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LAND REFORM AND CERTIFICATION IN MADAGASCAR: DOES PERCEPTION OF TENURE SECURITY MATTER AND CHANGE?

Draft version

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Abstract

The Malagasy land reform, ongoing since 2005, belongs to the new generation of land reforms. It promotes the legal recognition of existing landholders' rights (through certification) and the decentralization of land management. Despite the change of paradigm underlying this new wave of reforms, premises and expectations remain unchanged: a) rights legalization is justified by large tenure insecurity and b) rights formalization is a prerequisite to reduce conflicts over land rights, improve access to credit, boost productive investments and stimulate land markets. But before analyzing economic impacts, the relations between land reform and tenure security need to be explored. In this line, the paper first explores the determinant of the sense of tenure insecurity and underlines the complementary role of certification to informal and existing modes of rights validation (*petits papiers*). It shows then that decentralization of land management (through the creation of local land offices) offers a better and a more equitable access to legal information, land administration institutions, legalization of rights and devices of conflict resolution. But it also underlines that this ongoing process of legal empowerment still need to be more inclusive for the poor and discusses the ways to reinforce this process without denying the reality of local/customary land practices.

Key-words: certification, land reform, legal empowerment, tenure security, Madagascar.

I. INTRODUCTION

The 1990's has seen a new wave of tenure reforms. The new paradigm is to accompany the gradual evolution of land tenure through the legal recognition of existing landholders' rights and not to substitute a system based on land registration and ownership titles for customary land tenure (Bruce *et al.*, 1994). The legal recognition of customary rights is implemented through the decentralization of land management and the conception of new and local registration process in order to reconcile legitimacy, legality and actual practices (Le Roy *et al.*, 1996, Lavigne-Delville (dir), 1998).

The Malagasy land reform ongoing since 2005 belongs to this new generation of land reforms. In line with the recommendations and the support of various of international institutions (World Bank, 2003; European Union 2004; FAO, 2006), this new land policy aims at giving legal standing to local land rights and at decentralizing land management (Teyssier *et al.*, 2009). Indeed, the 2005 land law stipulates that untitled but occupied land is no longer the property of the state but the occupants. Moreover, local governments (*Commune* in French) have been granted new powers. The establishment of a local land registry office (*guichet foncier*) allows them to legalize private property rights through the issue of individual or collective land certificates (*certificat foncier*). Legalization of property rights is not systematic but engaged on landowners' demand. It is done through the recognition of existing rights and public and contestable procedures. In October 2011, 400 Malagasy municipalities, or one-

fourth of the total number of municipalities at the country level, had set up land registry offices. The latter have received 120 000 applications and delivered approximately 60,000 certificates in about four years. Over the same period, the State land services have delivered by the means of registration an average of 1,500 land titles per year (www.observatoire-foncier.mg).

Despite the change of paradigm underlying the land reforms, this new wave of reforms is based on the same premises as before: households have unsecure land rights and their demand for legalized land rights is strong. This new wave of land reforms also feeds the same expectations in terms of impacts. In Madagascar, legalization of rights was justified by presumed large tenure insecurity and seen as a prerequisite to reduce conflicts over land rights, improve access to credit, boost productive investments and stimulate land markets – see *e.g.* Lettre de Politique Foncière (2005).

However, debates about land reform impacts are numerous. Controversies and various empirical results partly come from the diverse definition of “land reform”, “tenure security” and “impacts”, and the complex relations linking them. The scheme ‘land reform enhances tenure security which in turn induces impacts – such as access to credit, increase in investments, reduction of conflicts’ is quite different from the ground realities (Deininger and Feder, 2009).

First, large differences exist among the past and ongoing land reforms implemented in the various countries, not only in their legal basis (institutions, rules and legal registration system created or renewed) but also in their processes of implementation (Bruce and Migot-Adholla (eds), 1994; Lavigne-Delville (eds), 1998; Benjaminsen and Lund (eds), 2004; Colin *et al.* (eds), 2009).

Second, there is a great deal of variation in how tenure security is defined: either in reference to the substance of rights (range of use rights or full property rights) or to the assurance of rights (fear or probability of losing all or part of rights held) (Sjaastad and Bromley, 1997 & 2000; Lavigne Delville *et al.*, 1998; for a recent and complete review Arnot *et al.*, 2011)¹.

Third, before analyzing economic impacts (credit, investment and land markets), the relations between land reform and tenure security need to be explored. These relations are no more straightforward once tenure insecurity is defined as the perceived risk to lose one’s land rights and not as the only fact of holding no legal document (Bruce and Migot-Adholla, 1994; Lavigne Delville, 1998; Deininger and Feder, 2009; Colin *et al.*, 2009). Land reforms, based on the supply-driven establishment of new land administration institutions or legal empowerment of local authorities, generally strengthen institutional and normative pluralism (Lavigne Delville *et al.*, 1998; Lund, 2001). The effects on tenure security depend on the land users’ perception about the (new) land institution’s legitimacy, reliability and

¹ In this line and for both type of definition, there is also a great deal of variation in how security is measured: for the former type of definition, range of use or transferability rights, or holding of a legal title, or duration of possession, for the latter, probability of eviction or existing conflicts (eg Arnot and al., 2011).

accessibility; which in turns depends on technical and socio-political practices on the ground (from updating register to clientelism). In addition, the implementation of reform itself – notably when legal documents are delivered on users’ demand and not on a systematic basis – can lead to the exclusion of some rights holders (inter alia women, foreign born or cattle herders). It can indeed give the better off, better informed, better socially endowed or those who were born in the village and live there on a permanent basis the opportunity to legalize their rights without informing and getting the other land right users’ approval (*e.g.* Deininger and Feder, 2009). Lastly, land reform can provoke debates and struggles over land control among institutions that lead to conflict (Berry, 2004 & 2009; Sikor and Lund, 2009), and can open new routes for “institutional shopping” (V. Benda-Beckman, 1981) that may lead to make conflict more complex (Lund, 2001).

Those relations between land reform and tenure security, much investigated and yet still controversial in the scientific literature deserve to be re-examined in the Malagasy context. This paper aims at assessing the impact of the ongoing and still recent land reform on tenure security through the concept of legal empowerment². In the Malagasy context, are land decentralization and certification conducive to an inclusive legal empowerment? In other words, do they allow better and more equitable access to information, to land administration institutions, to land rights' legalization and help resolve conflicts?

The communication opens with the presentation of methodology. In the following section, it presents the Malagasy land reform and the different modes of land rights validation. It explores then the relations between land insecurity and land reform, which implies not only to define and measure tenurial insecurity but also to disentangle the diverse ways and rationales to secure land. In the fourth section, the communication emphasizes how land reform impact on tenure security through legal empowerment. In the final section, it deals with the policy implications to favor a more inclusive process of land rights legalization.

II. METHODOLOGY AND DATA

The paper uses first-hand data that were collected through a specially designed survey conducted in October 2011 on a large sample of 1,862 rural households residing in four regions and nine *communes* of Madagascar (see Figure 1). Within each chosen *commune*, the survey was completed by a qualitative fieldwork through focus groups. Regions and *communes* were first selected in a convenient way in order to reflect the diversity of land tenure practices as well as the strong heterogeneity in certification rates between regions and *communes* (Table 1). Land reform is still relatively recent - the

² “Empowerment” is the process whereby disadvantaged groups acquire greater control over decisions and processes affecting their lives. “Legal empowerment” is the process through which knowledge and uses of law bolster human agency (Cotula and Mathieu, 2008).

“oldest” local land office was 3 years old at the time of the survey (opened in July 2008) and most of them benefited from at best 6 months of financial support - most development agencies stop their funding due to the *coup d'état* in Mars 2009.

[Figure 1 and Table 1]

Then, within each *commune*, households were randomly selected, in such a way to ensure that at least one third of the sample households has certificates (or about to have one). The database is thus composed of 1,862 households among which 37% have at least one land certificate, and 7,697 plots of land among which 20% are certified or about to be. Results are weighted³ in order to be representative at the *commune* level, using country-representative survey data: National Agriculture Census (MinAgri, 2004) and Permanent Household Surveys (Instat, 2010).

Because there is no baseline survey, many retrospective questions relating to the last five years were included in the questionnaire, so as to allow the potential changes induced by the reform to be assessed, as in Jacoby and Minten in 2005.

The questionnaire was designed so as to include various modules on land documentation, land tenure practices, perceived tenure insecurity, conflicts, investment, and land transactions for all households' plots. It strongly benefited from previous in-depth qualitative interviews conducted by one of the authors – Boué (e.g Boué *et al.*, 2011) – in the rural municipality of Faratsiho, which provide a full description of land practices, sources of land tenure insecurity and existing means of securing tenure rights in the Malagasy context.

