


INSTITUTIONAL GOVERNANCE OF BIOMASS IN RELATION TO GLOBAL HEALTH AMONG FARMERS IN MADAGASCAR

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Abstract. In order to ensure its livelihoods, as many other all over the world, the population of Madagascar is increasing the pressure on resources, and in particular, on local biomass. This study examines how institutions are acting in the governance of biomass regarding to its potential impacts on global health. Thirty semi-structured interviews and twelve focus groups involving farmers and local institutional leaders were conducted in two disparate Communes near the capital Antananarivo. The purpose of these discussions was to gather information linking global health to the life of agrarian communities. As achievement of the methodological deployment, a mapping of institutions was set, showing the coexistence in the Malagasy highlands of traditional institutions: the household (*ankohonana*), the community (*fokonolona*) and the state (*fanjakana*), and new ones: the decentralised collectivity or Commune, religious communities and private enterprises or firms. Households, even though as mostly agrarian, are the most active in the production, consumption and transfer of biomass. However, their decision-making aptitude on biomass governance can be influenced by the authority of the state as a provider of public policies or by the holders of financial means as firms that favour certain productions over others. The activities of the interacting institutions maintain the power relations between them more than they preserve the regenerative capacity of biomass, the main source of well-being for agrarian societies.

Key words: smallholder farms, territory, well-being, authority, Malagasy highlands.

JEL code: I14; I31; Q15; O17

Introduction

The agrarian world has long been a reference in the socio-economic field for inspiring the study of resources and the understanding of organisations (Kalinowski, 2001). Its major role in the supply of food and raw materials has increased the interest in agricultural products as resources (Mazoyer and Roudart, 2002). Agricultural, forestry, wildlife, medicinal plants, fuelwood and other materials are central resources for food security and human health, but they mainly provide livelihoods for smallholder farms. The awareness that the issue of health, especially human health, is strongly threatened by various dimensions that go beyond the boundaries of the medical discipline has led to a consideration of global health (Koplan et al., 2009). Furthermore, the observation of the link between human health and that of animals or the ecosystem in general has led scientists to consider health as a whole (Rock et al., 2009). However, despite this integrated consideration of health, humans are still primarily responsible for the decrease in biomass, which is defined as the matter that makes active living organisms. While farmed animals account for 96% of the mammals in the animal kingdom and cultivated plants account for only 2% of the biomass in the plant kingdom, these two forms of biomass have declined by seven times less and by half, respectively, since the human era (Bar-on et al., 2018). In this growing human interest in satisfying biomass needs, the products of agriculture, woody plantations and livestock have become an issue of power and influence in the so-called hegemonic countries over the past millennium (Daviron, 2020).

In the Malagasy context, in one of the poorest countries according to UNDP indicators (Razafindrakoto et al., 2017), biomass has also been a power issue in the Malagasy highlands for the last two centuries. In Madagascar, biodiversity losses in vertebrate and in plant biomass are among the highest in the world (Sun et al., 2022). They are caused by both land-use and consumption patterns, which are largely made up of local biomass (agricultural, predation or gathering products). Whatever its origin,

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spontaneous or produced, biomass fate implies the responsibility of the human, through its actions or decisions. However, behind the term human, questions may arise about the degree of direct involvement of the individual and the degree of involvement of the institutions in which he or she is embedded. An institution is a set of rules that facilitate human interactions in a rational manner (Herath, 2005). In Madagascar, particularly in the highlands, institutional life has been organised at different levels since the 19th century through: the *ankohonana*, translated as the household; the *fokonolona* or community, which designates a group of people originally united by ancestry relationship, in this case associating with the extended family; the *Fanjakana* or State, established at the national level, which designates the central power governing all territories (Condominas, 1960). These different institutions can simultaneously exert their influence on the whole community and territory within the Communes, considered as an elementary unit to be assimilable to a socio-ecological system (Ostrom, 2009) in the framework of this study. Acemoglu and Robinson (2012) associate the failure of a nation with institutional weakness, particularly in Third World countries (Herath, 2005). The failure is assumed to be applicable to the national management of biomass. However, given the multiplicity of institutions likely to have an impact on the physical environment at the scale of a territory, it is not easy to specify the responsibility of each of them for this failure.

