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FORESTRY COMMONS IN THE MOROCCO HIGH ATLAS

Summary:

This paper gives details of the problematics, and defines the issues, in the area of the management of forestry commons in the Maghreb. It then goes on to describe the management methods of forestry commons (control of access, division of resources, development) in an enclosed valley in the Moroccan High Atlas mountains: the Ait Bou Gnez area. We put especial emphasis on the negative consequences, from an environmental point of view (deforestation) of the process of communal deregulation, which is becoming more widespread, and frequently leads to free access to resources. Finally, we underline the necessity of supporting community structures in order to be able to create policies capable of guaranteeing forestry renewal.

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Forestry Commons in the Morocco High Atlas

The relationship of people to nature, now an area of research in its own right, has seen the emergence of new interdisciplinary approaches. The use of natural resources (in the widest sense) - the method of appropriation, according to some authors (Reveret and Weber, 1994) - includes, in our view, all the links which unite a society to the resources which it uses, including the ideas which society has of nature, and the social relationships determined by the appropriation of resources (1); going beyond the small compass of knowledge about, and the techniques of, production; in short, of practical matters. We shall begin with the general problematic and with what is at stake in the management of forestry commons in the Mahreb countries. Then we shall discuss the issue of forestry commons, and its recent development, through the study of a particular instance, taken from a Moroccan mountain region.

The State Monopoly of the Forest and the Spacial/Cultural Crisis

The precolonial period in the Maghreb is characterised by a tribal order and by the predominance of various forms of communal use of pastoral land and forests. With the arrival of the colonial period, the French forestry code crossed the Mediterranean and dramatically changed the situation as regards land use and forestry exploitation. The State now became the owner and manager of almost all forestry land, being at the same time the conserver of a threatened natural habitat and the commercial exploiter of a productive forestry business. In Algeria, state intervention included pasture land, which was in part considered as 'communal land' in Morocco and Tunisia.

During the last century, one notices certain major tendencies: private appropriation of land ('melkisation') continued at the expense of the old commons. In Tunisia alone, it is estimated that more than two million hectares of steppe were appropriated in this way and made productive from the beginning of the century. At the same time, there was a general crisis in the methods of communal management: the disappearance of the traditional authority of the assemblies, increasing inequality amongst those with various land rights, an end to the periodic redistribution of land and to measures to protect pastoral land (Bourbouze, 1981; Bouderbala and Chiche, 1992) ...

"Collective land almost everywhere is a 'melk' without actually being called that" (Pascon, 1965). Certain writers go even further. "In their present form, the [traditional] collectives are no longer - and insofar as they ever were such - places in which collective decision-making occurs"

(Bouderbala, op. cit.).

The demographic revolution, the settling process amongst shepherds, the progress of a commercial economy and, perhaps above all, the increased power of the state as manager and moderniser, are the principle causes of this. The economic centre of gravity tends to be found outside collectivities, whilst at the same time an increasingly numerous, and most disadvantaged, rural population continues to find in such collective arrangements indispensable economic support (Bouderbala et al., op. cit.). The relationship between the various Maghrebian societies and the forestry/pastoral space seems to be radically changing into a veritable 'crisis of spatio-cultural identity', to use J-R Pitte's expression: privatisation of pastoral land, significant state intervention, and the

marginalisation of the inherited achievements and knowledge of an ancient tradition...