The main limitation of the sampling design is that it does not allow to properly assessing the impact of the Malagasy land reform at the national level. The way the regions and communes were selected only allows shedding light on what happened in some given places, and based on this, to figure out what is to be expected in all the regions where the reform has not really started yet. In addition, analysis presented here is mainly conducted on the pooled sample. Hence, the paper underlines first results but further analyses at regional level are necessary to take in account the regional dynamics.

III. CONTEXT

MALAGASY LAND REFORM

Before the land reform, all untitled land subject or not to claims of customary ownership was deemed to be state-owned. The only way to legally secure land rights was to obtain a land title delivered by the state land services ('Land services'). Since 2005, the land laws have stipulated that untitled but

³ Weighting is based on the ratio “number of household engaged in certification/ number of households”.

occupied land was no longer the ‘property of the state’ and was deemed ‘untitled private property’. This has resulted in a substantial decrease in state-owned land and a new allocation of responsibilities with regards to legal land registration. Since 2005, local governments, through their local land registry office have been allowed to issue individual or collective land certificates on “untitled private property” land.

Thus, two types of legal authorities (land services and local governments) can legally recognize land claims as legal private property and manage land issues. Land right holders can choose the means of legalizing their rights either through a title deed or through a certificate. Both confer similar legal property rights: the certificate entitles the owner to all transactions already allowed with titled land, including sale, inheritance, long-term lease, and mortgage.

Needless to say, these laws do not operate in a vacuum but, to rephrase Griffiths (1992), in a social field that is governed by laws, rules and conventions of different origins and that generates its own rules of the game. Next to these legal authorities, different local state or non state authorities operate at the local level to legitimize, even formalize through written documents, different bundles of land rights or land transactions: descendants of royal families, elders, village chiefs, mayor, etc. (see *e.g.* Rakoto, 1995; Ottino, 1998; Leroy *et al.*, 2006; Aubert *et al.*, 2008; Omrane, 2008; Muttenezerg, 2010).

In this context of institutional and normative pluralism, securing property rights requires a combination of rights validation at both local and state levels. In practice, Malagasy households combine various ways to secure land. The first one is through social recognition. The second one includes legal documents: both certificate and title. The third one results from the local recording systems, the so-called “*petits papiers*”. These papers, broken up here in two categories – simple or official– offer a first formalization of rights or more exactly, an “informal formalization of rights” (Mathieu, 2001; Lavigne-Delville, 2002)⁴. The “simple” *petits papiers* are handwritten documents accompanying transactions (sale, inheritance and donation). They can also attest property, notably, on the basis of the improvement principle (*principe de mise en valeur*). They are signed by both parties to the transaction and/or possibly other witnesses (family members or others). The “official” *petits papiers* are very much like the simple ones except the fact that they are signed and/or stamped by a representative of local state authorities (head of village, mayor, etc). In addition to this rich diversity of land documents, sometimes people also consider land tax receipts as a proof of ownership. *Petits papiers* and tax receipts have not strict legal validity but they can act as a first proof of property in case of conflicts (Rochegude, 2001).

⁴ “Formalization” means in this paper the use of all type of land documents, “informal formalization” means the use of written documents, “legalization” being reserved to the obtaining of legal written documents, i.e. title and certificate.

HOUSEHOLD CHARACTERISTICS

Extrapolated figures based on the survey data show that two thirds of the households own between 2 and 4 plots, with a medium farm size of about 1.80 hectare (all households own at least one plot and 55% of the plots are smaller than 0.5 ha). Next to housing (25% of the sample plots), plots are mainly dedicated to rice production- the main production and food for all rural households (45% of the sample plots, 63% of the cultivated sample plots)⁵.

Transfers among relatives represent the principal mode of access to land (52% of the plots were inherited and 4.4% donated). Land purchase is also an important way to acquire land. In the studied *communes*, 37% were acquired through purchase⁶. Appropriation by land development still exists but is limited (6.7%). The low percentage of appropriated/cleared plots as compared to the high percentage of purchased ones indicates that most of the land in the studied area is already appropriated. According to the interviewees, men, women, couples or even families as a whole can own the land, but men, in line with inheritance, local and customary rules, are the main owners (62% of the plots are owned by men, 24% by couples, 11.5% by women and 2% by families).

Households farm themselves the majority of the plots. But rental markets and more exactly forms of temporary use rights transfers are quite active. Sharecropping, leasing and also transfer being part of mutual aid system such as loan are particularly frequent on rice plots (8.4% of the rice plots) and in a lesser proportion for other annual and perennial crops (3.3%)⁷.

HOUSEHOLDS' MODES OF RIGHTS VALIDATION

To give the general picture, only 8% of the households have no document at all on all their plots. The large majority (83.2 %) has at least one written document on one of its plots (i.e. has at least one *petit papier* or tax receipt). The legalization of rights only concerns a minority: 9% have at least one legal document on one of its plots (respectively 8.2% and 0.9% have applied to or possess at least one certificate or one title⁸). Of course, households can have documents on several of their plots.

At the plot level, the frequency of *petits papiers* proves that people want to formally validate their land rights: 60% of the plots are secured by *petits papiers* (3/4 being "simple", 1/4 being "official"), and 23% have a tax receipt (Figure 2). About 11 % of the plots have no document. And then, 6% of the

⁵ Pastures, as they are most of the time collectively managed, were not systematically declared. We do not take them in account in the following analysis even if they are crucial for herders.

⁶ In 2001, at a national level, 16% of the land was acquired through this way (Minten and Razafaindraibe, 2003). As the process is cumulative, it is coherent to observe ten years later a higher rate of purchased plots.

⁷ The frequency of temporary use rights transfers appear to be similar to the one observed in 2001 at the national level - 8% of the rice plots and 4% of other plots were under some form of rental agreement (Minten and Razafaindraibe, 2003). According to Jacoby and Minten (2005), tenancy is limited in Madagascar as a whole largely because land ownership is not very concentrated.

⁸ There are strong inter commune variation, from 3 to 30% for certificate and from 0.1% to 4.4% for title.

plots are legally secured: 5.6% with a certificate and only 0.5% with a land title. Also, very often, households have a combination of documents on a given plot (two types of *petits papiers* for e.g., one *petit papier* and a tax receipt, or one *petit papier* and one certificate). A quarter of plots cumulates two types of land documents and 8% cumulate three types.

[Figure 2]

IV. DISENTANGLING THE SENSE OF TENURE SECURITY

HOW TO DEFINE AND MEASURE TENURE INSECURITY?

Land tenure security can be defined as a process that allows rights holders to gain a social and legal recognition of their rights and to reaffirm it against challenging claims (Lavigne Delville et al. 1998; Sjaastad and Bromley, 2000). “*This definition is relative rather than substantive. It is not attached to a particular bundle of property rights (such as private property) nor to a particular institutional support (such as statutory law and state-issued titles)*” (Bouquet, 2009:1390). Tenure security is then as much a matter of perception as a legal category (Hesseling, 1991: 203 in Lavigne Delville et al., 2008).

For example, in Madagascar, holding a land title does not systematically imply having deep feeling of tenure security. A land title holder may consider his rights as not totally secured – notably if the land conservation system is not up to date (torn or lost land register, title in the name of the dead parents) or if State land administration practices are not transparent (clientelism, corruption) (Jacoby and Minten, 2005; Teyssier, 2009; Muzzenberg, 2010). By contrast, landholders having no land document validating their rights but enjoying a strong social recognition may feel very secure about their land - notably when they are *tompon-tany*, master of the land as land was owned by their ancestors and passed on to them (e.g. Ottino, 1998; Evers, 2005).

According to this acceptation, landholders’ sense of tenure insecurity comes from the perception that someone can challenge their land rights and eventually, make them lose their rights. And, as land security itself may evolve over time (Leroy *et al.* 1996), perception can evolve depending on the sources of insecurity, the conditions conducive to insecurity and on the means available to enhance land security. In what follows, two dimensions of tenure insecurity are analytically dissociated and evaluated through specific questions⁹ (see Figure 3):

⁹ Perception is then difficult to measure. The following question, asked for each plot and referring to the present time was supposed to capture the sense of tenure security: “Are you afraid of having your rights challenged by tenant, former landowner, relatives, neighbors, villagers, outsiders or State?”. The answers clearly reveal that interviewed people refer to on-going threats or effective risks. Then, in a “learning by analyzing process”, we

- a short-term/concrete sense of insecurity referring to on-going threats or effective risks at the time of survey (at t). We measure it on each plot by asking farmers whether they think their rights might be challenged by, alternatively, relatives, neighbors, villagers, outsiders, the former landowner, one tenant or the State.
- a long-term/diffuse sense of insecurity referring to potential risks. We measure it through the answers to 2 distinct questions in the questionnaire : (i) the question of the motives that encouraged farmers to start a legal procedure on their plots, for those farmers who had a plot either certified or about to be at the time of the survey; (ii) the question of how farmers perceive the utility of a legal document on their plots that are legally “certifiable”, being aware, for this latter point, that the context and structure of the interview could have highly influenced people’s answers (cf Olivier de Sardan, 1995).

