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OBSTACLES TO THE DEVELOPMENT OF THE AGRICULTURAL SECTOR The case of the rural commune of Ranohira

**RABEMANANJARA Vololonirina Alisambatra, ANDRIANARIZAKA Hantatiana Henimpitia,
RAZANAMANDIMBY Jeanne Harminne and RANDRIAMIHARISOA Mamy Alfa**

¹Senior lecturer

University of Fianarantsoa, Madagascar

²Doctor of Management Sciences

University of Antananarivo, Madagascar

³Master in Management Science

University of Fianarantsoa, Madagascar

⁴Doctor HDR in Management Science

Lecturer at the University of Antananarivo

University of Antananarivo, Madagascar

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ABSTRACT

According to the concept of sustainable development, sustainable agriculture is based on three key functions: the production of goods and services, environmental management and rural development. But no-one can ignore the precarious nature of farms in developing countries like Madagascar. So, the question is, what are the obstacles to the development of Madagascar's agricultural sector?

By analysing the characteristics of farms in the rural commune of Ranohira, in the Ihorombe region of Madagascar, we can ascertain that different socio-economic contexts are blocking the development of the country's agricultural sector.

KEYWORDS: Farmers, Agriculture, Culture, Livestock, Development.

INTRODUCTION

The agricultural sector is at the heart of the economy of the least developed countries, including Madagascar, as it accounts for a share of GDP, produces most of the basic foodstuffs and is the only source of subsistence and a major source of income for more than half the population of this country".¹ Most countries will not be able to make real progress towards economic expansion, poverty reduction and greater food security if they do not harness the human resources and productive potential of the agricultural sector to increase its contribution to economic and social development in general. A strong and dynamic food production and agricultural system is therefore one of the main pillars of the strategy for economic growth and development. It is essential to the achievement of global poverty reduction targets.

In Madagascar, which is a country with an agricultural vocation, agriculture is the main activity. In the broadest sense, it plays an important role in Madagascar's economy, generating around 30% of GDP. Madagascar has a population of between 19.6 and 20.8 million, 80% of whom live in rural areas (INSTAT, 2012)² but it currently has a population of 25 million, 80.5% of whom live in rural areas (INSTAT, 2019)³. Economic activities in rural areas are essentially based on agriculture, which employs around 78% of economically active rural households (WDI, 2005)⁴. At present, however, this activity alone no longer enables families to meet their basic household needs. The country is making little progress towards economic expansion, poverty reduction and greater food security, as the development of the agricultural sector is slowing down. This raises the question of what is holding back the development of Madagascar's agricultural sector?

In 1798, Malthus proposed his Population Principle, according to which there would be a distortion between the reproductive power of the human species and the capacity to produce the means of subsistence. Later, the neo-Malthusians extended these ideas to the impact of high population growth on the degradation of the environment and the means of agricultural production. For Boserup (1965), unlike the Malthusians, demographic pressure is the spur that can lead to agricultural progress through a reorganisation of production. For this author, when the size of the population is too high in relation to the quantity of subsistence required, this leads to changes in the way the land is used and to improvements in cultivation techniques, or to a radical change in the production system.

But this work is based on the hypothesis that different socio-economic contexts are blocking the development of the country's agricultural sector. Quantitative and qualitative analyses of the situation of farmers in the commune of Ranohira, in the Ihorombe region of Madagascar, were carried out to study

¹ The role of agriculture in the economy

² 1993 This is an estimate; the last census dates back to 1993.

³ Results of RGPH 3, the latest general census of population and housing 3rd edition dates from 2018

⁴ According to the Policy Note on Madagascar, written and published by the World Bank in June 2010.

the obstacles to the development of the agricultural sector.

I- CONCEPTUAL FRAMEWORK

Agriculture, in its general sense, refers to all the work involved in transforming the natural environment to produce plants and animals useful to man. Mocher shows that agriculture is a particular mode of production based on the growth process of plants and animals.

From an economic point of view, agriculture represents a sector of activity, an income-generating activity based on the exploitation of land, the cultivation of animals and so on.

Agriculture has a number of specific characteristics that need to be taken into account to understand how it works:

- Land that is an important production factor in farming. It plays a special role in farming.
- Agriculture is highly dependent on natural conditions and the seasons. This is particularly true in developing countries where sophisticated techniques have not yet been mastered. This dependence has certain consequences: the seasonal nature of the use of factors and risk. Seasonality of factors, even if it is not specific to agriculture, imposes particular characteristics on the production function.