The prevailing idea, among state bodies as also among specialists in rural development, is that collectivities represent a stumbling block to the modernisation of agriculture and to the rational exploitation of resources. The well-known argument found in 'The Tragedy of Commons' (Hardin, 1968) supports this approach: "Everyone has an interest in exploiting and over-exploiting that which does not belong to anyone in particular (in this instance, communally owned property) ... The sum total of individual actions gives as a final result the degradation and destruction of the resources thus used" (quoted by P. Mathieu, 1991). But have we not witnessed, over several decades, in the Maghrebian countries, a progressive deforestation and desertification, a 'Tragedy of Commons'? Certain writers see the privatisation of pastoral land and integration into the commercial economy as the best method of guaranteeing the protection and renewal of pastoral land (El Aich, 1992). To this ecological argument one can add another against communal production, namely its economic inefficiency: an incompatibility with innovation, and a failure to fully exploit inalienable land... It is on these arguments that a paradigm of development is based. Collectivities, survivors of a long-past and archaic system, will sooner or later give way to state monopoly and a more widespread privatisation of land. Is this not illustrated by the decline of agro-pastoral communities in the Maghreb, the history of Europe and of the developed countries?

The emergence of new forestry strategies

However, encouraged especially by international organisations in the context of structural adjustments or of Agenda 21, new forestry strategies have appeared in the Maghreb (Ben M'Hamed, 1990). They require the active participation of the people in the collective and concerted management of the forestry space. This idea, supported by the work of numerous specialists (De Montgolfier et al., 1988) depends upon the following observation. State monopoly of forests has not prevented deforestation (Quezel et al., 1992). The permanent difference of interest between the forest manager, the public interest and the 'fella', far from resulting in a rational management of resources, frequently leads (especially in the High Atlas) to an impasse, in which there is heavy demand from forest users (land clearance, pasturing, firewood, charcoal...). On the other hand, the conditions of the terrain itself frequently do not provide the best opportunity for individual management of forestry/pastoral land. The 'melkisation' of the collectives and the extension of cereal growing for food production which has followed from this are responsible, in numerous arid and mountaneous regions of the Maghreb, for the spectacular development of desertification since independence (Floret et al., 1986; Tayaa et al., 1992).

In the management of natural resources, the so-called 'participative' approach is now becoming widely accepted. This leads to a full consideration of the constraints and priorities of the people locally; to the promotion of the organisation of these resources in the context of land collectives, users' associations or professional groupings (Ben M'hamed, op. cit.) However, although specialists are reaching agreement, concrete achievements on the ground are harder to find... It seems necessary to abandon the management

model based on centralised intervention, which upto now has been deeply-rooted both in people's minds and in their organisational structures. Instead, we need to rely on existing social entities which are able to liaise with centralised power and at the same time act as autonomous units in the management of the land (Fay, 1985).

This clearly illustrates how important it is to identify and study the socio-spatial structures, which are almost always very informal, traditional or changing, but in any case those which are actually in place in the communal situation. It is necessary to evaluate their impact on the environment, and possibly to imagine ways of changing them (the structures of decision-making, development strategies...) so that they become the main vehicles in a sustainable management strategy.

In the research field, many writers, mostly Anglo-Saxon (Berkes et al., 1989) have shown the inadequacy of G. Hardin's arguments. The renewal of natural resources is not dependent upon one particular system of land management; certain types of communal appropriation allow for the preservation of resources and represent an alternative to the privatisation of land and state monopoly (Wade, 1987). The aim of this paper is to illustrate an example of this in the Maghreb, based on a study of the Ait Bou Gmez valley in the Moroccan High Atlas. The conclusions reached on the basis of this study cannot be applied everywhere, although they do apply to the vast majority of the area of the Central High Atlas.

We would like to emphasise the following three points:

- Communal appropriation of a resource (in this example, the forest) under an efficient system of control, does not entail free access for that resource.

- The degradation of natural resources currently being observed in the Moroccan High Atlas (erosion, deforestation) is not the result of the communal appropriation of these resources; rather, it is the result of a historical process of social change (in the widest sense), often marked by the disintegration of forms of communal control. This deregulation frequently leads to free access to the resources in the absence of a recognised public authority.

- The methods of forest appropriation change in a natural, social, economic and institutional environment which is itself subject to change. Specific ecological and social circumstances can result in a style of communal management which will allow the renewal of the resources of the forest.