[Figure 3]

DISTRIBUTION OF INSECURITY

The land reform was launched on the postulate that households were tenure insecure or at least that they were looking for devices to validate their land rights, as exemplified by the large use of *petits papiers*. Within the 9 *communes* under concern, only 8.2% of the households actually have a concrete sense of tenure insecurity and 4.3% of the plots are concerned¹⁰. Households’ sense of concrete tenure insecurity is thus rather low.

But, households can also have a more diffuse sense of tenure insecurity. This subjective appreciation is not strictly proportional to the number of land disputes or expropriation due to a lack of proper documentation. A low frequency of challenging claims or a low risk of expropriation - as estimated for example by Jacoby and Minten (2005) in the Alaotra region¹¹ - do not prevent a diffuse sense of insecurity from being high. Indeed, individuals can attach importance to some significant events even if they have a low probability to occur (see Kahneman and Tversky, 1979; Bellemare 2011). Our data can only infer the existence of this diffuse sense of insecurity but they do not allow to precisely quantify it. Among those households who have engaged in the process of certification (8% of the households) motives for doing so are all more or less relating to their willingness to secure their rights: 72% declared that they wanted to avoid all potential contestations ; 9% to enhance the tenure security

analytically dissociate two dimensions of tenurial insecurity. As the analytical distinction came afterwards, we cannot precisely measure the diffuse sense of insecurity but only infer its existence (cf. annex B).

¹⁰ With strong variation between *communes*: from 3 to 13% households and from 1% to 10% plots.

¹¹ Household were asked whether they had heard of cases of households having lost land because they lacked proper documentation, 91% responded rarely or never (Jacoby and Minten, 2005:12).

for their children¹². In other words, they perceive land certificates as a long-term protection against all types of competing claims. In addition, the vast majority of households (92%) stated that certification would be useful to protect their rights¹³.

SOURCES OF, CONDITIONS CONDUCTIVE TO, AND MEANS OF REDUCING TENURE INSECURITY

Insecurity exists because people faced, are facing or are afraid of facing a land conflict. Concerning the concrete sense of insecurity and in line with others studies (Pavageau, 1981; Ottino, 1998; Rakoto, 1995), and on the sample people stating that they fear of facing competing claims, people mentioned that relatives are/could be the main challengers (in 52% of the cases). The other (potential) opponents are tenants (17%), outsiders (13%), villagers (11%) and, finally, marginally, former land owners - for plots acquired through purchase (3.6%), neighbors (2.2%) or the State (1.3%). A concrete sense of insecurity is also quite frequent when a conflict occurred in the past or is unresolved¹⁴.

Repeated fieldworks (Boué *et al.*, 2011, our data) have shown that several conditions may be conducive to fear or effective competing claims (see Figure 4). Some conditions are global and related to the history of the locality and to the context of institutional and legal pluralism (coexistence of customary, local and legal rules implemented by diverse authorities)¹⁵. Some other conditions are directly related to plots', owners' and households' characteristics among which:

- the economic value of the plot (area and type of crops), i.e. not necessarily its market price but its importance in relation to a household's income or self-consumption. The more crucial a plot for a household's livelihood, the more frightened a household of competing claims;
- the ability to control it (distance between house and plot),
- the mode of acquisition of the plot (inherited, purchased, donated or cleared). In particular, and based on fieldworks and descriptive statistics, landowners may fear competing claims from relatives on inherited plots, from landowners or tenants on purchased plot, from the heirs of former landowners on donated plots, and from neighbors, villagers or outsiders on improved/cleared plots;

¹² They also engage certification to reduce short term insecurity: to confirm the plot limits (7%) or stop a conflict (3%). Less proactive motives (to do like the neighbor or to do it due to the communication campaign) are about 9%.

¹³ They first answered - for the plots legally "certifiable" - that they could engaged certification without specific authorizations from family or traditional authorities: suggesting that they may have the whole bundle of property right. They then specified that certificate could indeed be useful – which may be a polite answer framed by the interview context. But they lastly explained that they do not effectively ask for one - even if they proposed a price close to the actual price – mainly because they have other priority expenditure (55%) or they do not know it enough (20%).

¹⁴ As we will see later on, the ranking of potential challengers is quite different from the one of effective opponents in case of conflicts, notably, disputes with relatives and neighbors being more frequent and disputes with tenant and state being rare.

¹⁵ Later on, we consider that these global conditions are similar for the 9 *communes*.

- the household's financial, human and social capital, with poor households having potentially less resources and power to claim their rights and get support.
- the identity of the owner (men, women, couples, families, natives, foreign born). In particular, women or foreign born may have less prerogatives according to the local/customary rules to access and own land;

Within the 9 communes under concern, households have potentially two means of reducing their perception of tenure security. First, they can undertake labor or financial investment on their plots, such as clearing, cultivating, tree planting, improving developments and even, but more rarely, fencing. Investments done on a plot can favor tenure insecurity as the rights holders can fear to lose the benefits of those investments. But, turning it the other way round, tenure insecurity can also favor investment, notably when labor and improvement are principles on which property rights are built and when investments are visible such as trees (e.g. Sjaastad and Bromley 1997). Second, households have diverse modes of rights validation: social recognition, *petits papiers*, tax receipt, certificate or land title.

[Figure 4]

WHAT ARE THE DETERMINANTS OF SENSE OF TENURE INSECURITY?

In order to explore the relations between land reform and tenure security, we first explore whether having a certificate has an impact on a household's sense of tenure security. This requires investigating more generally what conditions and means impact on the fear of facing competing claims, i.e. the concrete sense of insecurity (which is the only robust measure we have and which concerns the household perception at the time of the survey). We thus run two different sets of regressions : one which aims at emphasizing the correlations between plot and household characteristics (including mode of acquisition) and absence of fear (*i.e.* security feeling) (see Table 2) ; and one which aims at investigating whether the impact of a document (be it a title, a certificate, a *petit papier* or a tax receipt) varies between plots that been acquired through purchase, inheritance or any other mode of acquisition (see Table 3).

[Table 2 & Table 3]

On the basis of these results, **the probability of perceived tenure insecurity increases:**

- when the plot's economic value increases, i.e. when there are rice crops (crucial for food consumption) and perennial crops (such as Eucalyptus constituting a reserve of capital or Cacao assuring cash revenue, but the presence of perennial crops can also show, due to the twofold causality relation between investment and tenure security, that people plant perennial crops to attest property rights);

- when plots are acquired through improvement (Table 2), especially when there is no land document (Table 3). Improvement generally occurs on distant hill land and limits are not as clearly delimited as on rice plots. Owners fear that neighbors or villagers change the limits or make an abusive appropriation. But insecurity also occurs on plots acquired through inheritance, donation and purchase when these latter have not any document or just a tax receipt (Table 3);
- when plots are owned by the family plots and acquired through donation (Table 3). Donation generally favors one child or a nephew/niece and the owner and his/her heirs fear that the other former owner's heirs contest their rights after the donor's death;
- when, on the ground of local rules, the land user/owner's status gives them less prerogatives such as new comers. Interviewed people stated to be foreign born as soon as their family's tomb is not located in the village they live. Hence, this qualification covers a too large diversity of situations ranging from people originating from neighboring villages to people coming from other regions. Thus, the number of years spent in the village is a better proxy to evaluate social integration. Insecurity has a higher probability when the foreign born are new comers.

The capacity to easily control the plot (distance between house and plot) does not impact on the perceived tenure insecurity as other parameters are stronger (mode of acquisition, identity of the owner and modes of rights validation). The fact that women enjoy fewer advantages according to certain local and inheritance rules and also face the risk of being expropriated by the family in law once becoming widow especially so on inherited plots do not influence – according to our data – the sense of tenure security (Table 2).

On the other hand, the **probability of perceived tenure insecurity decreases** with:

- the number of plots, a *proxy* for agricultural wealth (purchased plots) or for importance of the family (inherited plots) (Table 2). Owners, notably on inherited and donated plots, enjoy a strong social role and position inside their large family protecting them against competing claims from relatives (Table 3). Nevertheless, this social position does not protect them against outsiders on purchased or cleared plots. However, household wealth (as measured by a score computed using housing equipment) is not significant;
- the formalization and legalization of rights. Absence of land document does not systematically imply tenure insecurity - the majority of households who do not have any document are not afraid of losing their right on a short-term perspective. But the probability of tenure insecurity decreases with the formalization of rights: tax receipt for donated or improved plots and, above all, *little papers* or certificate (Tables 2 and 3). Certification effectively works only when the process is completed and the owner got his certificate (that may indicate that people were effectively unsecured when they asked for

a certificate¹⁶). Land titles impact positively on tenure security only on donated or improved plots, but negatively on purchased plot – because, often, updating of the title after a land sales is not finalized (the buyer discovers that the seller was not the only owner or had not a title on his name, or the procedure is long and costly – cf Jacoby and Minten (2005)).