The problem we propose to address is related to its potential impacts on global health: How do institutions act in the governance of biomass production, access, use and reproduction? The aim of the study is to determine the level of responsibility of institutions with regard to the governance of biomass and its impacts on the preservation of global health. Two main hypotheses are associated with the central question. The first hypothesis assumes that the biomass is governed by the institution that is most involved in its management. The second hypothesis suggests that the diversity of institutions allows for a balance of overall health by mutually preserving the biomass. In order to verify the hypotheses in the context of the Malagasy highlands, which are still largely dominated by agricultural life, and where the purpose of the agrarian system revolves around biomass, two methods were developed:

- semi-structured interviews (number: 30): conducted towards resource persons, identified locally as people with responsibilities within an institution or whose concerns and activities relate to biomass or global health: Representatives of the Commune or Municipality (02), Chiefs of *Fokontany* (06 official chiefs of villages), members/leaders of farmers' associations (05), civil servant responsible of resource policy (01), community-based agents (04), chiefs of health centre (03), veterinary agents (02), community elders including a responsible in a religious community (06), and manager at confessional school (01);
- focus group discussion: carried out in 12 fokontany, each focus group was bringing each a maximum of 15 individuals including resource persons, chief of household previously surveyed (communitarian survey accompanying the interviews, hereafter called survey 2022).

The two Communes of the highlands chosen in the study have contrasting socio-ecological statuses: urban in the case of Arivonimamo and rural in Behenjy (Table 1).

The information collected through the focus group meetings as well as that provided by individual interviews with resource persons linked to local forms of institution feed the study database. From this database, a governance analysis model was developed in three successive steps:

- the first step is to identify the different institutions, as well as the different types of authority that accompany them (state or public etc.);
- the second step, raises the functional interest of the institutions by establishing the activities of the institutions with the ecological elements of the Commune, in particular with regard to biomass;

- finally, the third step focuses on identifying how the decision-making centre of each institution impacts on global health, taking into account the phenomena that contribute to its deterioration or to its preservation.

Table 1

Characteristics of the Communes of Arivonimamo and Behenjy

Socio-demographic indicators	Arivonimamo	Behenjy
Geographical coordinates	19°00'573"S 47°10'59"E	19°12'46"S 47°28'56"E
Status of the municipality	Urban	Rural
Number of <i>Fokontany</i> (Municipality's subdivision)	13	22
Population density (inhabitants/km ²)	411	142
People that refers to conventional health professionals	62%	53%
Number of hospital beds	30	0
Access to regular sanitation device (clean water)	65%	3%
Use of fuelwood as energy source	98%	100%

Source: *communitarian survey that accompanied interviews led by authors*

Research results and discussion

1. Multiple institutions coexist in a predominant agrarian-based community

During the interviews and group discussions, the traditional institutions that have existed for two centuries were mentioned, with some variability with regard to the *fokonolona*, whose structure is still recognised, but whose official functions have been integrated among the tasks of the staff of the *Fokontany*, the basic territorial unit where the central state power is established. New institutions are also growing alongside the old ones: the Commune or Municipality that represents the decentralised power, the religious community and the private/civil organisations or enterprises.

1.1. Traditional institutions have been existing since royal era

1.1.1. Ankohonana, the basic institution of society

The *ankohonana* refers to all individuals living under the same roof and sharing the same meals. It refers to the nuclear family, but can also include relatives who are temporarily away and are regularly supplied with food. It is established in 84% of cases through the institution of marriage. Monogamous marriage is established between a man and a woman, from two different families, 80% of whom are native to the studied localities. The couple forms the household and runs an agricultural farm in 87% of cases (surveys 2022). They share responsibilities and work inside the smallholder farm (SF) established by pooling their inheritances (if any) and their own resources: land, agricultural equipment, livestock, know-how, etc. A SF ensures both the production and consumption of goods derived from biomass as well as other related activities related to extraction (extraction of inert [abiotic] or living resources [from gathering and hunting]) or to small-scale transformation in order to generate, in particular, fiduciary income. The household defends the same interest, which is to ensure the subsistence of all members, even those who are far away, and even the descendants of children who are not yet emancipated (married but not independent in terms of farming or unmarried).

