution and secured its long term reproduction. Actually, damar gardens belong to this large interface existing in tropical countries between "agriculture" and "forest" which is encompassed in the agroforestry debate initiated some twenty years ago by scientists. But in the agroforestry context, they convey a totally new dimension: it is no more a question of associating, as in conventional agroforestry, trees and herbaceous crops, but of applying an agricultural logic to the management of a forest resource (Michon, 1985 ; de Foresta and Michon, 1991).

4. Privatization of the commons ? Individual ownership revisited

By removing the prohibition of planting perennials in the *ladang*, the customary right system has legitimized individual appropriation of lands that were formerly part of the inalienable commons. But here again, the "privatization" process and its consequences are original and unexpected.

The common perception of the private right system in the Pesisir does not totally fit with the western definition of property rights where ownership is conceived as the absolute and exclusive right to freely use the land, the right to enjoy the fruits it provides, and the right to alienate it. In the Pesisir, the owner of a piece of land is bound by traditional restrictions that are not expressed as strict rules promulgated through the customary right system, but are being exerted through a system of social and moral control in which individual considerations withdraw *vis a vis* those of a lineage. These restrictions are formulated so as to ensure that trees and land will be integrally transmitted to further generations. They therefore concern both the alienation of land and the right to cut the trees or drastically change the composition of a garden.

Transmission of rights to the damar gardens commonly follows the traditional patrilineal tenure regime formerly devised for irrigated ricefields and fruit gardens. However, the actual inheritance regime varies according to the origin of the transmitted property and people still make a clear distinction between *hak milik penuh* -full property rights- and *hak waris* -inherited rights. A newly created garden enters the category of *hak milik penuh*, a right similar to western ownership, which means freehold: such gardens can be transmitted or alienated according to the will of their creator. But once inherited, gardens become lineage patrimony and fall into the category of *hak waris*. Even if *hak waris* is acknowledged as an individual ownership right -the legitimate heir can say without hesitation "this garden belongs to me" and is free to harvest and use it-, the owner cannot alienate the land nor the

trees, neither can he cut productive trees without getting the permission of the whole extended family³. Transmitting a family patrimony intact to one's eldest son is socially as important as receiving it.

This restriction of rights is more a moral obligation that somebody may chose to follow or not, than a clearly formulated and enforced regulation, and in that sense, the Pesisir tenure system is clearly differing from a common property regime. *Hak waris bukan hak milik saya*, "my heritage is not my property" summarizes the ethic of the property right systems in the Pesisir, and this ethic still constitutes, more than any regulation, a clear safeguard against total privatization and individualization. Though being legally the legitimate and real owner of the garden, the holder of a *hak waris* is socially more of a depositary of a family patrimony, continuity of which is under the control of the whole lineage.

However, the property right system can not be dissociated from a social system in which many community traditions are still strong: besides the moral importance of the lineage, the domestic group largely exceeds the limits of the nuclear family. Receiving an inheritance in the form of land and trees bears important social and economic compensation duties. Sharing-out landed properties usually occur after the birth of the first male child of the eldest son. The newly endowed heir becomes the *kepala keluarga*, head of a family unit that comprises his children and his parents, as well as his unmarried youngest brothers, sometimes the children of his married brothers, and his unmarried sisters. As the exclusive heir of the family properties, the eldest son is in charge of housing and feeding all this extended family group. This heavy responsibility, according to the heirs, largely compensates for the inequality of the transmission system, but does not seem to affect negatively individual incentives for production and investment.

5. Re-establishing former common property rights in the framework of private agroforests

The re-establishment of former forest resources went along with the re-establishment of former common property traditions linked to these resources. Individual appropriation does not concern the totality of the agroforest domain. The degree of any owner's control over resources included in his garden actually depends on the nature of each concerned resource. Important economic resources such as resin and commercial fruits, as well as land, are effectively individually owned assets, with the traditional restrictions mentioned above. However on these private agroforest lands, many resources are still considered as common property or open access resources. In fact, the only strictly privatized resource is the damar resin, and taking resin from someone's tree constitutes a real theft. Other resources like fruits, sap from the sugar palm, bamboos, special thatching leaves, provided by species commonly considered as "planted", remain at the disposal of the community. But which community