Thus holding a certificate has a positive impact on sense of tenure security (once effectively obtained). Certificate seems to impact more on security than land title but as much as *petits papiers*. As Boue and co-authors (2011) underlined it, land certificates represent indeed a complement to *petits papiers* and are often not considered as a substitute (the increasing demand for certificate does not induce a decrease in demand for *petits papiers*). Indeed, households ask more frequently a certificate on plots having no document (Annex 1). They seize the opportunity to increase tenure security on the riskier plots. In addition, certificates offer a long term protection (cf. people's motives for certification to secure in the future their children's rights). Owners establish *petits papiers* at the time of the transaction and some plan to engage certification later on, when they have less financial constraints.

Land certificates have a positive impact on the sense of tenure security. But is it the only channel to reduce perceived tenure insecurity? Has land decentralization had other effects on tenure insecurity? And are those effects the same for all households?

V. LAND DECENTRALIZATION, CERTIFICATION AND LEGAL EMPOWERMENT

In the context of land tenure, the legal empowerment of the poor could be defined as the multiple processes and actions thanks to which (poor) people become more skilled, more powerful and eventually better able to use legal institutions and procedures to assert, document and defend their land rights (Hatcher et al., 2007). Hence, the questions are: has the reform allowed a better and a more equitable access to appropriate legal information, land administration institutions, legal procedures and devices of conflict resolution?

INFORMATION AND LEGAL LAND INSTITUTION ACCESSES

The availability of legal information is one component of legal empowerment in general and for securing land rights in particular. Until recently (Deininger et al., 2008; Cotula et Mathieu, 2008), it has never been included in the range of land reform impacts. The availability of appropriate information means not only that people are informed ('rights awareness') but also that people effectively overcome social, bureaucratic and cost barriers in order to access to legal land institutions ('rights enablement') (Bruce et al, 2007).

¹⁶ It can also include situation where tenure insecurity could have been awakened due to the certification process – but these cases are rather limited (cf. part on conflicts).

Within the 9 *communes under concern*, the majority of households knows about the existence of the Local Land Office (72%) and about land certificates (2/3 of those who know about the existence of a LLO). Mayors and agents of the Local land Office are the main sources of information (for 44% and 20% of households respectively), followed by relatives and neighbors or radio and press (for respectively 22% and 12% of households). While information on this new land institution appears to be well distributed across municipalities and villages, information does not circulate perfectly within municipalities and villages. We find indeed that the probability to be informed does not decrease when a household lives in a remote location but that it decreases when the household head is a woman, is younger or less educated. These findings underline the substantial role of communal staff in supporting the local land office and the impact of communication campaigns held within villages.

Overall, 31% of the households who knows about the existence of the local land office have visited it at least once. This attendance rate, at first glance limited, is actually five times bigger than the one observed for regional land services (see Figure 5). Moreover, 4/5 of these visitors had never been before to a legal land institution. Local land offices are more geographically but also more socially accessible than regional land services. The probability to visit the land office increases when the household head is older, more educated and richer but does not decrease when the household head is a women, a foreign born or live in a remote place. Hence, households' financial and human capital capacities still ease legal land institution access but certain households' social characteristics (gender, natives or not) do no prevent them – according to a self excluding behavior or social constraints - to visit the local land office. Lastly, 2/3 of the households visited land institutions to get information: respectively 74% and 26% were satisfied after consulting the local land office and regional land services.

Local land offices appear then to be more accessible and user-friendly than regional land services. Their contribution for securing land rights is not limited to the delivering of legal documents but also includes information services. Indeed, some land users come to the local land office to check that their plot is not located on a piece of land titled in the name of the State or private owners. This information, free at the local land office but costly to obtain at the regional land services (notably due to transaction costs – transport, waiting time, corruption), is likely to be crucial to make them feel more secure. That may also contribute to explain why 2/3 of the land users going to local land office do not ask directly for a land certificate (they may ask for one after a while, when they have the capital).

[Figure 5]

ACCESS TO AND PRACTICES OF RIGHTS LEGALIZATION

Land decentralization eases rights awareness (knowing and understanding rights and processes to enforce them) and rights enablement (legal institution access). But does it offer affordable and fair mechanisms to enforce rights?

Cost and time requested to get a certificate

In line with the annual analysis of the Malagasy land observatory¹⁷, our data confirm that the cost of a certificate is 50 times lesser than that of a land title – while the median cost of a certificate is 2 USD, it is 95 USD in the case of a land title (without taking into account transaction costs – transport, corruption, etc. – which can make the cost of a title even much higher). However, the cost of a certificate varies by commune (pricing policy) and has increased recently due to the withdrawal of international aid and low national subsidies. The legal procedure to obtain a certificate is also shorter than the one to get a land title: 65% of the landowners got their certificate in less than one year, versus 25% for those who asked for a title (and 53% had to wait between 3 and 11 years)¹⁸ (see Figure 6). The users' point of view is clear-cut. While a minority of certificate holders find the procedure too expensive and too long (respectively 5% and 11%), the majority of title holders judge that the procedure is far too costly and much too long (respectively 72% and 95%). Indeed, people often qualify land titles as inaccessible. Certificates are by contrast more accessible but their relative advantage over titles vanishes once they are compared with *petits papiers* (median cost is 0,25 USD).

[Figure 6]

Households' profile (wealth, remoteness as well as head's age and education)

Certification is on demand and non systematic as it was the case, for example, in Ethiopia (Deininger et al., 2008). Then, is certification a process conducive to exclusion? The following results are based on descriptive statistics (household characteristics by mode of rights' validation) and regressions (cf. annex 1 to 3).

Households who have either asked or obtained a certificate are led by heads of all ages and levels of education. Most of them have never been further than primary school (16% of certificate holders never went to school and 47% only in primary school). Despite its administrative nature, the certification procedure thus appears to be accessible regardless of household heads' level of education (Annex 3). This is quite different for the titling procedure (Annex 3). Title holders are more frequently older and

¹⁷ Land Observatory' data demonstrate that certificate is 50 times less expensive than land title -10 USD instead of 507 USD (ECR, 2008; Malagasy Land Observatory, 2011).

¹⁸ Land Observatory' data also demonstrate that certificate is 6 times quicker to obtain than title - on average 12 months instead of 6 years (ECR, 2008; Malagasy Land Observatory, 2011)

more educated than other households' heads. The level of education – often associated not only with the ability to engage more complex procedures but also to get a job position generating higher incomes – is a strong determinant of access to land titling.

Households who have a certificate (or are just about to get one) are well represented on the whole wealth distribution (and this is so whatever the wealth measure, i.e. be it the first wealth score computed on housing conditions or to capture the long term capitalization or the second one based on housing equipment to capture monetary incomes). There is no financial barrier to certification. Nevertheless, wealth is a determinant of the formalization and legalization of rights (see Figure 7). The wealthier the household, the higher the probability his holding a land document: *petits papiers*, certificate and title (Annex 2 & Annex 3). In addition, with regards to certificate, wealth increases the probability not only to ask for a certificate but also to ask for several certificates (Annex 3).

[Figure 7]

Households who have engaged into or finalized the certification process have various land assets. But they have more frequently more rice plots and more hill land plots (cultivating hill lands implies to have or rent a plow and thus to have more financial assets) (Annex 2). Indeed, a household's number of plots is strongly correlated with wealth and age. Poorer households are still young, have not yet inherited and have not enough capital to buy a plot. Having fewer plots and being not allowed to formalized/legalized the land rights on their name on family plots, they are less likely to have tax receipt, *petits papiers* and/or certificate.

Owners' profile (gender, natives/foreign born)

Men are the main landowners, thus they are the main certificate holders (74% of the certificates are registered under the name of men versus 21% under the name of women. However, women certify their plots more than men (7% of the women's plots versus 4% of the men's plots). By contrast, no clear pattern emerges as regards their marital status or their position as head or spouse of head within the household (Annex 2 & Annex 3). Hence, certification seems to offer a real new opportunity for women who, especially when they are household heads, do not have any document on their plots. However, fewer positive results in terms of women legal empowerment appear on plots declared as being the property of the couple. When such plots are certified, the majority are so under the name of the husband (82%) (women:12%; couple:6%). Advocated reasons to explain this are local habits – men stated that they just did not think about registering their wife (67%) or that is in line with local customs (16%) – and lack of information about the possibility to register all the owners of the plot on a same certificate (6%).

Lastly, foreign born are not excluded and as much represented than the *tompon-tany*. Indeed, being an outsider (coming from either a neighboring village or another region) does not appear to be a significant determinant.

