

Land Titling Costs: Evidence from Literature and Cases Using FFP

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RESUME

The necessity to improve Land Administration has been proposed in many different forum's and in literature in general for many years. The role of Land Administration in its many aspects, from geodetical, legal, financial, gender, environment and humanitarian.

But the advances in Land Administration, in the developing world, the region that mostly needs it, is still very slow, as Deininger (2017), based on a sample of countries estimated, that in average 70 % of the properties around the world are not formally registered.

The main aim of this article is to show how the Fit for Purpose (FFP) method can solve, with low costs and simple methods, and so diminishing the time spend to one of the most difficult aspects of Land Administration requirements in the developing countries: the titling of the informal landholders.

For that the article will start with a revision on Land Administration showing why land titling is one of its main problems and on different experiences that will show some existing estimations of the costs and time to title informal landholders in different countries. Surely the reasons for such different costs are linked to the legal countries characteristics and its procedures of titling, that will be highlighted. Further the article will show cases were using a Fit for Purpose approach, in general, reduced significantly the costs and time for titling

The conclusions of the articles aims to wrap up and stress that titling is an important part of the Land Administration System but mostly it needs institutional and legal changes for its improvement.

Key words: Land regularization, costs, property rights.

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INTRODUCTION

The necessity to improve Land Administration has been proposed in many different forum's and in literature in general for many years [p.e. De Soto (2003), Deininger (2003), Deininger (2009), Reydon (2017) Williamson (2010)]. Some, like Fernandes (2017), inspired by Payne (2007) have even been able to show, from a large literature review, that better land administration has strong impacts on different aspects of economic development: its economic side (increase in productivity, in investment and in credit obtaining), the gender equality side and on the environment side (better soil use and less deforestation). The role of Land Administration in its many aspects, from geodetical, legal, financial, gender, environment and humanitarian has got more attention recently by the VGGT/FAO been signed by many countries in 2012, by its role in the SDG approval at the UN conference in 2015 and by the recent document from IPCC¹ that stated clearly that good land administration plays a very important role in diminishing climate change and its impacts. On its urban side UN HABITAT (2016) established that for the inclusive sustainable development Land Administration is crucial². Besides that the ISO 19152 – LAND ADMINISTRATION DOMAIN MODE certification establishes clear ways forward in the improving of Land administration for any country as well as the IGIF-UN-GGIM is mainstreaming the need for

¹ https://www.ipcc.ch/site/assets/uploads/2019/08/Edited-SPM_Approved_Microsite_FINAL.pdf

² UN HABITAT (2016: 13 and 27) states it clearly in its articles 35 and 104: "We commit ourselves to promoting, at the appropriate level of government, including subnational and local government, increased security of tenure for all, recognizing the plurality of tenure types, and to developing fit-for-purpose and age-, gender- and environment-responsive solutions within the continuum of land and property rights, with particular attention to security of land tenure for women as key to their empowerment, including through effective administrative systems." (...) 104. We will promote compliance with legal requirements through strong, inclusive management frameworks and accountable institutions that deal with land registration and governance, applying transparent and sustainable management and use of land, property registration and sound financial systems. We will support local governments and relevant stakeholders, through a variety of mechanisms, in developing and using basic land inventory information, such as cadastres, valuation and risk maps, and land and housing price records, to generate the high-quality, timely and reliable data — disaggregated by income, sex, age, race, ethnicity, migration status, disability, geographic location and other characteristics relevant in the national context — needed to assess changes in land values, while ensuring that these data will not be used for discriminatory land-use policies."

good land administration. On the other hand, the issue of guaranteeing adequate land rights is getting stronger in the business world also, with different initiatives that can be synthesized in the IFC/WB Standards certification³.

But the advances in Land Administration, in the developing world, the region that mostly needs, it is still very slow. The many aspects of Land Administration requires a very integrated and long term actions from many different stakeholders in the country from institutional reforms, reaching legal rearrangements, and in the long term it accomplishes economic, social and environmental improvements in the countries. But mostly the needs and difficulties are exacerbated, as many stakeholders state that good Land administration is very costly, as they look at countries that have solved it already. Surely if everything is done technically in a very perfect way it will be very costly and will take much time. But as the solution are mostly linked to the need that new institutional settings and legislation are created so that the stakeholders (public and private) adapt themselves to exchange information the cost, is rather low. For that to happen the biggest need are trust, confidence and attribution of responsibilities between all the stakeholders that all information will be shared and there won't be any kind of misuse of the information.

The main aim of this article is to show how the Fit for Purpose (FFP)⁴ method can solve, with low costs and simple methods, and so diminishing the time spend to one of the most difficult aspects of Land Administration in the developing countries: providing land rights to all the informal landholders, including the ones that hold customary rights.

For that the article will start with a revision on Land Administration showing why land titling is one of its main problems. After that, based on existing literature on costs and time requirements of titling will show how and why there are so many different real costs. The next item will show some existing estimations of the costs of titling informal landholders around the world.

The next item, based on the Brazilian reality will start trying to quantify the informality in the rural landownership based on the Atlas fundiario estimates and then will

³ See for that: NOTE, I. G. (2012).

⁴ For that see Enemark et al (2014).

show the costs for some Brazilian experiences of the traditional way of giving titles to rural small owners.