The Ait Bou Gmez Valley in the High Atlas

The Ait Bou Gmez valley is about 20 kilometres in length and at an altitude of between 1,800 and 2,200 metres, in the Azilal province. Surrounded by the Central High Atlas, and situated between formidable mountain ranges (Azourki, 3,682 metres; Waougoulzat, 3,763 metres ...) the Ait Bou Gmez valley has about 10,000 inhabitants giving a density of 35 inhabitants per square kilometre. This is a high figure for a high mountain region. The population is divided into about thirty stone and adobe villages bordering land under cultivation.

The main site of communal life, Tabant, situated in the middle of the valley, brings together commercial, craft and administrative activities. Economic activity here is principally in the form of agriculture and livestock breeding; there is little in the way of diversification of activities (craft, trade and services). Nevertheless there has been a recent development in mountain tourism. Emigration also provides a not insignificant amount of extra revenue although, as happens often, there are no formal networks, set up by the prospective migrants.

The mountain climate (from the lowest degree of semi-aridity at the bottom of the valley, to sub-humidity on the slopes benefiting from the most rainwater) lacks water in summer, although precipitation is relatively abundant in winter and spring, a large part of which falls as snow on the summits. The winter cold seriously inhibits the development of vegetation.

Three ecological levels can be identified according to the altitude of the land: the cultivated area at the bottom of the valley represents about 10% of communal land. It includes the irrigated land of the alluvial plain and the 'bour' land (under dry cultivation) on the lower parts of the least steep slopes. Further up, sparse forest and 'matorrals' (3) of holm oak and juniper represent about a third of the land. The highest level is occupied by pastoral land which covers about half the land: xerophyte steppes in cushion-shape ('Bupleurum spinosum', 'Cytisus balancae' ...), areas of 'Ormenis scariosa' and areas of grass in humid depressions.

Production methods are based on a combined exploitation of the three

ecological levels. The crop-based agriculture at the bottom of the valley gradually gives way, as one goes further up the slopes, to forest areas used by livestock, and also provides wood and leaf forage, and this in turn gives place to the high pastures, used in the summer by herds of sheep and goats. The combination of intensive agriculture and extensive animal breeding is the key to the production systems (Bourbouze, op. cit.) Irrigated fields undergo intensive cultivation (two harvests each year) and are fertilised by the manure from the herds of animals. The animals can thus be considered as collectors of fertilising elements, which they transfer from the slopes of the mountain and deposit, in most cases, in the floor of the valley. Analogous systems are found throughout the world in many mountain regions.

The Forest: a basic element in the mountain economy.

Forests and 'matorrals', more or less dense and degraded, cover the slopes upto the highest point at which trees are found, between 2,400 and 2,700 metres. 'Juniperus phoenicea' is abundant at the base of the slopes and the south-facing inclines. Higher up, the holm oak ('*Quercus rotundifolia*' Lamk) and 'Juniperus oxycedrus' cover the great majority of the forest terrain. Box wood ('*Buxus sempervirens*' L.) covers the scree and rocky areas and the mobile substrata. Finally, the 'Juniperus thurifera' grows very sparsely at the very highest point of the forested area (Rhanem, 1985).

The communal forest can essentially be divided as follows:

*Juniperus thurifera: 2,020 Ha 20%

Holm oak:	6,000 Ha	60%
'Juniperus phoenicea':	700 Ha	7%
Various:	1,468 Ha	13%

Total:	10,188 Ha	100%
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Although degraded and not very productive (4), the forest is able to provide villagers with a group of products of vital importance in the context of an economy which is essentially orientated towards subsistence. The majority of tree species have multiply usages.

Firewood is used in the baking of bread in family ovens, in cooking and for winter heating. A household's average consumption of wood is more than 6 tonnes per year. Collecting firewood in the forest is carried out by all families, irrespective of the accessibility of the wood or the socio-economic characteristics of each household. Women devote a large part of their time to this activity in winter (Auclair, 1991). The most sought-after firewood is the wood of the holm oak, boxwood and juniper (Table 1).