1.1.2. Fokonolona, the local community

The notion of *fokonolona* has evolved from its original conception to its current consideration. By its structure, a *fokonolona* is not anymore necessarily composed by native families linked by ancestry

relationship. Nowadays, it has extended to the whole community, including established migrants. Descendants among the diaspora who are living far away from their natal place may also be considered as members of the *fokonolona*. Through its functions, the *fokonolona* was intended to ensure social cohesion and to govern human interactions. Even though it has no formal status, the *fokonolona* has a moral value for the communities, particularly in terms of respect for elders, policing of resources and initiation of mutual aid. In its current configuration, the *fokonolona* automatically gathers the entire population, but each community organises itself the governance way at its own convenience.

1.1.3. *Fanjakana « masi-mandidy » or the state holding full power*

The *fanjakana* brings together all forms of institutional representation of central power at the country level down to the grassroots level. It is keen to govern as closely as possible to the population, so successive rulers have sought to establish the *fokonolona* as an official state institution. Since its consolidation by the King Andrianampoinimerina as a mode of organisation of the ramifications of royal power in the Imerina (former kingdom of the central highlands) at the beginning of the 19th century, forms of local aggregation have been exploited as means of conveying the policy of central power to the population (Condominas, 1960). Then, since the colonial rulers at the beginning of the 20th century, the *Fokontany* or the territorial space occupied by the *fokonolona*, has been set up as the basis for administrative divisions. The participants in the focus groups agreed that the State holds the prerogative as having the greatest notoriety among all existing institutions. The Head of the *Fokontany* is chosen by the *Fanjakana* from among the proposals of the *fokonolona*. The *Fanjakana*, which holds the public administration implements its authority, from the national to the village level, via the regional level. The constitution of the Fourth Malagasy Republic of 2010 confirmed this state hierarchy: the Central Government, the Province, the Region, the District, the Arrondissements, the *Fokontany*. At all levels, each branch of the State is endowed with designated public authority, except the Head of State, the President that is elected by universal suffrage.

1.2. Recently established institutions for human, economic or territorial development purposes

1.2.1. *Commune, as a decentralised authority*

Having had a vague outline during the period of royalty, the cantons, which became *Firaisam-pokontany* and thereafter Communes during the second part of the 20th century, were circumscribed by the colonial administration at the beginning of the 20th century (Rakoto Ramiarantsoa, 1995). In the absence of a faithful application of the constitution, the current decentralised authorities are only established at the level of the Communes where the mayors elected by universal suffrage have the primary role of contributing to economic, social, cultural and environmental development within their territorial circumscription. The mayor's office hosts the deconcentrated administrative and technical services, which are attached upstream to the regional directorates of the public ministries and downstream to the heads of the *Fokontany*. The Commune, a public institution, ensures the regalian functions of the State, in particular the regulation of citizen life through public services and the provision of common welfare facilities. In order to do this, it mobilises fees and taxes collected from the population and from certain institutions: taxes on profits (levied on private enterprises - especially trade), operating permits fees (private industrial enterprises), taxes on assets (households), taxes on traded products (farms), provision of services (all citizens), fees on administrative authorisations (religious community).

1.2.2. *Private enterprise as the only self-initiated institution*

Private enterprises have been established by their owners or members to serve essentially their own purposes. The financial issue remains crucial for them because the accumulation of funds, the constitution

of a profit, is the guarantee to perpetuate their entrepreneurial activities. It is notably thanks to the financial tool that such an entity can support activities that are out of their regular own duties (support for public schools, granting of safety nets, and participation in the social fund of the Communes during national or end-of-year celebrations) or environmental activities that are not profit-oriented. Some private firms (kept anonymous) from the capital Antananarivo have chosen the Commune of Behenjy for the Corporate Social Responsibility (CSR) programmes they undertake, mainly in reforestation activities. In the Commune of Arivonimamo, incentive of the diaspora advises an industrial farm producing chicks and chicken to set up there. Such establishments benefit both study sites by providing temporary or permanent work to the local population. Private companies working in the agricultural sector are also present. They mainly offer market opportunities for agricultural products (green beans, strawberries) and livestock (foie gras) instead of direct job.