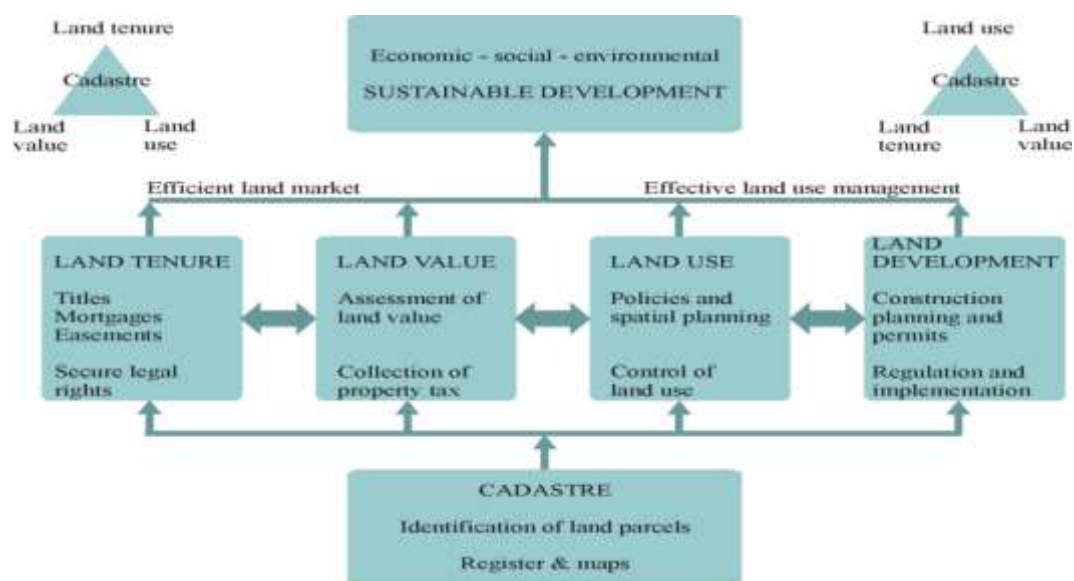
The last item before the conclusions will show that it is possible to lower well the costs and its possible to reduce the time for titling based on cases from Colombia, Brazil and Benin, that used the Fit for Purpose methodology to document different rights of small landholders.

The conclusions of the articles aims to wrap up what was presented along the article and make it clear that it is possible to reduce significantly the costs and the time spend in titling landholders. But at the same time it wants to stress that there exists no pandora box that will solve all titling problems. The titling is an important part of the Land Administration System but as the whole of it needs the participation of all stakeholders and needs institutional and legal changes to happen to all the informal land sector.

1. LAND ADMINISTRATION AND LAND RIGHTS REGISTRATION

Williamson (2010) has established that Sustainable Development can only be achieved when it has a Land Administration System in place, as can be seen below with the Graph 1, that consists of: a) a mapped cadaster (to identify the properties) b) secure legal rights (land tenure), c) land values (for taxation and others) c) Control over land use and d) the Land development definition. The Land Administration System to help building up to an suitable land ownership and land use has to have the correct human resources, an adequate institutional and legal settings. Many countries do not have the main precondition for an adequate Land Administration System that is a good mapped cadaster, a good register system and all what is behind to maintain it actual. In many countries with this lack, the way to try to control land use and land ownership is by creating more strict legislations, but as the landholders are not recognizable punishment or legislation enforcement is impossible.

Chart 1. Land Administration System - Schematic



Source: Enemark, Williamson (2010)

So one of the main problems to have an adequate Land Administration System is that many properties in the undeveloped world are not officially registered. That can be evidenced by table 1, obtain by Deininger (2017), were samples of countries were used to estimate the average amount of properties in the world that are not registered or formalized. It can be seen from that table that around 70 % of the properties around the world are not formally registered. It can be seen, from the same table, that among these regions the ones that have more informal properties are in Sub-Sahara and Latin America and Caribbean countries.

Table 1. Formal land tenure in the world

	Total	SSA	ECA	LAC	MNA	OECD	SAS	EAP
Private plots in city registered	0.22	0.04	0.32	0.03	0.14	0.68	0.25	0.24
Private plots in city mapped	0.46	0.13	0.60	0.31	0.48	0.97	0.25	0.52
Private plots in country registered	0.22	0.04	0.32	0.03	0.14	0.68	0.13	0.24

Land Titling Costs: Evidence from Literature and Cases Using FFP (10927)
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FIG e-Working Week 2021
 Smart Surveyors for Land and Water Management - Challenges in a New Reality
 Virtually in the Netherlands, 21–25 June 2021

Private plots in country mapped	0.24	0.02	0.40	0.03	0.14	0.71	0.13	0.28
No. of countries	189	47	25	32	21	31	8	25

Source: Deininger (2017)

SSA – Sub-Sahara Africa
 ECA – Europe and Central Asia
 LAC – Latin America and the Caribbean
 MNA – Middle East and North-Africa
 SAS – South Asia
 EAP – East Asia and the Pacific

So to improve the world’s land use for agriculture production, for a better environment, for housing and social rights, there is a need of an adequate Land Administration System, that as showed, needs to document and guarantee urban and rural landholdings rights. But even though large amounts of money have been spend with this by different international and multilateral institutions around the world this is still an important issue to be faced. One of the main reasons is that in most countries the requirements for it are so complex, so time-consuming, and costly that it does not occur in reality.

2. THE COST OF LAND TITLING IN THE LITERATURE

There aren’t many academic studies presenting the costs of the process of regularization, titling or formalization of the possessions. An important, but a bit old study, that shows the costs of the regularization is Holstein (1996: 22) that in a clear way states that:

“There is still only sketchy information available on the costs of land titling in World Bank supported projects. These figures come from Holstein (1993): The Thailand projects achieved US\$33 to \$47 per hectare (average rural parcel size 0.9 hectares), that is about \$40 per parcel; Brazil North East Land Tenure project - US\$6.5 per hectare (average parcel size 47 hectares); and from Staff Appraisal Reports (SAR), Algeria US\$5.5 per hectare; Costa Rica US\$ 14 per hectare. It is clear that Indonesian costs will be similar to Thailand's - \$40 to \$50 per parcel. In the breakdown of costs between the various parts

of the process mapping takes about 24% of total budget, adjudication about 18%, survey 22 %; registration 23%; and institution building about 13%. These figures are +/- 5% based on Thailand, Brazil, and the Algeria projects as calculated in 1993. Certainly more work and studies should be conducted into land titling and registration costing.”

But these results are quite impacting as it shows that the costs can vary from around US\$ 40 a parcel but also the participation of the different components of the regularization process, mapping being the largest, with 24 %, registration with 23 %, surveying 22% adjudication 18 % and institutional building 13 %. As most recent innovations have been made in the capturing information and the mapping process big changes are happening in this cost structure. But the study does not go into the different types of expenditures that a landholders incurs when trying to legalize their property.