EVOLUTION OF LAND CONFLICTS

According to development agencies and policy makers, tensions and conflicts are often considered as negative phenomena that have to be reduced to promote social and economic development. Conflicts are above all a mode of contesting existing rules or their interpretation, of gaining or maintaining access to resources, of reasserting control on land access and, more generally, of trying to change the balance of power (Le Meur, 2006; Sikor and Lund, 2009; Le Meur and Hochet, 2010). Thus, they are inherent in all societies and the point is not necessarily to drastically reduce them but to ease their resolution (Cleaver, 2002). In addition, they can help understanding the functioning of land arenas and identifying who are the relevant authorities and rules from the actors' point of view (Roberts, 1994; Chauveau and Mathieu, 1998).

Land tenure security means that landowners or land users can reaffirm their rights in case of competing claims (Lavigne Delville, 1998). This is based on the assumption that claimers can access to reliable authorities. The question is then: do decentralization and certification have induced more conflicts and a change in the mobilization of land authorities?

Land conflicts are regularly mentioned as the main type of conflicts in courts. In fact, land conflicts are not the most frequent but they are often complex to resolve and significant¹⁹. In the 9 studied *communes*, conflicts have concerned or concern 1.7% of the 7 143 owned plots. As observed by Jacoby and Minten in the Alaotra region (2005), the frequency of land conflict is thus rather low. Of course, conflicts may have been under reported as it is difficult to deal with this touchy issue during a quantitative interview.

In most of the reported cases, conflicts oppose(d) residents of the same village. They oppose(d) the landowner to relatives (42%) and villagers (30%)²⁰. In most of the cases, they also concerne(d) rice plots (67% of the conflicts).

For some plots in a situation of conflict, the certification process has been engaged in order to put an end to the conflict (28% of the preexisting conflicts). And, in the majority of those cases, certification has effectively allowed the conflict resolution (64% or 18 cases out of 28) and in a proportion slightly

¹⁹ According to a recent study realized by the Malagasy Land Observatory, land conflicts represent about 20% of civil cases.

²⁰ The other ones oppose the landowner to outsiders (12%), neighbors (7%), former landowner (6%), tenant (3%) and the State (1%).

higher than the average rate of conflict resolution (61%²¹). Certification thus stands as a new route to ease the resolution.

However, certification has also generated or awaked few conflicts (on 2% of the plots concerned by certification, which has induced a 10% increase in conflict). These conflicts, once again, mainly oppose residents of the same village. But, there are fewer conflicts between relatives – which could mean that landowners ask for one certificate only if they have their family’s approval – and more conflicts with villagers - notably on large rice or perennial plots from 1 to 4 ha) (Figure 8). Nevertheless, the procurement of the certificate has allowed solving the conflict in the majority of cases (72% or 8 cases out of 11) and in a proportion slightly higher than the average rate of conflict resolution (61%). Certification has thus allowed to clarify the situation or to put an end to the majority of insecure situations.

[Figure 8]

Such a quantitative approach based on a very small number of observations, together with the fact that some certification and conflict resolution are still in progress limit the robustness of the analysis. On this very short period, certification has induced a slight increase in conflicts (+2%). But it has also for the other certificate holders allowed to enhance their sense of tenure security. Certification offers an opportunity to (re)open the discussion about land rights thanks to the phase of rights confirmation on the field, gathering the landowner, the neighbors, the elected representatives of the village, the village head and the representatives of the *communes*, and to close it thanks to the intervention of third parties. Nor the Mayor neither the local land office’s agent is allowed to solve the conflict. Most of the conflict resolutions are done thanks to the intervention of the village’s representatives and head.

CONCLUSION AND POTENTIAL POLICY IMPLICATIONS

The land reform has effectively contributed to reduce households’ perception of tenure insecurity. One postulate of the land reform was that all households were tenure insecure. In fact, few households fear to face competing claims on their plots in the short term (concrete sense of tenure insecurity). But, effectively, the majority also states that they are not protected against all risk of contestation in the long term (diffuse sense of insecurity).

Holding a certificate effectively reduces the concrete sense of tenure insecurity. Others form of rights validation, notably *petits papiers*, also reduce it. But holding a certificate has the advantages, compared to *petits papiers*, to reduce the diffuse sense of tenurial security and, compared to land title, to be more accessible. Land certificates represent indeed a complement to *petits papiers* and are often

²¹ Average rate of resolution observed in the sample.

not considered as a substitute (the increasing demand for certificate does not induce a decrease in demand for *petits papiers*). Indeed, households ask more frequently a certificate on plots having no document.

In addition, the land reform - and notably the decentralization of land management - has also contributed to reduce the sense of tenure insecurity through a legal empowerment process. Accesses to land information and legal land institutions are easier. The majority of the households knows the local land office, one third of the latter has visited it (whereas most of these visitors were never been before to land administration) and has obtain free and valuable information. Access to right legalization through certification is far less costly and shorter than through land titling. And, local land offices offer a new route to ease conflict resolution. Certification process has indeed induced some conflicts but has also eased their resolution and the resolution of preexisting conflicts. All these points underline that the function of the local land office is not only to deliver certificate but to inform people and orientate them to the most appropriate institutions to solve their conflict. However, information on certification process needs to be improved: a) through more communication campaigns in the villages to reach more households head and notably women household heads, and b) through better explanations on certification to avoid registration on only one name when there are several owners, notably women.

Lastly, a large diversity of households has effectively engaged in certification. Some points are really positives: the level of education is not determinant proving that the new designed administrative procedure is effectively accessible; the foreign born are not excluded from the certification process and women (when they own the plot) resort more than men to certification. But other points are important to be questioned. Certification rate is still rather limited (8.2% of the households and 5.6% of the plots) and certification access is strongly determined by the households 'wealth.

The fact that certification is more accessible for wealthier households, not surprising as the certification process is on demand, questions the relevance of a systematic procedure. And, of course, reflections about systematic procedure need to be articulated not only to household level analysis but also to plot level analysis. The fact that some plots has less certified than others (such as inherited plots or pastures) could mean that the process of certification is not relevant or should be designed differently to better recognize existing customary land rights. Reflections about systematic procedure need also to be articulated to municipality and region level analysis. The difference in terms of certification rate between the municipalities (90% of the households have a certificate in some commune versus 3% of the households in other *communes*) can come from the local land office management, the certificate cost but also from the inadequacy of this mode of land validation with regard to the customary/local land tenure. Lastly, in *communes* where systematic procedure could be relevant, the reflection on this type of process needs to be articulated with reflections about cost and

sustainability of certification for the municipality, and hence with the other potential functions of the local land office in terms of land taxation and land planning.

The fact that certification access is strongly determined by the households 'wealth results also question the articulation between certificate and *petits papiers*, these latter being held by the majority of the population and the majority of the poor. It notably questions if the *petits papiers* could have a legal value or if the certification process could tend to adopt some of their characteristics (cost, stronger implication of the village head and lesser implication of the municipality staff, etc).

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ILLUSTRATIONS

Figure 1: Localization of studied *communes*



Table 1 : Local land offices (LLO) and communes characteristics

<i>Région</i> Commune	LLO creation	LLO "Age"	Pop. Totale	House- hold	asked CF	CF delivered	Demand rate	Regional score
<i>Analamanga</i>								
Tsaramasoandro	nov-09	2	13 410	1 916	179	120	0,09	(-)
<i>Vakinankaratra</i>								
Ambatomena	sept-08	3	25 694	3 670	648	557	0,18	(-)
Ambohimiarivo	août-08	3	12 435	1 553	517	289	0,33	(+/-)

Manandona	août-08	3	14 599	2 086	1870	1494	0,90	(+)
<i>Diana</i>								
	nov-08							
Antsakoamanondro		3	11 174	1 862	249	80	0,13	(+/-)
Benavony	nov-08	3	3 062	502	253	102	0,50	(+)
<i>Menabe</i>								
Ampanihy	juil-08	3	15 931	2 923	654	567	0,22	(+/-)
Malaimbandy	nov-09	2	109 432	21 886	724	500	0,03	(-)
Analaiva	juil-08	3	22 348	4 368	987	752	0,23	(+/-)

Figure 2: distribution of principal modes of rights validation (% of plots) – only the mode stated as “principal” by the interviewee is here considered