1.2.3. Religious community, discreet in the concern for global health

Religious communities are meant to support and/or to regulate the spiritual life, and even to extend their ethics in their interpersonal relations of the faithful members with the rest of the community. However, as inserted in national structures, religious communities, in the Christian case, have a development section, similar to a non-governmental organization that is active in supporting communities. In our case study, a congregation of Catholic sisters in Arivonimamo maintains a vegetable garden that is set as a showcase of organic farming to provide food for their own consumption needs. The congregation also sells to the public phytotherapeutic products developed by their community (ointment, cream based on essential oils) and other small-scale products (soap, wine) to enable financial supplies to some of its members.

2. Activities of institutions towards biomass are maintaining mutual interactions between them

The set of the encountered institutions is as much represented in the urban as in the rural Commune. With regard to biomass governance, interaction differs from one institution to another and at different intensities (Table 2).

In terms of objectives, *ankohonana* or households have the most direct contact with biomass compared to other institutions. In both urban and rural areas, smallholder farms are the majority of the households that compose the population. The interaction of the household with the *fokonolona* extends beyond the personal links induced by family belonging. Their exploited resources, such as land (for cropping and livestock purposes), are adjacent to each other. Use of its own resource necessarily interferes to those of other ones. Community management and rules permit to individualise the resources specific to each household. Access to common areas such as pastureland or groves whose undergrowth provides ecological services to the communities (fuelwood, gathered products) is also regulated within the interaction between *ankohonana* and *fokonolona*.

Household interaction with the state administration is rare in terms of support for crop and livestock production. Despite communal bylaws that require agricultural production for sale to be subject to rebates or fees, farmers do not necessarily do so in practice, especially when it concern local sales. Land taxes are the most important tribute that the *ankohonana* has to pay to the state. In return for these various financial contributions, the *ankohonana* that were present at the focus group discussions deplore the fact that the state's responsibility does not meet their expectations. Knowledge that past development projects convey does not last, even among the beneficiary actors. As example, the ASA AVOTRA MIRINDRA, a national state programme in the area of capacity building for agricultural enterprises (agricultural advice, rural employment) has trained about organic biopesticides. When questioned, some of whom were present at a

meeting in Behenja were beneficiaries of the project but they had difficulty to remind the technological innovation. Moreover, in the Commune of Arivonimamo, the State is gradually organising the management transfer of the remnants natural tapia forest to the local grassroots communities (*fokonolona*). However, the head of the forestry cantonment admits that despite this, it is difficult to enforce the law, particularly to make the police role effective in the face of the poaching that continues by exploiting the tapia for charcoal.

Besides, in the context of contracts for the sale of agricultural production, the *ankohonana* must pay for the inputs that the private companies provide. So that the production they buy can meet the standards that the firms want. Regardless of the hazards encountered during the cropping season, the farms directly receive the difference between the gross product and the value of these subsidies. The most beneficial interaction from private enterprises for households is the opportunity to acquire gainful employment (preferably stable or permanent). Private companies are involved in CSR initiatives through reforestation activities or charitable works for the benefit of the Communal area where they are located or active. However, participants in the focus group discussions were unable to define the tenure of the land on which such afforestations are established, or the fate of the newly planted trees.