Agriculture has a very important role to play in improving the standard of living of peasants, as it is a major source of income for most peasants in reducing poverty (Schultz, 1980). Agriculture, the main activity in the rural world, must continue to play its historic role, which can be summed up as follows: supplying raw materials to industry, generally located in urban centres, in the first phase of development; transferring rural labour to various activities in the secondary and tertiary sectors.

According to François Perroux, development "is the combination of mental and social changes in a population that enable it to achieve cumulative and lasting growth in its overall real product". According to Bonny et al, "Local agricultural development plays an important role, particularly in the daily lives of farmers, because it is a major engine of growth, it is based on the exploitation of natural resources and the development of territories, and it meets human needs and the basic needs of many households around the world". (Losch et al., 2011). And rural development refers to the management of human development and the orientation of technological and institutional change so as to improve inclusion, longevity, knowledge and living standards in rural areas in a context of equity and sustainability. Aquaculture and fish farming can be part of rural development and sustainable development options.

II- RESULTS

In relation to the objective of this work, the results focus on the threats to farming in the study area

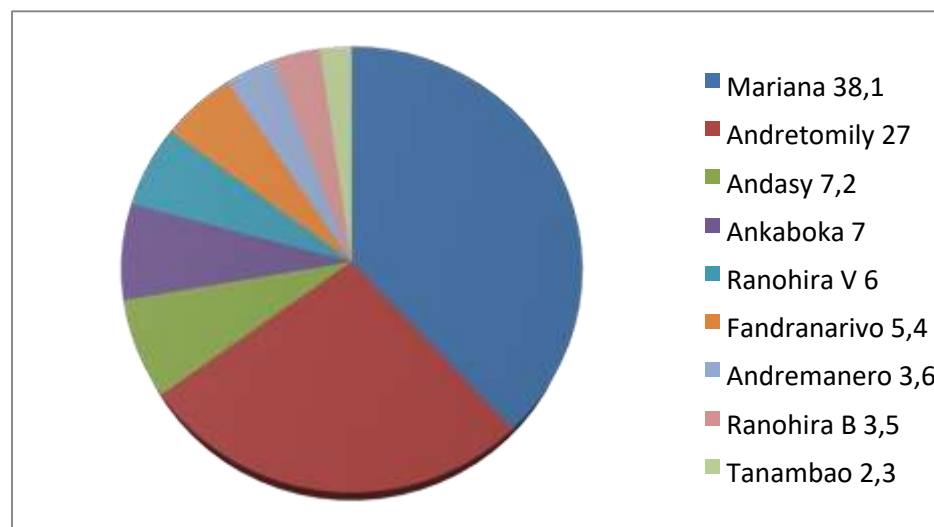
2.1 Cultivation and farming methods

Rice-growing is the main activity for farmers in the commune, and is also the source of income and food self-sufficiency for the commune. This area covers a total surface area of 1,112 ha, and rice growing is the main activity in the area. Until now, cultivation has been carried out using ploughing implements and a traditional production system. As a result, farmers are unable to achieve satisfactory yields. Production averages around 0.6 tonnes per hectare. Furthermore, the biggest difficulty for this type of crop remains access to water. The majority of cultivated plots are not watered and are therefore dependent on rainfall. Rice growing is also subject to insects such as locusts.

In Ranohira, the cultivated area is 1,822 ha, i.e. 0.007 of the total area, and the area still suitable for cultivation is 1,061 ha. The most widespread farming system is direct tenancy (80%) and sharecropping (20%). Agriculture in the commune is characterised by the extensive use of hand tools for soil preparation. The main cropping season is the rainy season (Asara). Extensive farming system, based on self-consumption. The agrarian landscape of the commune is characterised by small parcels of land of between 20 and 50 ares, dominated by rice cultivation. Other crops occupy 10 to 15 ares per household.

In the rural commune of Ranohira, households are uniquely positioned in terms of the physical area used for rice production. This is 0.3 hectares, whereas in regions with large rice-growing operations such as Ambatondrazaka and Marovoay, it can rise to 1.9 and 1.6 hectares respectively (ROR, 2006, EPM, 2005)⁵.

Figure 1: Proportion of households by area under rice (%) by fokontany (area in ha)



⁵ According to the survey carried out by ROR, 2006, EPM, 2005, which mentions the surface area exploited by this rice granary zone in Madagascar.