3 Usually parents if present, direct uncles and brothers.

may harvest which resource and to which extent varies according to resources, from the family group to the lineage or the village itself-. Usually, permission of the owner should be asked before collecting what could be considered as "important quantities" and sharing of the benefits usually occurs for those products harvested for commercial purposes, but picking fruits or bamboo for one's own immediate consumption while passing by a garden is considered normal. Resources considered as pure "forest resources" like rattan, wild vegetables, medicinal plants, firewood from spontaneous species, in fact those plants that are perceived "wild" as opposed to those considered as "planted", are covered by a regime that fluctuates between a very wide sense of common property -firewood for example may be collected in small quantities by anybody from the village community- to open access: in most villages, the customary rule allows, without any restriction concerning the origin of the collector and over all the agroforest area, not only subsistence hunting and gathering of vegetables or medicinal plants- but also more income-generating activities such as commercial gathering of rattan.

6. Social changes : securing a new balance in access to forest lands and resources

One of the main outputs of the mutation in the institutional framework governing the control of land and the access to productive resources is that it related the access to land ownership to labor availability of each individual, not to their rank in the family's hierarchy. In the former tenure system, where private appropriation of land was acknowledged exclusively for wet ricefields, access to land property was commonly the privilege of the oldest branches of the founding families. The youngest branches of families, who could not gain access to land property had no agricultural lands, that is no patrimony, to transmit to their descendants. As property rights, and the related economic power due to the access to irrigated rice culture, were de facto concentrated in the hands of a few families, this created an unequal balance of power and wealth.

As private claims on forest lands became acknowledged with the development of damar cultivation, all those landless families could suddenly gain access to ownership for themselves and their descendants. And this easily explains the success of damar cultivation. The concern of creation, perpetuation and transmission of new production structures was obviously a leading factor in the dynamics of damar garden establishment, a factor as important as pure economic considerations. Securing private ownership happened through the plantation of economic woody perennials, that is through the establishment of permanent commercial structures on former subsistence lands. This process secured access to productive structures and to new forms of capitalization for all the villagers through which younger branches of the family could escape depending for their livelihood upon their elders and gain access to private permanent housing in the village⁴.

4 *i.e* buy land, build a private house and start an independant domestic group.

7. Reinventing the commons in the Pesisir : common property traditions revisited in the framework of individual rights

Several factors had combined to weaken community traditions and create forces for privatization of forest land and resources: the experienced failure of former common property regulations to protect the wild damar resource, the contradiction between obvious needs of change in production systems and impediments to evolution due to the regulations of land appropriation, the imbalance between purely common traditions concerning land available for swiddening, and lineage traditions traditionally applied to irrigated ricefields and fruit gardens around villages, as well as the high hierarchization of the society where founding families and elder lineages hold both productive lands and social power. The adoption of new values that went along with mutation in production systems in the Pesisir first emerged against former common property traditions: acknowledged property rights to forest land, and privatization of these rights. However, the large scale landscape transformation resulted neither in a total institutional revolution that totally erased old values, nor in a major ecological change: forest resources and structures have been re-established whereas common property traditions have been redefined and reinforced in the context of privatization.

The privatization movement did not lead to individualization in the form of exclusive control over land or trees. Both the definition and enforcement of private property rights are restricted through a strict system of social control. The former legal authority of the village community over land and resources is replaced by a moral control of the lineage community. But this social control allows, in the same way as former common property regulations, that durability and integrity of garden structures are ensured for future generations. Seen from the angle of *de facto* use rights, the delineation between "individual" and "common" property is not totally clear, specially from the point of view of who really holds the authority: legal and moral control are dissociated. Even if individual ownership is accepted as a right by the village community, the land owners still have to consult the lineage community members before important decisions for garden management are taken. This balance between rights and moral obligations is also obvious for minor resources included in the agroforest to which other members of either the domestic group, the lineage or the village community can gain access.