Landholders without formal documentation have various types of costs during a normal land registration process to arrive at the final product: a fully registered parcel. Not only the economic cost, but also the time they have to spend, going to many different offices to reach that aim. In this article the costs will refer to all expenses associated with the process of registering a possession to make it into an official property, but there is a need to categorize them.

De Vries et al (2003), using the Institutional definition of transaction cost, analyzed the regularization process of urban plots in Namibia. They came to costs between US\$ 533 and US\$ 3.588 per plot in average in that country. They also evidenced that the process took between 282 to 684 days depending in the type plot that was being regularized.

The costs types proposed by De Vries (2003) can be used as a bases to compare the countries cost in a more accurate way. So table 2 has the 3 main costs associated to the process of regularization: professional costs, governmental costs and taxes. Many times the studies do not separate these kinds of expenses. This study will use these categories of costs

to scrutinize all the regularization processes that literature shows as well as the cases that will be analyzed.

Table 2. General cost types associated to regularization

Types of Costs	Types of fees	Who Charges	Rationale
Professional⁵	Town planner's	The professional or sometimes de government	Professional services costs
	Surveyor's		
	Conveyancer's		
Governmental⁶	Examination	Deeds Office – notaries	Effective costs to maintain the services
	Examination	Surveyor General's Office	
	Application	Land Administration and Control Body, Local Authority, Townships Board and Planning Advisory Board	
Taxes	Endowment	Local Authority (municipality)	Taxes that are charged with the regularization
	Transfer and stamp duties	Local Authority (municipality)	

Source: De Vries et al (2003: 3)

A more recent study by Ali et al (2014:7) when discussing the cost benefits of land regularization of possessions in Tanzania, has come to very interesting estimates than can be summarized as:

“Interviews with multiple surveying companies in Dar es Salaam produced cost estimates for surveying a single parcel ranging from approximately \$600 at the very low end to upwards of \$3,000 – depending on the size, location, and other complicating factors related

⁵Professional fees are the fees that have to be paid to (often 'registered', in some countries referred to as 'licensed') professionals as part of the registration process.

⁶ Government fees are the costs associated with the statutory operations of registration itself at governmental offices and include all the internal costs of cadastral and land administration organizations.

to local government administration. The Tanzanian Ministry of Lands estimates systematic demarcation at scale costs approximately 150,000 to 250,000 per parcel (\$96 to \$160), though the basis for these estimates is somewhat opaque. (...) The combined cost of town planning and surveying for the project was considerably below the Ministry's estimates, at roughly 70,000 shillings per parcel (approximately \$45)."

Again it can be seen that depending on what is taken in account the costs can vary quite a bit, for this case just the demarcation, professional costs in our table, between 100 and 160 US\$, and the governmental application would make it range between 145 and 200 US\$, without all other governmental costs.

The USAID has developed a methodology called MAST in 2016 to give titles to the landholders and was able to reduce the costs significantly, as can be seen in table 3. It has been implemented mostly in Africa, where it reduced the costs by half in some counties going from around US\$ 40 to around US\$ 20 and with the scaling up it reached even US\$ 7,85 per plot. And the USAID advocates that the reduction on the time spend to title went from 550 days to 100 days. Most probably these are only the measuring costs, or the surveyors cost, not taking in account all other costs. But the information is not clear if it reaches all the costs as stated in table 2, the costs of legal research of ownership that is frequently needed or the taxes that involved in the registering process. But in any case these results are very much in line with what the methodology of Fit for Purpose proposes, as will be showed later.

Table 3. USAID/MAST COST OF TITLING PER PARCEL (USD)*

Country	USD
Rwanda (lowest cost)	5,89
Tanzania (MAST at scale)	7,85
Kyrgyzstan	10,55

Indonesia	16,30
Tanzania (MAST initial pilot)	20,57
Thailand	21,66
El Salvador	29,74
Tanzania (pre-MAST)	40,00
Lesotho	69,00
Mozambique	88,78

USAID/MAST (2019)

Deininger, K; et al (2010) is an important study that analyses different cases, some included land rights documentation (titling) costs. In the article by SAGASHYA, D; ENGLISH, C (2010:55) presents very expressive costs for documentation that can be resumed here:

“Unit capital costs for rural titling are estimated to be US\$35 to \$41/ha (RwF 19,075–22,345/ha) and US\$9 to \$11 (RwF 4,905–5,995) per parcel/title. After the main rural land titling work has been completed in the first five years of the program. Using an exchange rate of US\$1=RwF 545 the recurrent costs of the subsequent rural land administration activities are estimated to be just over US\$2.50/ha (RwF 1,635/ha) and just under US\$1 (RwF 545) per parcel. The unit capital cost for urban titling is approximately US\$9 to \$10 (RwF 4,905–5,450) per parcel and US\$150 to \$200/ha (RwF 81,750–109,000/ha). This is due to the greater population density and smaller parcel size in urban areas.”

But it did not clarify which kind of costs these are. If only the legal costs, or the surveying as proposed by de Vries. In the same page of the article they conclude in a very interesting way saying that:

With the scarcity of data on titling costs in other developing countries, it is difficult to draw clear conclusions as to the cost-effectiveness of Rwanda’s reform program. However, the unit costs do not, at this stage, seem to be

excessive. In fact, these appear to be at a level that could be covered by reasonable fee payments (discussed in the final section). The key factor is how they compare to the potential benefits.

The report prepared by DFID [English D et al (2019:24)] aiming the presentation of the Lessons and guiding principles on land tenure regularisation and land sector has a quite large amount of economic information on land titling. They presented that the titling cost in Ethiopia was with their project of US\$ 5,2 per plot. But again it is not clear if all of the regularization is included or only parts of it.

As most titling projects are done by partnership between governmental entities and multilateral institutions its most important part is the planning of the activities and surely what comes with it is the costs estimation. This item will start by obtaining some costs estimations existing in several propositions and will finish with the estimations that COFLAS established based on a focus group methodology⁷.