Source: Authors, 2023.

Only 7% of households have no rice fields. This low figure is not negligible, given that rice is a staple food. We also found that over 60% of farmers farm less than half a hectare of land. This area is usually made up of a single plot for those with less than 0.3 hectares, and two or more plots, generally scattered, for those with more than 0.5 hectares.

It is very rare to find large plots of land, even among large landowners, i.e. those with more than one hectare. This situation prevents the mechanisation of farming and the use of new agricultural technologies.

However, there are other ways of increasing production, such as improving agricultural inputs and techniques.

Rice is only grown in one season in the commune due to the lack of rainfall. The growing season runs from December to April, with harvesting starting in May.

Rice is grown according to the "voly vary" season.

The following table summarises the rice-growing calendar in the rural commune of Ranohira

Table 1: Ranohira rice-growing calendar

Saisons	Saison of « voly vary »												
	Oct	Nov	Dec	Janv	Fev	Mars	Avr	May	June	July	Aug	Sept	
Work													
Ploughing		*	*										
Tramplng				*									
Transplanting				*									
Weeding						*	*						
Harvesting								*	*				

Source: Authors, 2023.

The growing season is during the rainy season (November-December) when most rice fields can be cultivated. Ploughing begins very early, around November and December, but transplanting takes place in January after the land has been ploughed. Weeding begins a month after transplanting and harvesting generally takes place in May or June. Before that, the harvest season is generally during the lean season (October-March). However, some farmers cultivate during the "antono taona" season, but only a minority

of farmers can cultivate because it depends on the geographical location of the rice fields in relation to the dams and, above all, on rainfall. Agricultural yields in our study area average just 0.6 tonnes per hectare (CRR, 2017), whereas in areas classified as rice granaries in Madagascar, yields can reach up to 5 tonnes per hectare. Agricultural activity is therefore insufficient to ensure household food security. Rice yields in this area also fail to cover daily household needs. Insufficient rice production in the commune is the cause of the long lean period (October - March).

Cutting is done manually with a sickle, as long as the farmers have the necessary equipment. The cut bunches are tied into sheaves and transported to the threshing floor to be built into a "lomondo" millstone. Threshing only really begins after a few days, or even a week, to allow the ears to dry out properly. The bundles of rice are beaten on a block of stone or wood to remove the husks. The women then winnow the rice using a basket as a tool. The paddy is then sacked and transported to the village.

2.2 Agricultural infrastructure

The majority of agricultural regions in Madagascar are poorly equipped with infrastructure such as dams, aqueducts, irrigation canals, etc. In some cases, the lack of maintenance makes them unusable. In some cases, the lack of maintenance means that they are unusable, although some farmers have taken the initiative to build canals to irrigate their plots of land.

Ranohira is poorly equipped with agricultural infrastructure, with only 03 types identified in the Commune. The 03 different types of infrastructure are: huskers, storage sheds and hydro-agricultural dams.

In the entire commune, only 03 hydro-agricultural micro-dams had been identified, at Ianakandrarezo, Mikaika and Ranohira Basse. Due to lack of maintenance, these infrastructures have limited capacity in terms of flooded surface area.

Ranohira also has a storage shed, which has existed since the 2nd Republic. This half-barrel-shaped shed was used at the time to store agricultural produce from the state cooperative. This infrastructure is currently unusable.

Finally, in relation to rice production capacity, the huskers currently in place are not enough to cover the entire Commune. There are only 06 in the chief town, one in Mariana and one in Andretomily. For the other fonkontany, there is no mechanical tool for husking paddy, which is still done by hand.

In the rural commune of Ranohira, for the rice-growing season, we note that there are as many households whose plots are irrigated as those who have no irrigation system at all. According to the farmers, another

advantage of having access to dams, whatever the type, is being able to cultivate during the season. For plots without irrigation, the growing season is heavily dependent on the arrival of rain.

However, household plots are not only small, but also lack investment in equipment, inputs and farming techniques.

2.3 Farming characteristics

Historically, Ihorombe is a sparsely populated area where the predominant activity is the rearing of large herds of zebu cattle, since livestock rearing is the driving force behind the development of the Commune's economy and contributes to improving the standard of living of households in the area. It is also a transit area towards Ihorombe for cattle coming from the south and south-west (Menamaty, Berenty, etc.).

In some parts of Madagascar, such as Ambalavao, Tsiroanomandidy and the Mahafaly, owning a herd of cattle is both a sign of wealth and a source of income. Animals such as oxen, sheep and goats are used to supply the markets in the major towns.