This social control has obvious consequences for the sustainability and the efficiency of agroforest management. The breakdown of the agroforest block into individually owned plots, if it is not controlled by a strong social structure, might evolve into a mosaic of fields with different structures and vocations, and lead to a drastic fragmentation of the ecosystem which might greatly endanger the overall reproduction of biological and productive structures. This situation of ecological and economic collapse happened in some villages, with the introduction of clove. The collapse of clove gardens and the related extension of bushy and grassy vegetation has led in some areas to fire problems which threaten to destroy the remaining patches of damar gardens. The social control allows, in the same way as former common property systems, that perenity and integrity of garden structures are ensured for future generations. Establishing an access to productive structures and resources which will

pay in the long term introduces a new logic in agriculture, in which short term market fluctuations are totally buffered by the concern of perpetuation of these structures and of those resources, which also has a counterpart: concern and respect of the investments made by the grandparents, which increases the inertia of the whole system against drastic change.

The replacement of communal forest by damar gardens induced major change in perceptions and socio-economic valuation of forest commons. For Pesisir villagers, the damar agroforest is not a forest anymore, but a real garden. This well established distinction between the forest and agroforests is a logical one. Agroforests result from an important initial work and represent long term investment, they represent years of a process which can be assimilated to capitalization. Assimilating agroforests to natural forest would mean denying this work and time investment, this long term planning of the "ancestors" for their heirs, which is an obvious tradition to any Pesisir farmer. It would also deny the whole appropriation process achieved through the establishment of the agroforest. In present tenure systems, natural forest cannot be appropriated in its totality, claims can be made over individual resources, not on the land neither on the space itself. Creation of landed properties for the lineage, which is as important as creating productive structures goes through destruction of the forest and plantation of trees. Confusing agroforest with the forest is, in that sense, an heresy for the agroforester. Unfortunately, it is also an easy solution for forest land administrators.

Conclusion

It is important to emphasize the fact that, as a general rule perfectly illustrated here, what we often call "traditional" management and tenure systems in forest societies are neither rigid nor definitive, but, on the contrary, marked by a high flexibility. Not only techniques and strategies, but also institutional systems and property rights constantly evolve to adapt to changing circumstances. Legal patterns of access to land and control over productive resources (land as well as plants or animals) are shaped by and reflect the constant evolution in resource availability and perception, ecological stability, economic utilization, social cohesion. An urgent task of tenure systems specialists is not to conclude on the validity of common property systems versus individual property, but more likely to understand why and how common property regimes may dissolve into private rights or how individual, private rights loose ground to more common patterns of control, and what are the consequences of such evolutions on ecosystems and associated social systems. Assessing the forms and benefits of a closer integration, rather than an opposition, between common and individual rights, might help managing renewable resources in a more equitable or in more sustainable way.

The damar agroforest model offer new insights into the definition of technical, ecological as well as socio-economic and institutional bases for managing forest resources into agricultural systems. They also open new perspectives for re-inventing forest commons

through an original agricultural perspective. This might have important political consequences.

The government of Indonesia, who is the formal owner of some 75% of total forest lands in Indonesia, fails to recognize individual rights -mainly for ownership, but often also for utilization- over forest lands and resources. Government foresters fear the assumed "individualism" of farmer communities and are convinced that the first thing that will happen, if they grant individual property rights to individual farmers on forest lands, will be that the farmers will cut all the trees and sell the land. On the other hand, they also fail to recognize the validity of common property systems and postulate that indigenous communities are totally unable to sustainably and efficiently manage forests lands or resources.

We have seen that the tenure system over agroforest land and trees in the Pesisir and the related social systems that control it appears to be an efficient framework for sustainable development of the damar agroforest. The close integration between the right system and the social system has ensured the agroforests durability over more than a century. The main qualities of this traditional system which might interest a forest administrator who aims at maintaining "production forest" under a productive forest cover, are that agroforest properties can not be sold out and that productive trees can not be cut down. Enforcing the local system of land tenure and social control would be the best guaranty that the land remains in the community under an agroforest cover and that the tree cover remains permanent. Introducing new systems for control of land and/or trees will most probably lead to deregulation of the traditional system, and the first consequence that might be observed in case of weakening of the custom and social control could be that farmers would start cutting trees and selling land. Just the reverse of what is expected.