Table 2

Institutional architecture of biomass activities according to global health elements

Links to global health	<i>Ankohonana</i> (household)	<i>Fokonolona</i> (Community)	<i>Fanjakana</i> (Sttat)	Commune	Religious community	Private enterprise
Human health	Productive activity (food and commercial) Purchase or collection of consumer goods: food, phytotherapy, energy	Income activity: occasional sale of family groves	Health authority Project leader: - FAFY (health and nutrition of mothers and children) - ASA AVOTRA MIRINDRA: agricultural advice service	Community service through support to the Basic Health Centre	Solidarity networks Production and marketing of phytotherapeutic products	Care for employees whose health deteriorates or who are taken off sick
Animal health	Animal husbandry: feeding and care using local remedies	Community grazing and watering places regulation	Authority mandating veterinary activity	Raising awareness of cattle vaccination		Veterinary professional
Plant health	Technical route, gardening		Agricultural policies and afforestation Development project	Integration of gardening lessons and practices in public schools	Creation of an organic orchard and vegetable garden showcase	Commercial professional: Sale of pesticides, fertilizers, seeds
Ecosystem health	Mining of the fertility of the ecological environmen: water, wood, mineral elements in the soil	Bushfire police	Environmental policy Role in resource regulation	Community reforestation according to land availability Protection of natural resources		Private reforestation activity in the framework of corporate social responsibility

Sources: interviews and focus group discussions animated by the authors

As far as public institutions are concerned, their contribution lies in establishing National Policies and ensuring their implementation for the State, and Communal Development Plans for the Communes. At the national level, the State can provide incentives or support for biomass production, such as making tree seedlings available to citizens who wish to plant trees as part of the national reforestation policy; and

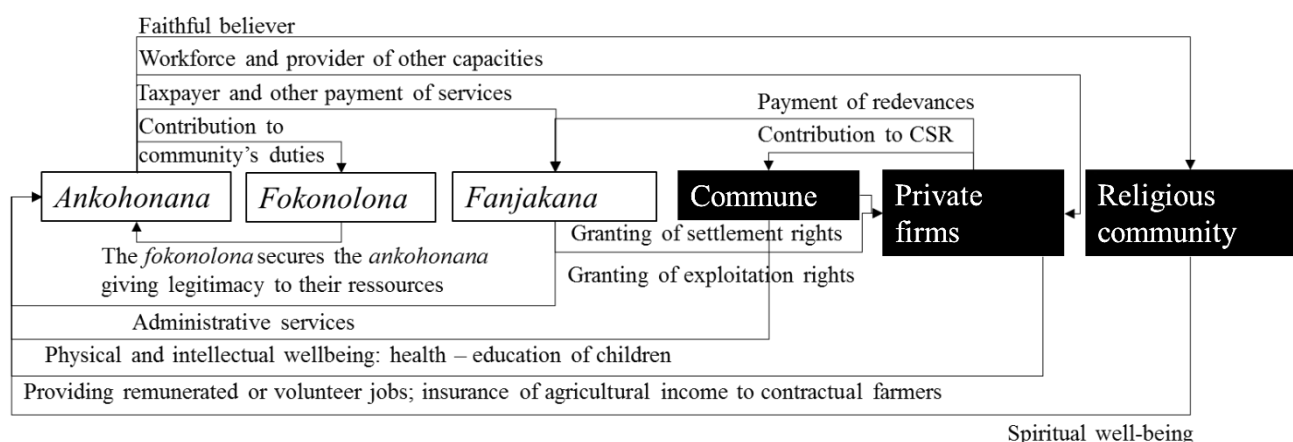
conducting development projects to strengthen the capacity of farms to produce. Depending on the financial capacities of the Communes, support for productive activities, mainly agricultural, within the local authority can only be engaged once the fixed costs related to the wages of employees of the Communes and related services are settled. Thus, as the slogan of the Commune of Behenjy team indicates, "the Mayor is open to all forms of partnership". That means that the Commune welcome any partnerships that may directly contribute to finance productive and security aspects of development. In the same Commune, handcrafters that were unified as SF inside associations that make handmade objects from vegetable fiber were outraged by the attitude of some central government officials. Instead of considering their request for help and support to struggle the lack of markets, the visiting state representatives blamed them for not making enough effort to produce sisal, the basic raw material for most of the local handicraft product lines.