The COFAS experience was systematized by Burns and Farki (2018), that so have written a very accessible guide, based on the Fit for Purpose methodology, to develop a Land Administration System, with the steps to take and the clear evaluation of the costs of each methodology. The next table 3 shows the relative estimated average costs of the different settings of registrations based on the different types of methodologies linked to the available information and the will of each country. But again it does not take into account all the costs that were proposed by De Vries et al (2003). But in any case it gives an important hint on the relative cost of each of the use of field staff (surveyors) and the type of geodesic information available or desired.

Table 4: Estimated unit cost of systematic registration

⁷

The focus group is an well-known methodology that estimates prices, costs and other variables from consensus obtained by expertise groups. The experience shows that the results are comparable to significant statistics sampling results.

Systematic Registration process	Adjudication by local volunteers, no surveys	Use of large-scale image maps with little investment in the geodetic reference network, paid field staff.	Use of large-scale image maps with investment in the geodetic reference network, paid field staff.	Ground surveys, with investment in GRN, paid field staff.	[other]
Systematic Registration cost/ property (USD)	1	10	15	50	[specify cost]

Source: BURNS and FARKI (2018)

From this literature can be seen that the costs of the regularization process can vary much depending on the kind of previous information that was available, what kind of results are expected or what legislation establishes. For that reason the Kadaster has developed the concept of Fit for Purpose Land Administration. Fit for Purpose means that the policy makers should, to improve the Land Administration System, find the quickest, most adequate and affordable solution, in place of looking into the measurement accuracy or the most modern technology. Based on the available information and the needs of the country the aim should be getting first a fully coverage of land ownership then gradually improve the information accuracy.

4. COST OF LAND TITLING IN BRAZIL: SOME INFORMATION

In Brazil as in many ex-colonies the land issue is quite complicated and its institutional setting to create an adequate Land Administration System is still quite far away, as showed in Reydon (2015) and Reydon(2019). These studies, besides other issues, showed that one very important problem to face is the reduction of informality in land ownership. Its diminishing is important as there inclusive are no clear numbers of the amount of land without titles are in the country.

From the Brazilian occupied land tenure estimates from Sparovek et al(2019), based on all mapped existing data, can be estimated that around 271,1 million ha (around 31,9 % of the surface)⁸ of private possessions have no titles. It accounts for around 4,5 million of farms⁹. These are estimations made from the mapped surface so it can be considered rather roughly.

So it expresses a large amount. Another kind of study using the same type of data, mainly the CAR experience, developed in the state of Acre by Mastrangelo et alli (2019:8) was able to identify that “93,38% of the rural properties in Acre, or 55,21% in terms of occupied area, are not owned in fact, thus prevented from enjoying all the rights and duties that would be inherent to it under Brazilian law.”

So the issue of regularization is crucial for the country. The legislation to regularize possessions has been simplified (see law 13267/2017), but the main rules are still in place making it quite time consuming and costly. The main regulation comes from the Law 10267/2000 that established that with any change in the register, at the register notaries, to owner should provide a georeferenced map of its rural property and send it to INCRA to build up a mapped cadaster of rural land properties¹⁰. The specific legislation for the regularization is the INCRA’s Normative Instruction no.13 from 2003 that consolidates the georeferencing processes consolidation¹¹.

⁸ This estimation comes from the sum of: a) rural land reform settlements (as they are not registered yet) with 41,7 million; b) undesignated land 54,6 million; c) private property only at CAR cadaster (if assumed that 50 % of CAR mapped does not have title) that is 43,5 million; d) private property from Terra Legal program with 9,8 million and e) Unregistered land with 141,5 million of ha.

⁹ This estimation is rather simplistic as the amount of properties are difficult to estimate. So we came to the next estimates amounts: a) rural land reform settlements (as they are not registered yet) with 1,4 million families; b) undesignated land 22,3 thousand; c) private property only with CAR cadaster (if assumed that 50 % of CAR mapped does not have title) that is 2 million; d) private property from Terra Legal program with 116 thousand farms; and e) Unregistered land with 1,1 million of properties.

¹⁰ This created a mapped (not certified) cadaster that sums up around 70% of the national surface. In side this area are all the resettlement projects that do not have titles yet for what there is a estimation of 1,4 million properties.

¹¹ The article 3 of the 2003 the Normative Instruction that defines the basic guidelines for the activity of cadastral inspection of rural properties legislation establishes that the boundaries of the rural properties must be georeferenced based on the Brazilian Geodetic System, and its positional precision has to be of 50 centimeters, and vertices accuracy should also be of 50 centimeters. Besides that it is also required to prove the legitimacy of the domain and the ownership of rural properties, through the analysis of the domain chain, which should reach the original documentation that transferred the property from the public to the private domain. The same legislation has established the standard technology to be used for the georeferencing not allowing the use of GPS1 and GPS2 GPS devices, known as GPS navigation, neither for the perimeter survey nor for georeferencing services, due to the impossibility of these devices to reach the needed accuracy.

Based on the prevailing legislation on land ownership regulation, the cost of giving out titles to all untitled properties would be very high. For this, we used a case from the municipality of São José das Pontas, in the state of Pará, where the titling effort had extremely favorable results, from the legal point of view.

The high levels of accuracy that the Brazilian legislation established makes the registration of possessions quite expensive. Table 4 are estimations made by Reydon and Costa (2010) from a regularization process done by the ITERPA in Pará in a municipality not far from Belem and from a project from IDB in Brazil. The cost per hectare from ITERPA of US\$ 9,95 and US\$ 19,73 are as well as the costs per farm of US\$ 230,88 and US\$ 404,49 similar to what is found in the literature.