In the Ihorombe region, 92.2% of households keep livestock. It is an activity that goes hand in hand with agriculture but, unlike the latter, is not intended for consumption.

Each hamlet has a grazing area stretching for miles around, where the animals are kept. In the grazing areas, the animals feed mainly on grasses. But despite this vast expanse, and the wealth of natural grazing, the animals' feeding conditions have deteriorated. Because of the high incidence of cattle rustling and the fear of the Dahalo, the local population does not dare to move the herds too far from the hamlets, and systematically parks the animals in the evenings.

The willing presence of private vets has led to the control of previously deadly diseases: anthrax, symptomatic anthrax and colibacillary enteritis. However, losses in cattle farming tend to be due to parasitic diseases in calves, and in adults the greatest losses are due to fasciolosis.

The limits to the development of pig farming. Pork is the second most popular meat in Madagascar after beef. The main pig diseases in the region are Teschen disease and classical African swine fever, which are holding back the development of pig farming in Madagascar. The disease is less well controlled. This situation is exacerbated by the shortage of vaccines and technicians, which limits interventions to the interior and immediate vicinity of the commune's chief town, and the inadequacy of feed in terms of both quality and quantity.

Poultry production is generally traditional. Poultry are kept free-range around the houses where they forage for food. Sometimes, they are fed with a few grains and kitchen waste coming directly from family members. The main common diseases are Pasteurellosis, avian pox and Newcastle disease, which periodically strike hens and roosters and decimate the flock in the event of an epidemic. According to

the locals, the diseases are most common in the warmer months of July and August. During this period, most household poultry is affected by the disease.

III- DISCUSSIONS

On the basis of the above findings, the following discussion will focus on the various socio-economic contexts that are hampering the development of the country's agricultural sector.

Agriculture in Madagascar is still traditional and not very intensive, resulting in low yields. Weakly developed distribution systems and the high cost of transporting inputs are reducing productivity. This is compounded by the inadequacy of production infrastructures such as irrigation, trade, processing and storage, resulting in state interventionism and very little use of chemical fertilisers. The poor in rural areas are generally small family farmers. Their situation continues to deteriorate. This is due to insufficient expansion of the productive bases of rural development, such as low agricultural yields, insecure land tenure and poor access to means of production and credit. The farming practised is traditional and not very intensive, with low yields.

Clearing for dry crops and rice cultivation on river banks (destruction of cyperacus and fragmites fields by off-season bean and maize cultivation) and alluvial plains.) Rice production is low. Reduced soil fertility in rice fields, insufficient water (damaged dam, low rainfall), low-yield cropping practices, longer hunger gap, lower household income. Farmers' ability to invest in means of production is low (equipment, inputs), low household income, difficult access to capital (micro-credit, etc.), unfavourable environment, high input prices, low technical capacity, competition for labour with rice-growing, attacks by insects and pests, inability to acquire hitched equipment limiting the cultivated area. Insecurity: theft of standing crops, theft of herds, attacks on villages, the consequences of insecurity in rural areas are often underestimated: capitalisation of production units and changes to farmers' strategies and crop management. Land tenure problems: land tenure insecurity, burdensome levies in sharecropping and tenant farming contracts.

3.1 Impact of poverty on farming

Agriculture is the driving force behind sustainable development in rural areas, but poverty is the main obstacle to development. In Madagascar, agriculture is still the main source of livelihood for 68% of households, and in 2010, 81% of households said they had engaged in agricultural activities during the year (INSTAT, 2011). Poverty is still very high, with 80% of the population living on less than US\$1.25 per day and 92% on less than US\$2 per day in 2010, ranking it among the poorest countries in the world (World Bank, 2014). Small-scale farmers (with an area of less than 1.5 ha) make up 70% of agricultural households (INSTAT, 2011). According to the EPM 2010 released by INSTAT in 2011, 86% of the poor live in rural areas. The development of sustainable agriculture is a very important and priority element in

improving living conditions and the sustainability of farms, thereby laying the foundations for sustainable development.

3.2 Proliferation of insecurity

In terms of public safety, the existence of banditry is very dangerous in the villages, as is the failure to respect the successive "dina", which also leads to insecurity. Insufficient production, unemployment and idleness are all factors in insecurity.