Finally, not all religious communities contribute in the direct concern of biomass governance within the study areas. The specific activities in selling "natural" products create interactions with the local population, the *ankohonana*, who buy their products and sometimes provide them with raw material. Occasionally, discerning visitors can buy products at factory prices by taking advantage of a short marketing circuit. These locally branded products are exported and are known elsewhere, in the Capital city. As such, the religious community maintains solidarity-based interactions between its members.

3. Influence of the centre of decision-making centres within institutions

3.1. Decision-making centre and limit of influence of institutions

The institutions coexisting in the Malagasy highlands are interconnected throughout their mutual activities or duties (Figure 1). The State has the largest scope because the activities of all other institutions, exception to the *fokonolona* case, must be approved by its territorial branches. According to the participants in the discussions, the rules and directives established by the State remain sovereign despite the power of the decentralised authorities represented by the Communes, whose mayors and councillors are elected. These directives derive from the general policy of the State, executed by the government, appointed by the elected President. According to the testimony of a councillor of the Mayor of Arivonimamo, it is common that due to the lack of political cohesion between the state regime or *fanjakana* in place and the mayor of the Commune, decisions taken by the latter may be scuttled upstream by the District, which oversees it, or by the Heads of *Fokontany* downstream, who are supposed to implement them.



CSR: Corporate Social Responsibility

Sources : interviews and focus group discussions animated by the authors

Fig. 1. Intersections between the spheres of institutions coexisting in the Malagasy highlands

Within the *ankohonana*, the decision belongs to the "*teny ierana*" or the compromise of the couple when the parents are both present in the household. Decisions about the farming system and income-generating activities are taken, as well as the allocation of consumption expenses. Among these concerns where joint decisions are taken are those relating to health: human health (particularly the distribution of tasks), domestic animal health (daily care and eventual treatment), and the health of cultivated plants.

Although the elders have a privileged status within the *fokonolona*, decisions are taken by majority vote by a collegial leadership, through small committees representative of society, in case the whole community cannot be gathered together in a plenary assembly. In the Commune of Arivonimamo, committees composed of representatives of the local authorities (Head of the *Fokontany*), elders, and vigorous young men called mobile sentinels are established to discuss about security, environmental, or socio-economic concern at village level. In the Commune of Behenjy, places called "*kianja maitso*" have been established for the entire population of a village, where they have to attend regular assemblies to discuss similar issues than cited in Arivonimamo. In this pseudo-family structure of the *fokonolona*, which as in the past is keen to preserve social cohesion, authority belongs to the elders of the extended families who majoritarily represent them.

The centre of decision-making varies according to the religious communities. In particular, decision-making follows a top-down path for the Catholic Church, based on the recommendations of the Holy Father, the Pope at the Vatican, or according to the congregations of the Sisters or Brothers who work there. The latter carry out the appropriate assignments. The bottom-up path is applied for the Protestant community (local Calvinist, or Lutheran) where the general assembly (gathering faithful confirmed to take the Lord's Supper) makes the decisions that the church office carries out with the help of all the faithful members. However, the church leaders maintain moral authority for spiritual concern as part of human spiritual health.

In the case of private firms operating in the study Communes, which are of medium to small size, decisions are made by the owners, or the board of directors or members (in the case of non-profit associations). The decision to take part in CSR-related activities belongs to the managers of the companies, but they often result from commitments made when the factory was set up, in consultation with the host commune. The *fokonolona* deplors the fact that, at present, the socio-ecological damage likely to degrade health inside industrial site (employee's health) and outside (pollution from sludge and smoke), particularly in Behenjy, where they recycle metals or waste oil, is not accompanied by clear control and compensation measures. They call for the vigilance of the Commune and the advice of the researchers who conducted the current study.

3.2. Power relations between institutions, reducing the ability of agrarian households to govern over biomass

Although the decision-making centres within each institution are well defined, the forms of authority or prominence that individuals within institutions may have can influence decisions taken within them or against other institutions.

The *ankohonana* and the community or *fokonolona* take advantage of their proximity to the land to act directly on the biomass according to the resources at their disposal and conformingly or not to the global regulations established by the *Fanjakana*. Besides, the forms of support they receive can influence their decision: orienting production towards certain vegetables rather than others; protecting the *tapia* forest in accordance with the State regulations or contributing to plant fast-growing and invasive trees because of

the free status of plants or seedlings, even though they likely may compete with the native species to be protected (Kull et al., 2005).