Table 5. Estimation of Regularization cost with Georeferencing in Brazil -

	no. Farms	Average Area	Total Area estim.	Total Cost US\$ 1000	Cost per ha US\$	Cost per farm US\$
BID Brazil 2007	44.500	20,5	912.250	18.000,00	19,73	404,49
ITERPA -Brazil - 2008	542	23,2	12571	125,14	9,95	230,88

Source: Reydon e Costa (2010)

5. COST OF REGULARIZATION WITH FFP METHODOLOGY:

From this literature can be seen that the costs of the regularization process can vary much depending on the kind of previous information that was available and what kind of result is expected. For that reason the Kadaster has developed the concept of Fit for Purpose Land Administration. Fit for Purpose means that the policy makers should, to improve the

Land Administration System, find the quickest, most adequate and affordable solution, in place of looking into the measurement accuracy or the most modern technology. Based on the available information and the needs of the country the aim should be getting first a fully coverage of land ownership then gradually improve the information accuracy. For that an important analytical step was done with the creation of the Fit for Purpose methodology that Enemark et al (2014:6), proposed as:

“the approach used for building land administration systems in less developed countries should be flexible and focused on citizens’ needs, such as providing security of tenure and control of land use, rather than focusing on top-end technical solutions and high accuracy surveys.” A fit-for-purpose approach includes the following elements:

- *Flexible in the spatial data capture approaches to provide for varying use and occupation.*
- *Inclusive in scope to cover all tenure and all land.*
- *Participatory in approach to data capture and use to ensure community support.*
- *Affordable for the government to establish and operate, and for society to use.*
- *Reliable in terms of information that is authoritative and up-to-date.*
- *Attainable in relation to establishing the system within a short timeframe and within available resources.*
- *Upgradeable with regard to incremental upgrading and improvement over time in response to social and legal needs and emerging economic opportunities.*

A country’s legal and institutional framework must be revised to apply the elements of the fit-for-purpose approach. This means that the fit-for-purpose approach must be enshrined in law, it must still be implemented within a robust land governance framework, and the information must be made accessible to all users.”

The overall procedure used for land rights documentation, following the Fit-For-Purpose (FFP) philosophy, used with some adaptations, consist of six major steps (see Figure 3)¹². The first step is *Socialization*. During this step, leaders of the community (-ies) located in the work area are contacted to organize a general meeting in which the FFP team explains the

¹² As can be seen in Enemark et al(2014) the whole Fit for Purpose methodology also includes the legal adaptation, the institutional changes, the mapping procedures and others.

nature of the work, the responsibilities of the different actors and the flow of activities. A critical result of this step is the identification of young adults from the community that will be trained to become grass-root surveyors and help the community execute the work.



Figure 3 — Major steps of the FFP methodology

The second step is *Planning & Training*. After the explanation of the work, a social mapping exercise is carried out through which the various landowners or claimants identify the location and the approximate area of their parcels (spatial units) on a base map. After all the data has been collected, these stakeholders are informed of when their survey will happen, and which of the grass-root surveyors will accompany them.

Simultaneously, these young surveyors are introduced to the functioning of the required equipment (mobile app & handheld GPS), and they receive explanation of the specific steps to follow to survey parcels. A number of test runs are executed to guarantee complete understanding of the procedure. Special training material has been developed and is available for this task.

The third step is *Data Collection*. Following the previously drawn plan, various survey teams are dispatched to cover the whole area and to collect simultaneously the spatial, administrative and legal data of the landholders.

The fourth step is *Post-Processing*. This step is used to transform surveyed data into topologically correct representations of real-world land parcels in a semi-automated way. Additionally, an analysis on the various classes of rights is made and compared with existing government registers when applicable.

The fifth step is called *Public Inspection*. During this step, the processed results are presented to the community in a public forum for approval. Signatures are collected as validation of the results, which indicate agreement between the parties.

The sixth and last step is *Registration*. All parcels that received approval by the authorities and the community are incorporated into the national registers so that official documents can be generated for the various rightholders. In some cases, the right can be immediately formalized and leading to land titles. For others, which fall into different categories of rights, a different procedure applies, but they can potentially lead to titles too.

The next two items will show two cases using the Fit for Purpose methodology in South America, in the Brazil and in Colombia. Besides showing the costs of regularization with traditional methods and with the Fit for Purpose method the cases will show the difference in time frame for the regularization. Surely the legal and institutional settings of the countries have a great influence in the process of regularization. This experience has as main aim show that costs can diminish strongly if using the FFP methodology.

5.1. THE CASE OF COLOMBIA

The Apartado's municipality pilot took place in the village of: Los Mandarinos (including the "private" area of El Trebol), El Tigre, La Balsa and La Linda comprising 252 parcels. In Los Mandarinos, field data of the whole village has been collected, including state

land. In the other villages, only data on “private” land parcels has been collected, at the specific request of Agencia Nacional de Tierras (ANT).

This paper will use the information from the area of El Trebol, with 17 landowners, because it is the only one that has completed the process, from preparing to measure to giving out the titles¹³ under pressure of the visit of the Dutch PM. The others have gone through the whole of the process up to the public inspection, and are now waiting for approval by ANT to issue titles.



¹³ With the presence of the Dutch Prime Minister Mark Rutte.

5.1.1. *The images and field work*

A first meeting was held with leaders of the communities from the villages from the area of el Trebor. The field data collection aims to create an overview of all people to land relationships. Those relationships can be formal land rights or recognized customary or indigenous land rights. It is also possible that informal relationships are observed. There may be disputes. Mapping of overlapping claims is included in the methodology. This means agreed disagreement is mapped, the disputed holders are the “claimants” (Parties).

The methodology further aims at the creation of complete coverage of land administration based on the outcomes of field data collection. The people to land relationships should be formally registered where possible.

Field data collection succeeds procedural steps such as project block selection, preparations, awareness raising, announcement, as well as training. All this was done for the pilots – in close cooperation with the national institutions with responsibilities in land administration, that is the ANT, SNR, IGAC, DNP, the Cadastre of Antioquia, as well as the Universidad Distrita 1 (*ingenieria catastral*), the University of Twente (ITC) and ESRI/TRIMBLE Colombia. The collected data from the field require data handling afterwards and should be available for public inspection and for a confrontation with legally data from the land registry under SNR and IGAC. This means that the collected data from reality will be compared with the legal data as a basis for decision making on land titling.

Participatory, because people themselves will be actively involved in the data collection, especially in post conflict *veredas* to enhance trust in the collected data (including accepting considerable differences in the expected area of the parcel and the measured area) and regain overall trust in the government.

For this process step standard software is used, the Esri Collector App. Parameters in this app are set in such a way that the data collection can be done according to the Colombian definition of LADM. The project team has tight connections to the development team of the

collector app in order to discuss bugs and functional demands, but on this part the project does not develop software component by itself.