Wood for Construction, used in the supporting structures of the terrace roofing of houses and for shelters for shepherds, comes mainly from the 'Juniperus thurifera', which the mountain dwellers appreciate for its strength and resistance in the face of bad weather, and prefer over holm oak. But,

symptomatic of the decline of these species, many villages are nowadays having recourse to poplar trees which grow in the marshy areas at the bottom of the valley. The 'Juniperus oxycedrus' provides steady beams, props and lintels. Through the distillation of wood, the mountain dwellers extract a vegetable essence or tar which is used in veterinary and popular medicine and for waterproofing goatskins. As for the 'Juniperus phoenicea', it provides small poles which, when interlaced, form a roofing framework.

Most of the forest species give foliage as forage: in particular the holm oak, whose leaf and acorn is used for feeding livestock, but also the 'Juniperus thurifera' and 'Fraxinus xantoxylodes', regularly pollarded and pruned so that new branches will grow that are short and thick, and thus easy to collect for animal feed. Forest trees constitute an available source of forage which is vital at certain periods (during snow and drought) and we shall return to this issue.

Finally, the forest provides wood for making implements (the making of ploughs, and other woodwork) and various other products (medicinal plants (Ben Chaabane, 1991)...). It is also used by livestock for the greater part of the year.

Appropriation and Control of Access to the Forest

In Moroccan law, forests and 'matorrals' belong to the state. The right to use them, and their exploitation, are controlled by the forest code. In the Ait Bou Gmez valley, however, as in many other High Atlas regions, the property law governing the forests is not strictly enforced.

Certainly, the communal forestry areas have been clearly demarcated by the authorities but the approval procedure has not been completed. The closest forestry office is 50 kilometres away and in general the villagers claim that they never consult this office or pay any tax on the cutting of wood (Rollier-Lecestre, 1986). The forestry code is generally speaking not applied. Thus, the forest is in fact appropriated by the mountain communities who regulate access to it. Customary rights take precedence over supposed legal rights in the forest area. We shall here describe the bases of these and attempt to assess the consequences of them.

The appropriation of natural resources clearly appears here as a reflection of the social structures that can be found in the area. The Berber societies of the High Atlas, the Ait Bou Gmez in particular, are characterised by a thorough adaptation to what is essentially an unfavourable mountain environment; and by a strong internal cohesion marked by certain social arrangements which are frequently found to have disappeared elsewhere. We can speak here of a segmented society (Gellner, 1969) typified by the interlocking of different functional levels, family units or alliances connected together in the manner of Russian dolls. The patriarchal family frequently brings together several nuclear families, which constitute the basic social unit. After this we have a larger group or 'lineage' ('irhs'), groups of related families, then the village itself ('douar'), generally made up of several 'lineages'. Then there are much larger groupings or 'fractions' (three in number in the valley) and finally there is the tribe of the Ait Bou Gmez valley; these last two constituting the highest levels of the society's segments. This of course is only a theoretical scheme; the reality is much more fluid and complex.

Whatever the case, each group, at different levels in the segmentation, derives part of its coherence and identity by virtue of its role in the appropriation of natural resources, especially the forestry/pasture land, which is a basic component in the production system. What follows from this situation is a socio-spatial organisation based on the following principles (according to Le Coz, 1990):

ETHNICITY: a real or presumed affiliation among members of the group

TERRITORIALITY: the inalienability of resources and the potential equality of the eligible parties to the rights of these resources

VERTICAL COMPLEMENTARITY: access to water and cultivated land, to the forests and to the high pastures.

In this system, the opposition of groups which are clearly equal ensures a relatively balanced access to the natural resources, as can be seen for example in the equal land structure (7).