Although the *Fokonolona* is not considered as an official institution in the constitution, its legitimacy among the *ankohonana* as well as among public authorities (*Fanjakana* or Commune) has no doubt. According to our observations, elders sit in the governance of the Commune as councillors or even as Mayor. In non-isolated cases, the Heads of *Fokontany* succeed each other from one extended family in particular, with handovers from father to son, with the endorsement of the *Fanjakana* and the consent of the Community. In exceptional cases, members of the Diaspora may also have responsibilities within the national structures of the State. These diaspora may, under the instinct of accountability, act in favour of their community of origin in development actions. This form of notoriety that certain "privileged" members of the *Fokonolona* display results either from respect for the caste hierarchy established since the royal era, or from recognition of the charisma of these elders in maintaining social peace.

Private firms that mobilise civil society or private investors do not have any authority. Instead, they use the financial means they manage to establish a kind of reputation to influence other institutions. By making inputs available to farm households, companies in charge to collect agricultural products push those who contract with them to allocate some of their own resources to produce the commodities the companies want. Similarly, through actions linked to CSR, private firms manage to occupy part of the community's land, with the approval of the decentralised authority. Even though the scope of action of these resource holders is limited (sectoral and spatio-temporal) and often timely, they are still very much solicited by the communities. The financial potentiality of firms attracts households' interests to which monetary resources was revealed by the focus group discussion as the limiting factor in the preservation of health in the study area. The financial limitations currently prevent them from ensuring subsistence agricultural production, which is exposed to the stresses of severe water deficiency, favouring the proliferation of plant pests (army worms) and certain animal diseases (undiagnosed vomiting in cattle species). The *ankohonana*, whose land resources are also limited as a result of generational inheritance games, are forced to look for more remunerative work in other sectors of activity: industrial, artisanal or trading. The financial income generated by these extra-agricultural activities helps to compensate for self-consumption on the farm. The state of food insufficiency degrades both human and animal health, while nutrient deficiency weakens crops.

Conclusions, propositions, recommendations

- 1) Whatever the status of the Communes, rural or urban, smallholder farms represent the majority of households or *ankohonana* among the population established as a community or *fokonolona* in the Malagasy highlands. Although they have control over the actual mobilisation of resources for productive purposes, their productive activities may be influenced by other institutions, notably the state, *Fanjakana*, and private enterprises. The first hypothesis is refuted insofar as the governance of biomass does not belong entirely to the one who manages it the most, i.e. the *ankohonana*. It is influenced by those with authoritarian or financial power.
- 2) Although they are not exempt from responsibility for biomass governance, the household bears most of the damage to overall health (disease, environmental hazards) in their interactions with other institutions. Interactions where the biomass status is beneficial to them exist but only evolve on a small scale, notably with religious communities or during short development projects. The second hypothesis is therefore invalidated because the balance of power maintains an institutional equilibrium in the agrarian-dominated area, but not a biomass equilibrium on which the global health of households in

particular depends. The situation highlights a lack of coordination between institutions that may help to appropriately manage a critical resource as biomass (Heikkila et al., 2011).

3) The difficulty of mobilising some actors was noticed during the focus group discussion. A lack of cohesion is therefore assumed in some communities. Actually, the associative life of exclusively farmer-based actors such as cooperatives does not endure despite the initiative of volunteers who take on the role of leaders, unlike the *fokonolona*, which regulates issues of the agrarian commons. However, productive interactions are still possible in the face of a common challenge between institutions with divergent interests (Andriamihaja et al., 2021). In order to work in diversity and at all scales, the proposal of Gupta et al. (2010) against current environmental uncertainties could be applied to global health concerns. To do this, institutions need to strengthen their capacity for learning, leadership and equitable governance of available resource. Coordination of all institutions implicated to the use of resources that satisfy fundamental needs (Gérard et al., 2022) is necessary.

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