Part of the exercise was digitalizing the titles that existed. Of the parcels that were measured in this pilot, 4 of them had a registered title. These documents were digitalized by reconstructing the textual description of the boundaries that was found in the titles. In case that there was a usable map, this map was georeferenced using visual objects that could be seen in the satellite image. Without guaranteeing a high precision, all these parcels could be reconstructed.

5.1.2. Post-processing of field data and Public Inspection

With the collector app parcels are measured as closed polygons. This implies that each common parcel boundary was measured twice. ITC en Universidad Distrital developed dedicated software for post-processing. With this software double collected boundaries can be combined to one common boundary, taking into account the precision of the measurement of the collected boundary points. Some days after the measurements in the field, the Public Inspection was held in one of the local churches in Apartado. At this event most of the owners agreed on their boundaries and so titles could be given some months later, as the information still had to be processed by the ANT.

5.1.3. Comparing the regularization costs

Table 6 is an estimation of the titling costs of this experience of Fit for Purpose approach, the comparable ANT regularization process¹⁴ and the legal regularizing land possessions process, based on the de Vries (2004) scheme. In the surveyors cost from the FFP experience has all efforts of getting the local people together and all other steps included. The

¹⁴ The Agencia Nacional de Tierras (ANT) is responsible for the regularization of all rural areas that are not titled. The institution was created by the decree 2363/2015.

equipment and the whole Kadaster infra-structure to develop all the instruments is not included as all of them are available now. In the

It can be seen that there is a large difference in costs between the FFP and the ANT processes. The differences are caused mainly by two regulations: a. the surveying with high accuracy; b. as they need to review the whole deed chain to be sure that the title is given with no risk of having some other owner. But in reality the differences are of philosophy. The FFP method as is based on the reality of the current ownership, approved by the landholders while the participatory measuring and by the whole of the community in the public inspection. So from the point of view of the people on the ground there is, in general no need for that accuracy and to go back to the documents from the system. Surely in the cases were there is some disagreement other administrative actions from ANT or even judicial could be taken¹⁵.

Table 6. Titling Cost for Colombia - US\$

Types of Costs	Types of fees	Judicial Adverse possession legalization	Regularization cost ANT	Pilot - Fit for purpose method(a) (b)
Professional	Town planner's			0,00
	Surveyor's		132,73	10,90
	Conveyancer's			0,00
Governmental	Deeds/title Examination	56,80	193,55	
	Cadastral Examination	58,99		0,00

¹⁵ In the case of Cumaribo, also from Colombia it could be noticed that the reason for disagreements between indigenous groups, the army and private owners was caused by an overlapping of titles given by the government in the past. Its solution has to come from the government.

	Deed/Title Application	58,17		0,00
Taxes	Endowment			0,00
	Transfer and stamp duties			0,00
TOTAL		173,96	326,28	10,90

Source: field work KI and ANT.

5.2. The case of Tangará da Serra – Mato Grosso

This case started from a feeling that too much precision as a technical requirement for georeferencing in Brazil is a major problem for the small landowners (less than 400 hectares) that are required to do it. Although this is a government responsibility, to georeference these properties will be a great challenge for the Brazilian Land Administration System. As the georeferencing requirements in Brazil make this process quite expensive, the main idea was to test a Fit for Purpose approach with Kadaster International (NL) support, to make it faster, affordable and secure the rights of these smallholders.

Evidence shows that informal rights outnumber formal land rights in Brazil, for both urban and rural scenarios. Formalizing land rights can be very time consuming (over 20 years for a parcel within the judicial system) and costly (around USD 7.000), which makes it a very challenging task, especially for communities that are social and economically fragile.

To address the challenges and the land regularization issues, an integrated and participatory “Fit for Purpose” (FFP) approach was developed in Tangará da Serra, Mato Grosso, Brazil. By the end of it, 52 parcels were identified, measured, formalized and registered, following all legal and technical requirements, but also, with minimum costs as it can be seen in table .



Image 3 – Photos from the Pilot in Tangará da Serra

It is important to explain that all quantitative information around costs of regularization are unprecise they are rough average estimations as the legal, transportation and other cost vary much per place, per professional and so on. This case of Tangará the estimations are a bit more precise as they were costs incurred, but they do not take in account all the fixed costs that are behind the exercise of the pilot regularization, but they give a good idea of what these costs are.

At the table can be seen that in Brazil an individual judicial regularization of a large property, more than 400 ha would cost in that region, with those legal costs around US\$ 6 203 per plot. In the same region with a smaller plot, in a extra judicial regularization (done by the local registration notary) the cost would be of US\$ 3.034, much less than the judicial method, but still too much for a small landholder. When done using the fit for purpose method it came to only US\$ 51,04. Surely it was a specific experience, were all important stakeholder took part and were very much interested in solving the problem as that can bring more

resources to the region, reducing costs and time. One of the institutional characteristics that helped reducing time and costs was that the registration offices (notaries and registration notaries) were in the hands of the same person, not having double charges as mostly happens. The lack of costs related to the title application is due to the law 13465/17 that stated that first registration is with no cost. What is also remarkable is the time frame: while the normal process takes minimal of 10 years, with the FFP method it took less than 4 months.

Table 7. Titling Cost for Tangara da Serra MT - Brazil US\$ (US\$ 1 = R\$ 4,124)

Types of Costs	Types of fees	Judicial Adverse possession legalization - large plot	Extra-judicial Adverse possession legalization - smal plot	Pilot - Fit for purpose method(a) (b)
Professional	Town planner's	0,00	0,00	0,00
	Surveyor's	1233,15	748,18	41,71
	Conveyancer's	1818,62	181,86	0,00
Governmental	Deeds/title Examination	1211,35	649,80	9,33
	Cadastral Examination	969,93	969,93	0,00
	Deed/Title Application	969,93	484,97	0,00
Taxes	Endowment	0,00	0,00	0,00
	Transfer and stamp duties	0,00	0,00	0,00
TOTAL		6202,98	3034,75	51,04

(a) In this project as all stakeholders were very much engaged it was possible, based on some legislation, to have no lawyer cost and no registration cost.