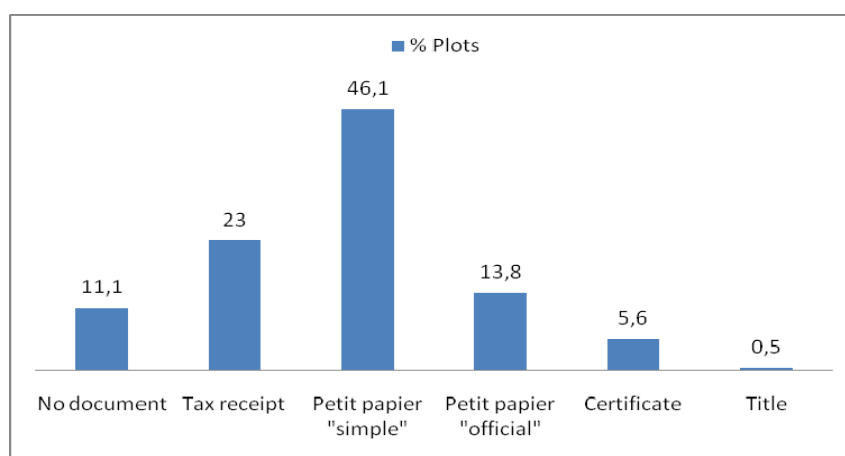
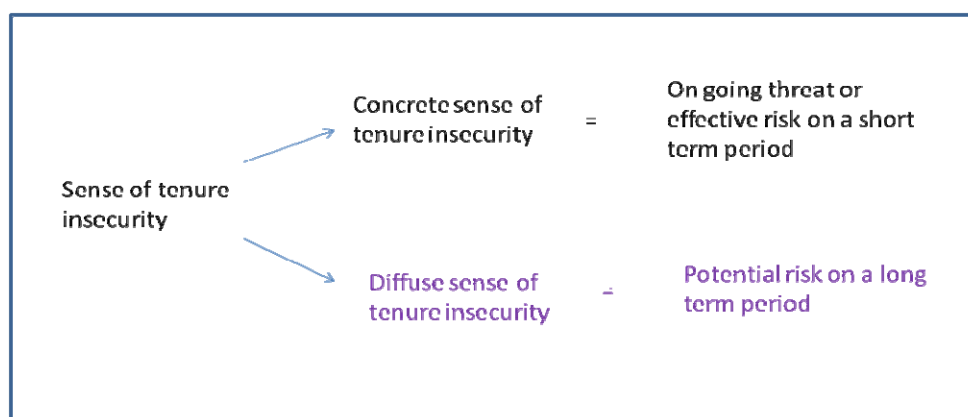


Figure 3: the two dimensions of tenure insecurity (and related measures)



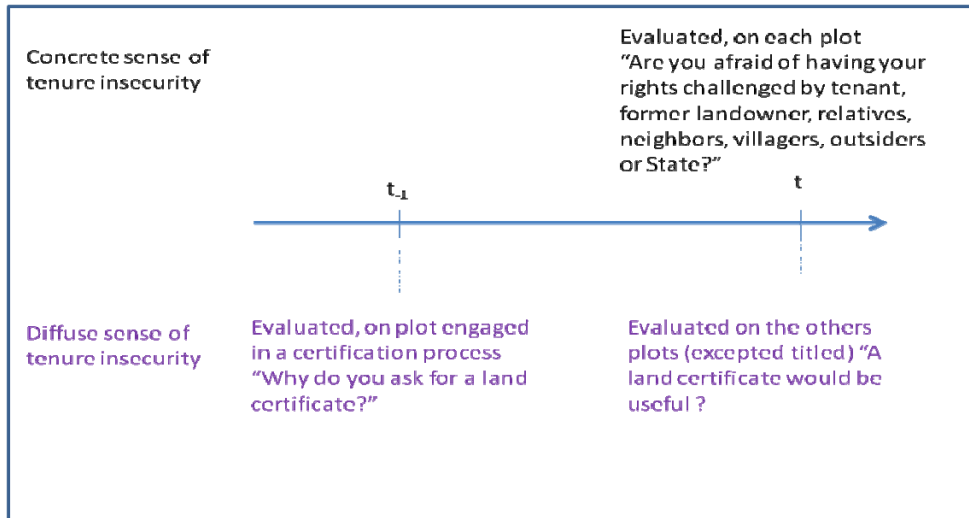


Figure 4: conditions and means influencing on tenure insecurity (only the blue arrows will be explored)

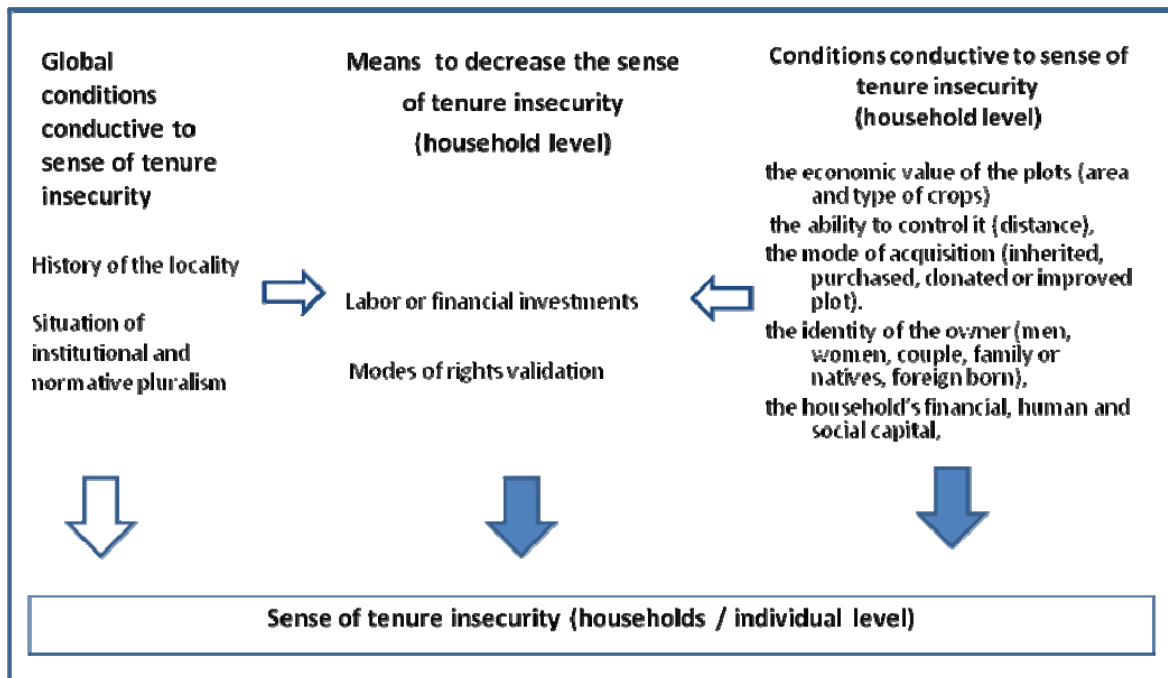


Table 2: Linear Probability Model of perception of tenure security

Dependent variable : 1 : no fear ; 0 otherwise	Coefficients (z-values)
Distance	-0.003 (0.02)
Distance ²	0.001 (0.00)
Plot area (m ²)	-0.004 (0.00)
Area ²	-0.000 (0.00)
Mode of acquisition (ref: inheritance)	
Purchase	0.010* (0.01)
Donation	-0.018 (0.01)
Improvement	-0.028*** (0.01)
Mode of rights validation (ref: no document)	
Land title	0.001 (0.02)
Certificate	0.020* (0.01)
Certification in progress	-0.009* (0.05)
<i>Petits papiers</i>	0.016* (0.01)
Tax receipt	0.014 (0.01)
Crops (ref: annual others than rice)	
Rice	-0.011** (0.01)
Perennial crops	-0.028*** (0.01)
Landowner (ref: Mister)	
Madame	-0.012 (0.01)
Couple	-0.005 (0.01)
Family (indivision)	-0.066 (0.02)
Household's characteristics	
Household wealth (score based on housing equipment)	-0.002 (0.00)
Foreign born household head	-0.004 (0.03)
Number of years in the locality (foreign born)	0.001**

	(0.00)
Age of head	0.003
	(0.00)
Age ²	-0.000
	(0.00)
Number of plots owned by the household	0.004**
	(0.00)
Constant	0.769***
	(0.07)
<hr/>	
Observations	7143
Standard errors in parentheses	
* p<0.1, ** p<0.05, *** p<0.01	

Table 3: Linear Probability Model of sense of tenure security after disaggregating the sample of plots by mode of acquisition