The "agroforest framework" offers a good opportunity to devise new forms of association between farmers and foresters concerning forest resources. Ecologically, economically, socially, agroforests are not to be likened to a natural forest. Neither are they to an agricultural system or a conventional tree plantation. Even in the field of agroforestry, agroforests as illustrated by the damar garden model run counter to conventional perceptions of what should be "an association between woody perennials and agricultural crops and/or animals on the same land management unit", which is most often conceived as a simple, obvious combination between one tree species and several short-cycle crops. Agroforests are indeed "a new paradigm" (Garrity, pers. comm.). And, as such they open a totally new field for negotiations between foresters, agriculturalists and local communities, a field favorable to innovations where new solutions to ancient conflicts may be solved without one or another party losing face. In particular, it may allow a formation of new alliances between the conventional forestry sector and local communities, and new options for land or resource management and control, without destabilizing the existing forestry legislation. And it would be a pity not to take this as an opportunity to rethink the conventional context of forestry and agriculture, in the country and in a more general way.

BIBLIOGRAPHY

- COLLET (O.J.A.), 1925 - *Terres et peuples de Sumatra*. Amsterdam, Elsevier.
- DUPAIN (D.), 1994 - *Une région traditionnellement agroforestière en mutation : le Pesisir*. Rapport Orstom-Biotrop-Cnearc-Eitarc, Montpellier, France.
- FORESTA (H. de), MICHON (G.), 1991 - «Agroforesteries indonésiennes : systèmes et approches». Communication à l'Atelier "Quelles Agroforestries pour l'Orstom", Paris, Orstom.
- LEVANG (P.), 1989 - «Farming systems and household incomes». In Pain (M.), ed., *Transmigration and spontaneous migrations in Indonesia*. Jakarta-Paris, Departemen Transmigrasi - Orstom : 193-283.
- LEVANG (P.), 1992 - *Pahmungan, Penengahan, Balai Kencana. Enquête agro-économique dans la région de Krui (Lampung)*. Rapport de mission Soft-Orstom-Biotrop.
- MARSDEN (W.), 1783 - *The history of Sumatra*. London.
- MARY (F.), 1987 - *Agroforêts et sociétés. Etude comparée de trois systèmes agroforestiers indonésiens*. Thèse de Docteur-Ingénieur. Ensa-Montpellier.
- MICHON (G.), 1985 - *De l'homme de la forêt au paysan de l'arbre : agroforesteries indonésiennes*. Thèse de Doctorat, U.S.T.L., Montpellier.
- MICHON (G.), 1993. - Gestion des ressources naturelles : la voie agroforestière indonésienne. *Arbres, Forêts et Communautés Rurales*, 5 : 28-36.
- MICHON (G.), BOMPARD (J.-M.), 1987 - Agroforesteries indonésiennes : contributions paysannes à la conservation des forêts naturelles et de leurs ressources. *Revue d'Ecologie (La Terre et la Vie)*, 42 : 3-37.
- MICHON (G.), FORESTA (H. de), 1994 - «Forest resource management and biodiversity conservation : the Indonesian agroforest model». Communication à l'Atelier UICN "Biological diversity conservation outside protected areas : overview of traditional agroecosystems", Madrid, Mai 1994.
- RAPPARD (F. W.), 1937 - Oorspronkelijke bijdragen : de damar van Bengkoelen (The damar of Bengkulu). *Tectona*, 1 (30) : 897-915.

SEVIN (O.), 1989 - «History and population». In Pain (M.), ed., *Transmigration and spontaneous migrations in Indonesia*. Jakarta-Paris, Departemen Transmigrasi - Orstom : 13-123.

SIBUEA (T. T. H.), HERDIMANSYAH (D.), 1993 - *The variety of mammal species in the agroforest areas of Krui (Lampung), Muara Bungo (Jambi), and Maninjau (West-Sumatra)*. Rapport ORSTOM-BIOTROP/HIMBIO (UNPAD), Bandung, Indonesia.

THIOLLAY (J.-M.), 1994 - Are traditional agroforests an alternative for the conservation of rainforest bird diversity ? Three case studies in Sumatra. To be published in *Conservation Biology*.