(b) as the area to regularize was owned but not occupied privately it did not need the cadastral examination.

5.3. BEST PRACTICE IN BENIN

The land title in Benin (Titre Foncier) has existed since colonial times and it's very high level of legal certainty was reaffirmed with the 2017 revision of the Land Administration Act from 2013 (Code Foncier Domianial, 2013).

The government of Benin is in strong support of the realization of a proper land administration. In the PAG 2016 'Benin Révélé' government action program (PAG 2016), a national digital cadaster is mentioned as an action line. It is considered as an important tool

for further economic development. Benin has chosen for a centralized land administration and has the intention to record land rights for the entire national territory. The execution of the land administration in Benin is assigned to the l'Agence Nationale du Domaine et du Foncier (ANDF), that was established by the law of 2013 and which has started its activities in 2016. It is estimated that there are about five million cadastral plots in Benin and that currently only 50,000 plots have a land title and have been registered in accordance with the Land Administration Act.

Mekking et al (2020) state that one of the reasons for the slow increase in the number of titles are the costs. Before the introduction of the 2013 Land Administration Act, high costs were involved and it could take several years of time to obtain an official confirmation of land ownership. With the introduction of the Land Administration Act a guaranteed lead time of 120 days and a fixed price of 200 US dollars for the application of a land title was provided. Additional costs are to be made for obtaining a municipal source document, that in rural areas has a fixed price of about 43 US dollars, and in more urban areas the prize depends on plot size or transaction costs. Next to that a fee has to be paid for measurements by certified private surveyors. It is estimated that the total costs for a land title are about 500 US dollars. These are very high costs for Benin citizens.

Within this context an alternative approach was developed that is more cost and time efficient and that is not based on a land title (Titre Foncier) but on a 'verified presumption of ownership'. This presumed ownership is recorded in the national land administration and provides initial tenure security at low costs. This can later be upgraded to a formal land title and paid for by the owner, for example in case of high value parcels.

This approach was developed within the perspective of Fit For Purpose Land Administration and uses, amongst others, the following principles; a tenure security that is based on 'verified presumption of ownership' instead of a formal land title, allowing testimonies instead of source documents, acceptance of a spatial measurement accuracy of 1 meter instead of cm accuracy and substantial assistance of local population in collecting the data.

This ‘fit for purpose’ approach was tested in four municipalities across Benin in 2019. During a three months period, a total of 2,349 land parcels with a total surface of 3,500 hectares were collected. The average costs were about 17 US dollars per parcel and about 19 US dollars per hectare. These costs do not include the software costs for a Land Administration System software nor the costs for capacity building of the cadastral organization. As a follow-up this approach will be scaled up within several municipalities in Benin from 2020 onwards.

Table 8. Costs for formal Land Title and Fit For Purpose ‘presumed ownership’ in Benin – US dollar

Types of Costs	Types of fees	Formal process leading to formal Land Title	Fit For Purpose approach leading to ‘verified presumed ownership’¹⁾
Professional	Town planner’s	unknown	17 ²⁾
	Surveyor’s		
	Conveyancer’s		
Governmental	Deeds/title examination	200	
	Cadastral examination		
	Deed/title application		
Taxes	Endowment	Rural area fixed price: 43 Urban area: based on parcel size or transaction price	
	Transfer and stamp duties		
Total		Estimation of total costs: 500	17²⁾

1): Based on a 3 months test with 2349 parcels and a surface of 3500 hectare.

2): Excluding costs for the Land Administration System software and capacity building for the cadastral organization

FINAL REMARKS

The main aim of the article was to show how the Fit for Purpose (FFP)¹⁶ method can solve, with low costs and simple methods, and so diminishing the time spend to one of the most difficult aspects of Land Administration in the developing countries: providing land rights to all the informal landholders, including the ones that hold customary rights.

The article started with a revision on Land Administration showing why providing land rights to all the informal landholders, including the ones that hold customary rights is one of its main problems. After that, reviewed literature and was able to see that there are some important advances in showing experiments with low costs. But the results are quite different as the criteria used to explicit the costs are not always very clear.

In this review de Vries(2003) paper has to be highlighted as it based on the case of Namibia, proposed a classification of the different costs and requirements of titling: the professional, the governmental and the taxes, that can be used for all kinds of rights concession\). With this classification, better comparison could be made between the studies to achieve a better understanding were are the bottlenecks of the process of giving out the landholders rights.

The next item, based on the Brazilian reality made some estimates on the amount of informal landholdings exists in the rural reality, based on the Atlas fundiario. After that, showed the costs for some Brazilian experiences of the traditional way of giving titles to rural small owners.

The last item, before the conclusions, showed, based on Fit for Purpose cases developed in Colombia, Brazil and Benin, that it is possible to lower well the costs and its possible to reduce the time to document different rights of small landholders. But at the same time it wants to stress that there exists no pandora box that will solve all titling problems. The titling is an important part of the Land Administration System but as the whole of it needs the participation of all stakeholders and needs institutional and legal changes to happen to all the informal land sector.

¹⁶ For that see Enemark et al (2014).

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REFERENCES

ALI D, COLLIN M, DEININGER K, DERCON S, SANDEFUR J, ZEITLIN A (2014) The Price of Empowerment: Experimental Evidence on Land Titling in Tanzania, Working Paper 369, Centre for Global Development, Pp. 1-34, Accessed from:

<https://www.cgdev.org/sites/default/files/priceempowerment-land-titling-tanzania.pdf>

BURNS, T.; FAIRLIE, K. (2018) Framework for Costing and Financing Land Administration Services- *securing land and property rights for all*. CoFLAS. UN-Habitat/FIG/GLTN. <https://gltm.net/2018/09/26/framework-for-costing-and-financing-land-administration-services-coflas/>

CODE FONCIER DOMANIAL (2013). Loi n°2013-01 du 14 janvier 2013 portant Code foncier et domanial en République du Bénin. Modifiée par la loi n°2017-15 du 26 mai 2017.