Let us now take the case of the forests and examine the details whereby access to this resource is controlled. The functional unity here is the village. Each 'douar' in effect controls access to a defined forestry area in which the members of the village community have the right to cut wood and the right of pasture (Figure 2: Organisation of the village territories). Between neighbouring communities, different agreements, based on the principle

of reciprocity, govern usage. For example, the herds and flocks of Ait Rbat have access to the pastures of Ait Wanougdal. In exchange, the latter have the right to cut wood in part of the forest of Ait Rbat ...

The ethno-territorial principle (the belonging to a community) determines the right to use forestry land without any further restriction. However, the community can exercise some control in the sale of products outside the community. In addition to this basic principle, the village community is much more strict in granting access to its forestry land to certain groups. This concerns a rule internal to the community. The forest 'agoudal' (plural: 'igoulden') is the basis of this. This term refers to a reserved area, ordered and controlled by the group. In most villages, there are one or several 'igoulden', forestry areas in which the cutting of wood is forbidden for the greater part of the year, and designed to provide foliage as forage, or wood for construction, and sometimes firewood for the mosque. Usually situated close to the villages, having a southern exposure in areas little affected by snow, the 'igoulden' comprise areas noticeable more densely wooded than contiguous areas, with trees which have been pruned less and are taller.

In each village, decisions concerning local life, especially the management of water and forestry/pasture land, are discussed in the 'jmaa', an assembly bringing together the heads of families. The 'naib', appointed by the 'jmaa', is responsible for the integrity of the communal areas and for ensuring that the prohibition on cutting is respected. Although this is not an official post, the 'naib' has some authority when discussing matters with the local authorities and a legal document testifies to his

functions. Certain villages appoint watchmen for the 'agoudal', paid for by the community. Those contravening the regulations are liable to sanctions decided upon by the 'jmaa'.

The Community Management of Forests in Aguerd-n-Ouzrou

We shall now take the example of Aguerd-n-Ouzrou (300 inhabitants, 55 dwellings), a 'douar' having about a hundred hectares of forestry land on the slopes of the 'Djebel Igoudamene (3,519m). The village livestock have pasture rights over all of this land. On the other hand, the cutting of wood is strictly forbidden in two restricted areas. The holm oak 'Agoudal' covers several dozen hectares on the high areas overlooking the village. This collection of stunted oaks has a crucial importance in the winter feeding of the livestock. In effect, it provides the villagers with the means of feeding their animals in times of snow, because foraging stocks are low and the winter transhumance has been abandoned by the majority of breeders. The prohibitions on wood-cutting can be lifted in winter by a decision of the 'jmaa'. For example, there was a lifting of the prohibition for four days during the winter of 1986-7 and for 20 days the following winter. During these periods, the amount of wood which can be taken is restricted to one woman's load per household.

The other area where there is a prohibition is the 'Agoudal-n-Wabaskil', an area of 'Juniperus thurifera' of about thirty hectares used as a source of wood for construction. The prohibition is lifted for four days each winter. Villagers wishing to build, but only those, can take whatever quantity is required for this purpose. They pay 2 Dh for each unit of wood to the

communal village fund, which sum is used for the upkeep of the mosque, the reception of important guests and for festivities. It is necessary that the construction work is actually undertaken. One cannot cut the wood and then sell it outside the community, and even less use it to make charcoal.

The 'naib' appointed by the 'jmaa' for an indeterminate period, is required to supervise the prohibition system. If at least two witnesses testify that there has been a breach, then the offender is liable to a fine of 100 Dh (paid to the communal village fund), a considerable amount for the villagers. The offender is also required to lodge ten guests in his house for a period which depends on the gravity of the offence. When efforts at persuasion fail, offenders can in the last resort be brought before the head of the Tabant Annexe (the 'Caid'), representing state authority and possessing means of coercion.

Despite this organisation, Aguerd-n-Ouzrou does not have enough resources to cover everyone's needs without endangering the renewal of these resources. The taking of firewood is done at the expense of the available forestry resources outside the 'agoudal', in spite of the increasing tendency to buy charcoal from mountain communities in the neighbouring valley.