Social insecurity, fatigue due to night-time surveillance reduces the productive force because men are the labour force, especially in terms of productivity, and the population produces little out of discouragement. Agricultural activity can cause social insecurity because many people do not have enough land to farm.

This inadequacy can encourage people to take over an area of land illegally. This land problem weighs heavily on the lives of farmers, as most of them do not own land and work on state-owned land or land belonging to others, which leads to serious disputes between farmers. There are those who have no land at all to cultivate and who sometimes intend to steal other people's crops, either because they are still standing or because they are already in the reserves.

Insecurity demotivates breeders, and is a major problem for a society based on agricultural and pastoral activities, becoming a brake on development if the state does not manage to eradicate it. It should be noted that zebu are not just an economic commodity. As sacred animals, they also have a religious character, and this insecurity destabilises the basis of villages, and even society. Zebu thieves carry out their acts with firearms, and zebu are their first targets. In a way, these are well-organised acts of banditry. Indeed, because of the frequency of attacks, the population lives in an atmosphere of permanent mistrust. Everyone is constantly on the alert, expecting to be attacked at any moment.

The Ihorombe region, of which Ranohira is an integral part, has long been classified as a red zone due to the proliferation of the "Malaso phenomenon"⁶ ».

Insecurity generally takes the form of cattle rustling, armed robbery and other fatal acts of violence. In the commune of Ranohira, the security arrangements are as follows: One (1) gendarmerie brigade in Ranohira chef-lieu, and one (1) police station in Ranohira chef-lieu. These 02 units ensure security throughout the commune. Undoubtedly, the elements present in these units do not manage to ensure security in the entire commune. So, to deal with the scourge of acts of banditry, the authorities, together with the population, have adopted self-defence strategies, the DINA and the KALONE (JADO).

⁶ According to the survey carried out by ROR, 2006, EPM, 2005, which mentions the surface area exploited by this rice granary zone in Madagascar.

3.3 Poor Road infrastructure

The inter-"fokontany" tracks are in poor condition, the lack of responsibility on the part of the State and the "fokonolona" causing major problems, the lack of maintenance, the isolation of certain villages, the inaccessibility of the area and finally the difficulty of evacuating agricultural produce.

There are 3 categories of road: national roads (RN), roads of communal interest (RIC) and unclassified roads (RNC). The Ministry of Public Works is responsible for the development and maintenance of national roads. As far as the RIC and RNC are concerned, their fate is very unclear from the point of view of both development and maintenance.

In the national roads category, the condition of the road is good. Maintenance has been carried out for 2017 by the central government, and a major section has been restored.

The condition of secondary roads remains poor, with some impassable during the rainy season.

The RIC linking Ranohira and Beroroha is in more or less good condition. However, due to a lack of maintenance, the road deteriorates more and more after each rainstorm.

For the RNCs, the roads are often tracings made by the regular passage of carts or rough tracks laid out by the Fokonolona. Sometimes it is enough for 4X4 cars to follow the footpaths for a new road to be laid out. The total length of unclassified roads is estimated at 138 km for the 09 fokontany.

3.4 Production factor constraints

The lack of agricultural water, especially for plots on land and terraces, is the main concern of the inhabitants of the terroir. These plots are subject to the vagaries of rainfall. The terraces are supplied with water by winding irrigation canals, rainwater and run-off from the undeveloped upper parts of the slopes. Farmers have also noted a decline in the fertility of the rice fields. Few rice growers bring farmyard manure onto their plots.

Difficult access to agricultural inputs is also an obstacle to the development of rice growing:

- Mineral fertilisers are very expensive, given the low monetary incomes of the majority of the population. And farmers make little use of manure. The causes cited by local people are transport problems, and most of them do not link the drop in yields to soil fertility, but rather to insufficient irrigation water.
- Farmers' lack of capacity to invest in harnessed equipment. This limits the area of lowland currently under cultivation, which accounts for only a quarter of the total rice-growing area.
- Crop diseases and pests: There is a period affecting crops, especially rice, and rice lice are the main crop pests mentioned by the population.

Finally, the cultivation technique adopted is not very effective. Although the region has favourable

climatic conditions for growing rice, yields remain low. None of the farmers uses SRI or SRA; when asked about this, most people were unaware of these innovations. What's more, the farms are still extensifying, as they still have vast tracts of arable land. In order to be able to cultivate more rice fields during the short rainy season, the traditional technique is the most effective.