DE VRIES, W. T.; GEORGIADOU, Y.; LEWIS, J. The cost of land registration: a case study of cost efficiency in Namibia. **Australian surveyor**, v. 48, n. 1, p. 7-20, 2003.

DE SOTO, H. *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. Basic Books, 2003.

DEININGER, K. **Land Policies for Growth and Poverty Reduction**. A World Bank Policy Research Report. Washington, DC: World Bank and Oxford University Press, 2003. 292 p.

DEININGER, K.; FEDER, G. *Land Registration, Governance, and Development: Evidence and Implications for Policy*. Oxford University Press, 2009.

DEININGER, K., AUGUSTINUS, C., ENEMARK, S., & MUNRO-FAURE, P. (Eds.). (2010). *Innovations in land rights recognition, administration, and governance*. The World Bank.

ENGLISH, C, LOCKE A, QUAN J, AND FEYERTAG, J (2019) Securing land rights at scale. *LEGEND Land: Enhancing Governance for Economic Development*.

<https://landportal.org/library/resources/securing-land-rights-scale>

ENEMARK, S., BELL, K. C., LEMMEN, C. H. J., & MCLAREN, R. (2014). *Fit-for-purpose land administration*. International Federation of Surveyors (FIG).

FERNANDES, V.B. (2018) A relação entre a governança de terras e o desenvolvimento econômico – Tese de Doutorado – UNICAMP – Campinas- 2018.

HABITAt, U. N. (2016). Habitat III: New urban agenda. *Quito*. Online at: <http://habitat3.org/wp-content/uploads/NUA-English.pdf>: UN Habitat.

HOLSTEIN, Lynn. Towards best practice from World Bank experience in land titling and registration. In: *International Conference on Land Tenure and Administration*. 1996. p. 1-26.

MASTRANGELO, J. P. S. ; REYDON, B. P. ; CAVALCANTE FILHO, P. G. ; BALLINI, R. ; FELÍCIO, A. S. G. ; SOUZA, D. ; CAVALCANTE, C. ; SILVA, A. M. ; GARRAFIEL, R. . Informality in access to land and deforestation in the legal Amazon: an empirical study of the state of Acre. In: Land and Poverty Conference 2019, 2019. Land and Poverty Conference 2019: Catalyzing Innovation.

MEKKING ET AL (2020) (Paper is accepted but not published yet at FIG 2020). Mekking S., Kougblenou V., Vranken M., Kossou F., Van den Berg C. Upscaling land administration in Benin towards national coverage, balancing between time, quality and costs. This paper has been accepted but not published yet at the FIG Working Week 2020, Amsterdam.

MOLENDIJK, M., SANTOS DUKON, T., LEMMEN, C. H. J., MORALES GUARIN, J. M., ENDO, V., RESTREPO RODRIGUEZ, S., GONZALEZ DUEÑAS, J. F., MATIZ SANCHEZ, I. E., SPIJKERS, P., UNGER, E. M. AND MORENO HORTA, I. A. (2018) Land and Peace in Colombia: FFP Methodology for Field Data Collection and Data Handling. In: Land Governance in an Interconnected World. Annual World Bank Conference on Land and Poverty 2018 - The World Bank Building, Washington D.C., United States 19 - 23 March 2018. 19 p.

MORALES, J; LEMMEN, C, DE BY, R; MOLENDIJK, M.; OOSTERBROEK E. and ORTIZ DAVILA, A (2019) On the Design of a Modern and Generic Approach to Land Registration: The Colombia Experience 8th International FIG workshop on the Land Administration Domain Model 1-3 October 2019, Kuala Lumpur, Malaysia

NOTE, I. G. (2012). 5: Land Acquisition and Involuntary Resettlement. *International Finance Corporation: Washington, DC, USA*.

PAG (2016) Programa d'Actions du Gouvernement, Benin Révélé,
<http://revealingbenin.com/wp-content/uploads/2017/03/Le-Programme-dActions.pdf>,
accessed at 20-02-2020

PAYNE, G; DURAND-LASSERVE, A; RAKODI, C. Social and economic impacts of land titling programmes in urban and peri-urban areas: A review of literature (chapter 6), 2007. In: LALL, S.V; FREIRE, M; YUEN, B; RAJACK, R; HELLUIN, J (Ed). **Urban Land Markets: Improving Land Management for Successful Urbanization**. Springer Science & Business, Oct. 7, 2009.

REYDON, B.P. (2019) Challenges of current land governance in Brazil: beyond the historical, political and social demands for land reform, In: Antonio M. Buainain, Rodrigo Lanna, Zander Navarro. (Org.). *Agricultural Development in Brazil: The Rise of a Global Agro-food Power*. 1ed.: Routledge , 2019, v. , p. 70-90.

REYDON, B.P., TELLES, T., FERNANDES, V.B. (2014). Land tenure in Brazil: The question of regulation and governance. **Land Use Policy** 42 (2015), p. 509-516.

REYDON, Bastiaan Philip, COSTA, Anderson Simões. O custo da regularização das propriedades rurais brasileiras: uma estimativa. **Revista de Política Agrícola**. , v.1, p.50 - 64, 2010. ISSN 1413-4969

SAGASHYA, D; ENGLISH, C Designing and Establishing a Land Administration System for Rwanda: Technical and Economic Analysis. In: DEININGER, K., AUGUSTINUS, C., ENEMARK, S., & MUNRO-FAURE, P. (Eds.). (2010). *Innovations in land rights recognition, administration, and governance*. The World Bank.

SPAROVEK, G ; REYDON, B. P. ; GUEDES PINTO, L. F. ; FARIA, V. ; DE FREITAS, F. L. M. ; AZEVEDO-RAMOS, C. ; GARDNER, T. ; HAMAMURA, C. ; RAJÃO, R. ; CERIGNONI, F. ; SIQUEIRA, G. P. ; CARVALHO, T. ; ALENCAR, A. ; RIBEIRO, V. .
Who owns Brazilian lands?. **LAND USE POLICY**, v. 87, p. 104062, 2019

WILLIAMSON, I. et al. (2010) **Land Administration for Sustainable Development**.
California: Readlands. 2010.

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