Communal Deregulation and the Deterioration of Natural Resources

Far from being free of access, the forestry resources are subject, in the valley, to community control. Control of access to the forest 'agoudal' is based on a system which is at the same time punitive

(surveillance, sanctions) and participative (collective decisions concerning the setting up, opening and closing of prohibited areas). In the case of conflict, the role of arbiter is taken over by the state. The principle of equality is insisted upon by those with rights; and in general this principle is respected in the division of the forest's products. The system is in general highly efficient and there is scrupulous respect for the prohibitions. The rules seem to be accepted and taken to heart by those concerned despite the constraints (women having to make long journeys to collect firewood, the occasional purchase of charcoal from outside the community...) The 'igoulden' provide a stable system whereby the most precious forestry resources can be made available to the mountain dwellers; namely the forage of foliage and wood for construction. In the prohibited areas, pruning takes place of each tree every three to five years, which allows for a satisfactory renewal of the leaf biomass.

The control of forest access is not an aim in itself. It occurs and remains in place when strong interests are involved in forestry resources. We can see that this situation shows the relative homogeneity between the production systems and their performance. The forest areas of the village are the source of collective benefit, a benefit shared between those eligible and jealously protected from the possible encroachments of neighbouring communities.

One of the most damaging factors for community organisation is the existence of diverging interests amongst land users. Pasture management shows this. The difference of interest between the large breeders and the small breeders does not permit village management of restricted or prohibited

access areas. The large breeders, who want to keep the pastures at the bottom of the mountain for winter, clash with the mass of small breeders who use these lower areas continuously (Rollier-Lecestre, 1986).

It is important to note that the recourse of some families to commercial products instead of using the local resources of the forest (butane gas for cooking, wood for construction...) will probably lead in the first instance to reduced pressure on the forest's resources; subsequently, it will result in the disappearance of community organisation and free forest access. The poorest families, being dependent on the local resources, will exercise an intolerable pressure on them. We find this situation in numerous regions of Morocco (Auclair, op. cit.), which leads to the process of desertification.

Community deregulation is the result of a complex process of social transformation, especially typified by the clashing of three competing factors in land management (Marty, 1985): the community factor, the state factor and the commercial factor. Gerard Fay has shown the relation between deterioration in community management methods and deterioration in the natural environment in the High Atlas, in relation to the installing of state control over the forests and the process of removing responsibility from the traditional collectives, which follows from it (Fay, 1985 and 1986). Similar processes have been adduced in argument based on the forests of Nepal (Chapagrain et al., 1985) Japan (Osako et al., 1983) the pasture areas in the north Sahel (Marty, op. cit.) and West Africa (Bouttoud, 1988).

In the Ait Bou Gnez valley, communal control of the land has, until

now, allowed for the effective limiting of cultivation based on clearance, at the expense of pastures and forests (8). This is not the case in the nearby less populated area of 'Dir' and the middle mountain regions, where extensive systems of production are increasing (Tayaa et al., op. cit.). In the High Atlas, there is no simple relationship between population density and demographic growth on the one hand, and over-exploitation of natural resources on the other (Fay, 1986). Certain densely-populated areas, having doubled their numbers since the beginning of the century, have not experienced a rapid worsening in the processes of erosion and deforestation (High Tessaoute, the Ait Bou Gmez area ...).

Development of forest appropriation and of the systems of production

The mechanisms for the appropriation of, and control of access to, forest areas in the Ait Bou Gmez valley are not permanently fixed. They develop across time according to new circumstances, showing flexibility and an ability to adapt. The valley's population has doubled since the census of 1936, leading to an increased demand for forestry products. The 'fraction' - a socio-spatial unit of several villages - previously controlled access to most of the pastures and forests. Over recent decades, it is the village which has established itself as the basic unit involved in the management of forestry/pasture land. Numerous inter-village disputes break out over the appropriation of forest and pasture (9). They are usually resolved by dividing up the forest area previously shared by several 'douars'. We are here witnessing, in some sense, a privatisation of the forest by the village communities.