	Inherited nofear	Purchased nofear	Donation nofear	Improvement nofear
distance	-0.012 (0.04)	0.039*** (0.01)	0.002 (0.04)	-0.016 (0.03)
Distance ²	0.001 (0.00)	-0.003* (0.00)	0.001 (0.01)	0.004 (0.01)
Plot area	0.008 (0.03)	-0.001 (0.01)	-0.015 (0.04)	-0.029 (0.02)
Area ²	-0.003 (0.01)	0.000 (0.00)	0.004 (0.01)	0.003 (0.00)
Mode of rights validation (ref: no document)				
Land title	-0.011 (0.04)	0.170* (0.10)	0.157* (0.08)	0.292*** (0.09)
Certificate	0.025 (0.02)	0.204*** (0.06)	0.156*** (0.06)	0.112* (0.06)
Certification in progress	-0.395*** (0.08)		0.085 (0.08)	-0.123 (0.18)
<i>Petits papiers</i>	0.003 (0.03)	0.208*** (0.06)	0.155*** (0.06)	0.161*** (0.04)
Tax receipt	-0.033 (0.03)	0.151** (0.07)	0.132** (0.06)	0.149*** (0.04)
Crops (ref: annual others than rice)				
Rice	0.008 (0.02)	-0.031* (0.02)	0.034 (0.03)	0.009 (0.02)
Perennial crops	-0.073 (0.05)	-0.029 (0.02)	-0.043 (0.10)	-0.018 (0.02)
Landowner (ref: Mister)				
Madame	-0.039 (0.03)	-0.002 (0.02)	0.013 (0.03)	0.045** (0.02)
Couple	-0.027 (0.02)	0.022 (0.01)	-0.007 (0.03)	0.044** (0.02)
Family (indivision)	-0.021 (0.02)	0.040 (0.04)	-0.571* (0.31)	0.126** (0.06)

Households' characteristics

Household wealth (score based on housing equipment)	-0.002 (0.00)	-0.012*** (0.00)	0.001 (0.01)	-0.021*** (0.01)
Foreign born household head	0.080* (0.05)	0.061* (0.03)	0.166*** (0.05)	0.103*** (0.02)
Number of years in the locality (foreign born)	0.003*** (0.00)	0.001*** (0.00)	0.002** (0.00)	0.001*** (0.00)
Age of head	0.026*** (0.00)	0.025*** (0.00)	0.027*** (0.00)	0.025*** (0.00)
Age ²	-0.000*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)
Number of plots owned by the household	0.012*** (0.00)	0.005** (0.00)	0.012 (0.00)	0.005 (0.00)
Constant	3847 0.080* (0.05)	2554 0.061* (0.03)	298 0.166*** (0.05)	444 0.103*** (0.02)
Observations	3847	2554	298	444
R2	0.943	0.969	0.966	0.972

Standard errors in parentheses - * p<0.1, ** p<0.05, *** p<0.01

Figure 5: Percentage of households who ever went to local land offices or state land administration services, by motive (extrapolated figures)

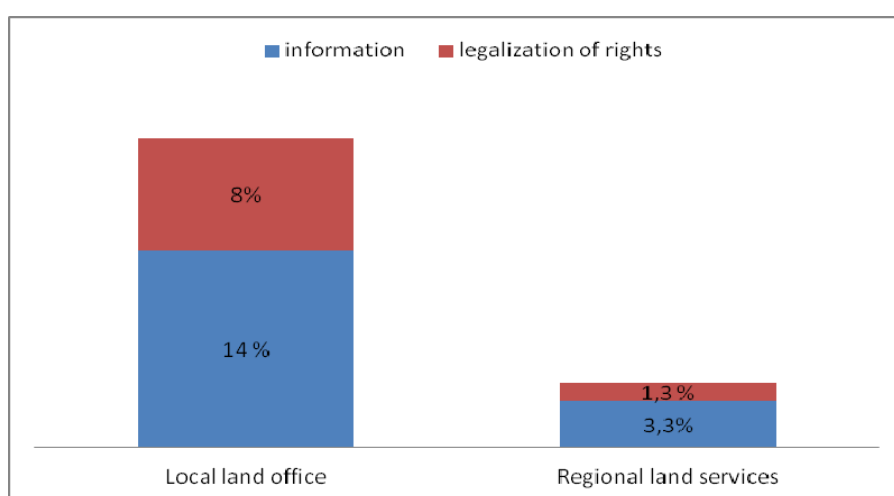


Figure 6: Time requested to get a legal document (% of holders)

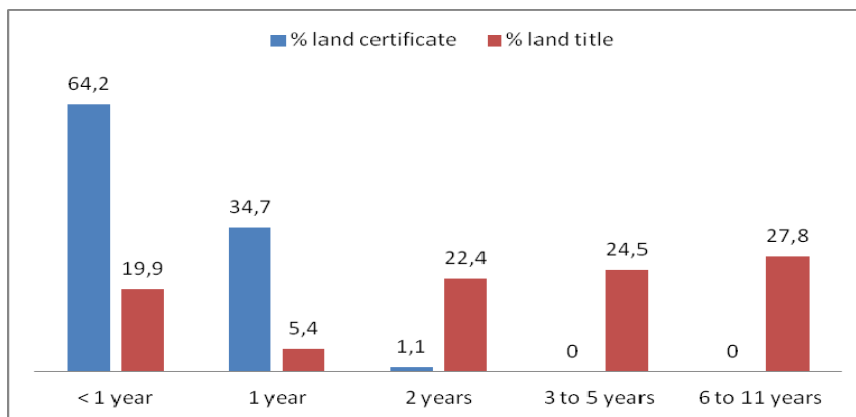


Figure 7: Distribution of households by wealth and type of document hold

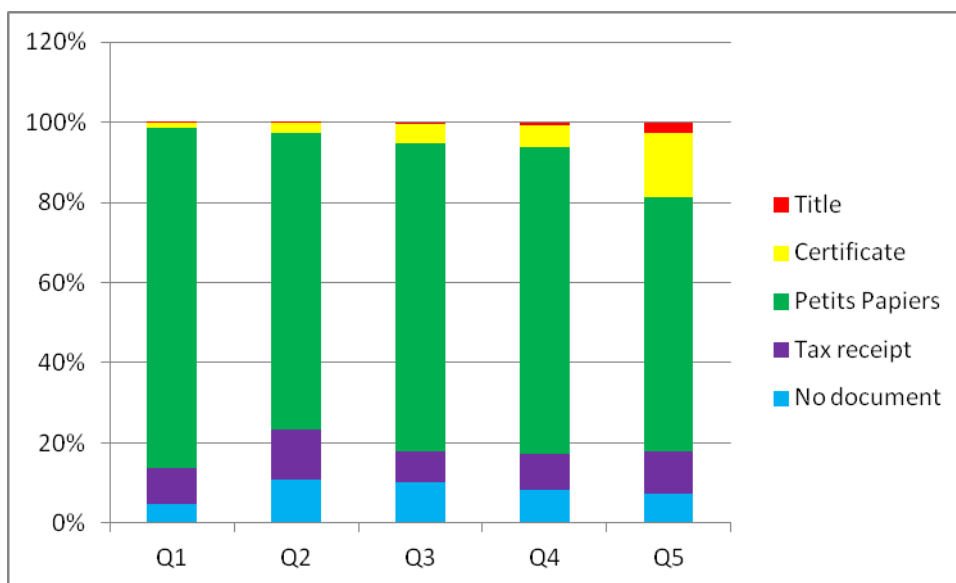
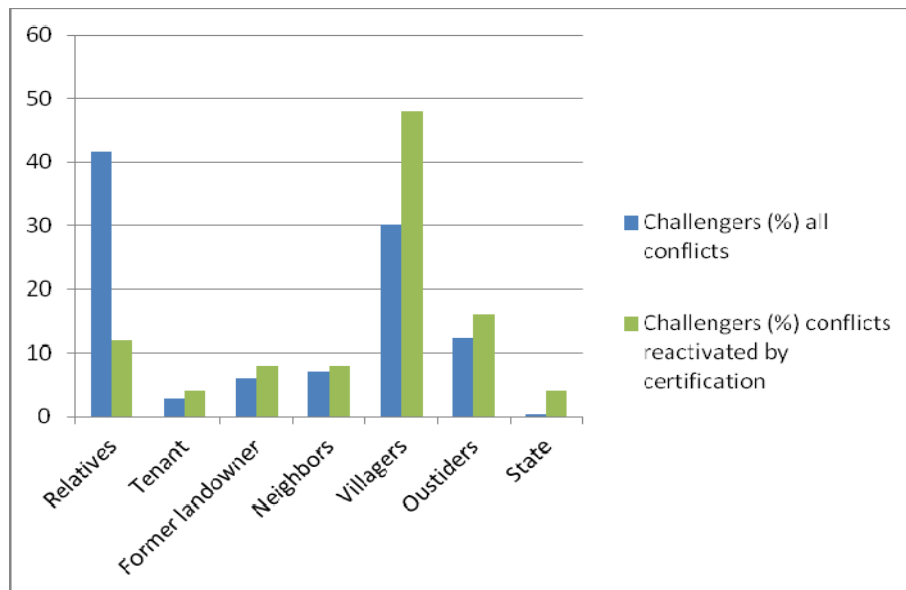


Figure 8 : Identity of the challengers in case of conflicts (%) (164 conflicts in total, 25 induced by certification)



ANNEXES

Annex 1: Predictive factors of certification. Linear probability model with household fixe effects.