Production on "tanety" remains marginal, and two major problems are put forward by the inhabitants concerning dry crops:

- Reduced crop yields due to the deterioration of soil fertility, insect and animal pests and climatic variations.
- Non-extension of the cultivated area due to insufficient means of production and competition for labour with rice growing.

As far as diseases and crop pests are concerned, there is a period affecting crops, especially rice, and rice lice are the main crop pests mentioned by the population.

3.5 Incapacity in breeding techniques

The proliferation of animal diseases, the lack of livestock managers and the lack of supervision cause the irregularity of the vaccination period for cattle, the absence of vaccination infrastructures, the non-existence of vaccination depots and the less frequent visits by veterinarians are all problems due to livestock farming in this area, the failure of livestock management (unhealthy pigsties, pigs and poultry are poorly fed) is due to the degradation of livestock production. The introduction of sick animals into the village, the high morbidity of the animals, the low productivity of the livestock, and the lack of motivation on the part of farmers to take up the activity. The state of health of the animals is also precarious overall, as evidenced by the persistence of endemic diseases. Similarly, livestock feeding problems result from the degradation of natural pastures and the poor use and development of by-products. In addition, the persistence of cattle theft is a demotivating factor for livestock farmers.

3.6 Marketing problems

Low-priced agricultural products, the remoteness of the market and the isolation of certain villages in the area are the main causes, the danger for farmers is the shortage and absence of collectors in the commune, and finally the low purchasing power of each household. Difficulties in accessing markets due to their remoteness. Problems of access to finance, due to a lack of capital and high interest rates. Difficulties in selling products due to the deterioration of roads and the lack of means of transport.

These various explanations confirm that a number of socio-economic factors are holding back the development of the agricultural sector.

CONCLUSION

The results obtained lead us to conclude that agriculture is threatened by several socio-economic factors. In addition to climate change, which alters the cropping calendar, the intensification of crop stealing and the complexity of the land situation, i.e. the problem of insufficient arable land, all have an impact on production efficiency. A vast area of arable land in the Commune is not cultivated, due to the use of hand tools. Livestock farming is threatened by the scourge of stolen oxen and other livestock, as well as the depletion of grazing land due to bush fires. The shortage of medicines and vaccines, inbreeding in pigs and theft of cattle from the south along hard-to-reach routes are all threats to livestock farming in the area. Insecurity is one of the factors causing a decline in livestock numbers and farmers' motivation.

With a view to sustainable development, the time has come to develop a clear approach to this sector. Building farmers' capacity to disseminate improved cultivation techniques can boost production.

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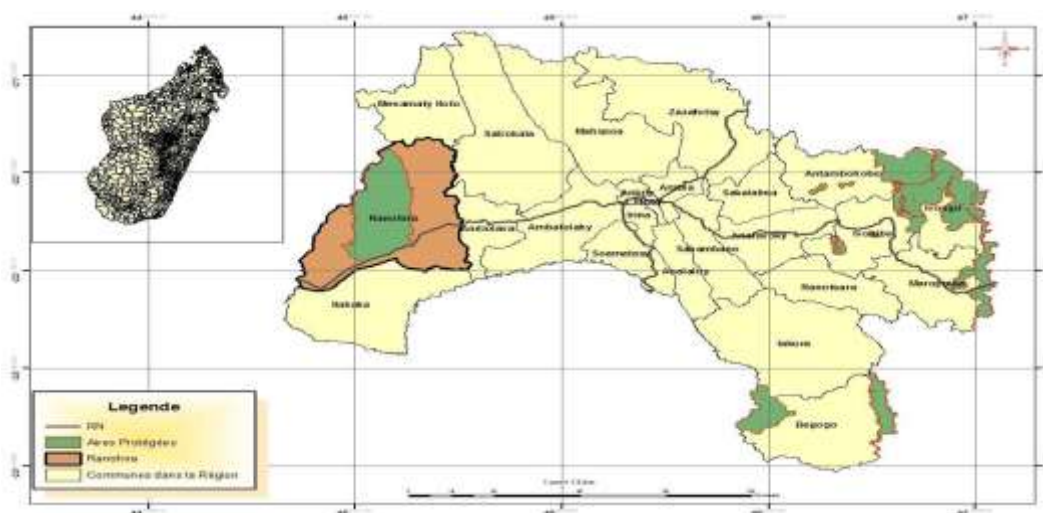
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ANNEXE

Map showing the location of the commune in the Ihorombe Region



Source: Monographie de la région Ihorombe, 2017