Recent decades have seen the strengthening and the extension of the 'igoulden' close to the villages (Development of the countryside 1940-1989). In this way, deforestation can be contained close to the 'douars' - one can even observe a certain renewal of forestry vegetation - whilst on the other hand, deforestation continues in the areas furthest off, at the edges of the village territory, in particular in the areas which have remained as shared terrains by several communities. Most of the 'douars' now control access to the forest and some of them go as far as sowing acorns of oak in order to renew production potential...

At the same time, we can see an intensification in the systems of cultivation and breeding: extension of irrigated areas and terraces set out for cultivation, increase in foraging, the planting of apple, walnut and poplar trees (Development of the countryside 1940-1989), the abandoning of the laborious process of transhumance...

Conclusion

The Ait Bou Gmez valley has upto now retained an original village organisation which is in charge of the management of forestry resources. To a certain extent, this organisation has been able to cope with a dramatic rise in demographic trends and an increase in the demand for forest products (10). It is based on social conventions which follow the principles of 'patriarchal management' as defined by J. De Montgolfier: a common language, a procedure (prohibitions on access...), rules for settling disputes.

The ability of the villagers to manage their own affairs and their

interest in the preservation of resources allow us to envisage a forestry development based on the following strategy (according to P. Mathieu, 1991):

Support for this organisation and for strengthening community institutions in the context of the basic socio-political structure (the rural community) (11).

Action to be based not on resources seen from the 'technical' perspective of their exploitation, but from the point of view of local users, their priorities (wood foraging and wood for construction), their management and organisational methods (tree-planting is advisable in the areas of restricted access) (12).

Clarification of land rights and reassuring users about the benefits of forestry management.

This last point should be emphasised because it is linked to the principal problem. The state ownership of forests means in effect that the actions of communal management have no legal legitimacy. A clear new legal basis is required. For example, it might be possible to introduce leases of medium or long term in the restricted areas attached to the villages, in the context of a general legal agreement with the collectivities (FAO, 1982). Finally, we can draw attention to a legal innovation being developed in Sambaina (Madagascar), bringing users together on an equal footing in management. This scheme is founded on a hybrid right (combining modern rights and principles with elements of what is customary) (Bertrand and Le Roy, 1991).

The Ait Bou Gmez valley and the central High Atlas present a specially good social and spacial context for the start of an innovatory forestry development whose ideas and scope (on the level of strategy and regulation) have an importance far beyond the frontiers of the Moroccan mountains.

NOTES

1. The appropriation of a natural resource includes methods of access and the control of access to this resource; and society's methods of division and transfer within and between generations.
2. Less than 20% of households have regular income coming from a member who has moved to the town or gone abroad.
3. Matorral: a generic term indicating subforestry vegetable formations (swamp, scrubland...) resulting from Mediterranean forest degradation.
4. Annual production of the forest does not exceed one square metre of wood per hectare (Moufaddal, 1985).
5. Butane gas covers less than 10% of energy needs.
6. There are plans for a forestry office at Tabant.
7. 98% of forestry exploitation is carried out by landowners themselves, with less than 4 hectares irrigated.
8. Between 1982 and 1984, the agricultural area newly cleared was 9.2 hectares for the whole commune (Moufaddal, 1985).
9. Forestry disputes occur in most of the villages.

10. Although the valley has an overall deficit in forestry products (the gap between production and actual need is estimated at 30%), comparing sequences of photographs shows that the area of forest has not shrunk in recent decades. Nevertheless, the pressure from cutting and from pasturing compromises the regeneration of most species and leads locally to the deterioration in the density of the forest.

11. In the regulations' framework of the Dahir of 1976, defining the modes whereby the rural community could manage forestry/pasture land.

12. The possibility of developing production networks linked to commerce (wood for construction, firewood and charcoal) should not be automatically dismissed, bearing in mind the relatively favourable ecological conditions in the central High Atlas.