	Parcelle certifiée ou en cours de certification
Superficie de la parcelle (ha)	0.014** (0.01)
Superficie de la parcelle ² (ha)	-0.000 (0.00)
Distance à la parcelle (heures)	0.000 (0.01)
Parcelle en faire-valoir indirect	-0.010 (0.02)
Mode d'accès (réf. : héritage)	
Achat	0.064*** (0.01)
Donation	0.045*** (0.01)
Mise en valeur	0.031*** (0.01)
Mise en valeur (réf. : riz)	
Habitat	-0.020** (0.01)
Mixte	-0.015 (0.01)
Autre culture annuelle	-0.023***

	(0.01)
Culture pérenne	-0.016**
	(0.01)
Paturage	-0.036*
	(0.02)
Jachere	-0.031
	(0.02)
Reboisement	-0.022
	(0.02)
Type de terrain (réf : plaine/bas-fond)	
Baiboho	-0.007
	(0.01)
Terrasse	0.160*
	(0.09)
Plateau	0.006
	(0.01)
Colline	0.004
	(0.01)
Propriétaire de la parcelle (réf : Monsieur)	
Madame	0.064***
	(0.02)
Couple	-0.009
	(0.01)
Famille	0.013
	(0.02)
Autre	-0.022
	(0.03)
Modes de sécurisation de la parcelle, hors certificat (réf : aucun document)	
PP simples	-0.125***
	(0.02)
PP officialisés	-0.092***
	(0.03)
Quittance d'impôt	-0.012
	(0.03)
PP simples + officialisés	-0.163***
	(0.03)
PP simples + quittance d'impôt	-0.105***
	(0.02)
PP officialisés + quittance d'impôt	-0.105***
	(0.03)
PP simples + officialisés+ quittance d'impôt	-0.188***
	(0.05)
Parcelle a fait l'objet d'un conflit	-0.000
	(0.02)
Constante	0.111***
	(0.02)
Observations	7054

Notes: Ecart-type entre parenthèses. * p<0.1, ** p<0.05, *** p<0.01. Régressions OLS avec effet fixe ménage, pondérées pour prendre en compte la surreprésentation des ménages demandeurs de certificat. Les parcelles immatriculées sont exclues de la régression (84 parcelles). La variable dépendante est égale à 1 si une demande de certificat a été faite sur la parcelle.

Annex 2: Household's characteristics according to the mode of rights validation

	Sans document			Petit papier/Quittance d'impôt			Certificat foncier			Titre foncier		
	Non	Oui		Non	Oui		Non	Oui		Non	Oui	
Age du chef de ménage	46,59	42,78	*	46,61	46,22		45,99	49,61	***	46,19	56,57	***
Niveau d'éducation du chef	2,08	1,98		2,18	2,04	*	2,04	2,36	***	2,06	2,62	***
Score de richesse du ménage (actifs)	-0,66	-0,69		0,07	-0,82	***	-0,79	0,75	***	-0,68	1,30	***
Score de richesse du ménage (habitat)	-0,61	-0,35	**	0,00	-0,71	***	-0,67	0,29	***	-0,60	0,62	***
Chef de ménage est une femme	0,11	0,24	**	0,19	0,11	**	0,12	0,14		0,13	0,07	
Taille du ménage	5,42	5,96		5,83	5,39	*	5,44	5,74		5,45	6,55	*
Nombre d'enfants moins de 14 ans	2,21	2,78	*	2,34	2,24		2,28	1,98	**	2,26	1,97	
Nombre d'adultes de 14 à 65 ans	3,03	3,01		3,30	2,98	***	2,98	3,58	***	3,02	4,21	**
Nombre de personnes plus de 65 ans	0,17	0,18		0,19	0,17		0,17	0,18		0,17	0,37	
Superficie totale possédée (en ha)	2,08	0,97	***	1,76	2,04		1,94	2,53	***	1,98	3,72	***
Superficie en plaine/bas-fond possédée (en ha)	1,15	0,50	***	0,93	1,13	*	1,07	1,35	**	1,09	1,81	**
Superficie en baiboho possédée (en ha)	0,45	0,10	***	0,26	0,45	***	0,42	0,43		0,42	0,62	
Superficie en plateau possédée (en ha)	0,44	0,22	***	0,44	0,42		0,40	0,65	***	0,42	0,87	**
Superficie en colline possédée (en ha)	0,04	0,12		0,11	0,04	**	0,04	0,09	*	0,05	0,41	*
Superficie en gradin possédée (en ha)	0,00	0,03		0,02	0,00		0,01	0,01		0,01	0,01	
Ménage est allochtone	0,33	0,22	*	0,27	0,33		0,32	0,32		0,32	0,41	
Distance au GF (heures, imputée si manquante)	1,01	0,76	*	0,81	1,02	**	1,00	0,84	**	0,99	0,82	

Note : Chiffres extrapolés à partir d'un échantillon de 1860 ménages propriétaires de parcelles. Test de différence entre "oui" et "non" pour chaque profil. Significativité : *** à 1%, ** à 5%, * à 10%

Annex 3: Predictives factors for modes of rights validation. Probit and LPM.

	(1)	(2)	(3)	(4)	(5)
	Pas de sécurisation	A demandé un CF (v.s Petits papiers/quittance)	A demandé un CF (ensemble)	A demandé un TF (ensemble)	Nb certificats demandés /Nb parcelles totales
Age du chef de ménage	-0.022*** (0.01)	0.005 (0.00)	0.005 (0.00)	0.025*** (0.01)	0.000 (0.00)
Niveau d'éducation du chef	0.049 (0.14)	-0.027 (0.05)	-0.023 (0.05)	0.215* (0.12)	-0.003 (0.00)
Score de richesse du ménage (actifs)	-0.120** (0.06)	0.151*** (0.03)	0.154*** (0.03)	0.012 (0.05)	0.020*** (0.00)
Score de richesse du ménage (habitat)	0.054 (0.11)	0.252*** (0.05)	0.237*** (0.05)	0.176* (0.09)	0.027*** (0.01)
Le chef de ménage est une femme	0.559** (0.22)	0.223* (0.11)	0.162 (0.10)	-0.340 (0.26)	0.011 (0.01)
Taille du ménage	0.688*** (0.23)	-0.071 (0.10)	-0.112 (0.10)	0.041 (0.15)	-0.012 (0.01)
Composition démographique du ménage (réf : personnes âgées plus de 65 ans)					
Nombre d'enfants moins de 14 ans	-0.521** (0.23)	0.059 (0.10)	0.091 (0.10)	-0.050 (0.17)	0.009 (0.01)
Nombre d'adultes de 14 à 65 ans	-0.587*** (0.21)	0.124 (0.10)	0.160* (0.09)	0.037 (0.15)	0.014* (0.01)
Superficie totale possédée (en ha)	0.371 (0.43)	0.396 (0.25)	0.339 (0.26)	-0.073 (0.18)	0.004 (0.03)
Superficie totale par type de terrain (réf : gradin)					
Superficie totale en bas fond possédée (en ha)	-0.585 (0.42)	-0.300 (0.25)	-0.236 (0.26)	0.171 (0.18)	0.001 (0.03)
Superficie totale en baiboho possédée	-0.809* (0.47)	-0.425* (0.25)	-0.351 (0.26)	0.106 (0.19)	-0.009 (0.03)

(en ha)					
Superficie totale	-0.491	-0.341	-0.282	0.162	0.003
en plateau possédée	(0.44)	(0.25)	(0.26)	(0.18)	(0.03)
(en ha)					
Superficie totale	-0.056	-0.104	-0.212	0.429**	0.006
en colline possédée (en	(0.37)	(0.27)	(0.26)	(0.21)	(0.03)
ha)					
Ménage est allochtone	-0.360	0.070	0.103	0.442**	0.010
	(0.25)	(0.10)	(0.10)	(0.22)	(0.01)
Distance au GF	-0.200	0.163*	0.181*	0.128	0.011
(heures, imputée si	(0.17)	(0.10)	(0.09)	(0.18)	(0.01)
manquante)					
Ménage ayant	-0.137	0.234	0.181	0.961***	0.010
un conflit sur les	(0.31)	(0.16)	(0.15)	(0.30)	(0.02)
parcelles					
% Parcelles	-0.714	1.339**	1.328***	0.649	0.108
en faire-valoir indirect	(0.72)	(0.53)	(0.50)	(0.69)	(0.08)
Constant	-0.970**	-2.170***	-2.181***	-8.782***	0.051**
	(0.45)	(0.28)	(0.26)	(0.71)	(0.02)
Observations	1860	1674	1860	1327	1860

Note: Ecart-type en parenthèses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Les colonnes (1)-(4) sont des Probit, la colonne (5) est une LMP.