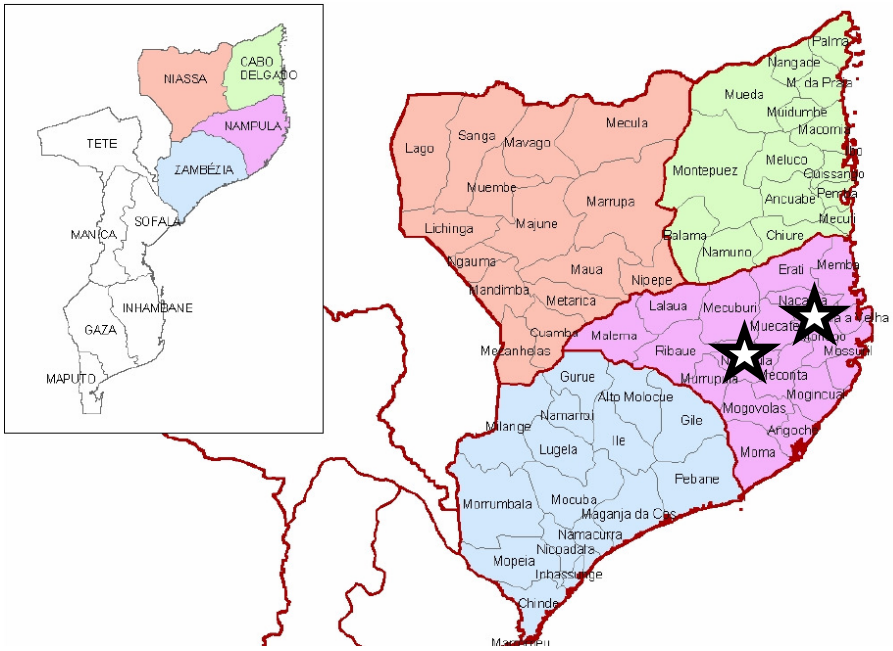
Impact Evaluation of Site-specific Activities under the Land Tenure Services Project: Report of the Baseline Survey Conducted in Two Urban Areas in Northern Mozambique



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Report submitted by
Michigan State University

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Glossary

AFRE	Department of Agricultural, Food and Resource Economics
CARRS	Department of Community, Agriculture, Recreation and Resource Studies
CENACARTA	National Center for Cartography *"Centro Nacional de Cartografia e Teledetecção"*
CsPro	Census and Survey Processing System
DEFF	Design effect
DiD	Difference-in-difference
DNTF	National Land and Forest Directorate
DUAT	"*Direito de Uso e Aproveitamento de Terra*" or Land Use Right (an official document provided by the land administration office providing formalized, long-term use rights for a specific land parcel)
EA	Enumeration Area
HDDS	Household Dietary Diversity Score
hh	Household
HTSPE	International Consultancy Company (acting as Service Provider)
IE	Impact Evaluation
INE	National Institute of Statistics
LIMS	Land Information Management System
MCA	Millennium Challenge Account
MCC	Millennium Challenge Corporation
MDES	Standardized Minimum Detectable Effect Size
MINAG-DE	Ministry of Agriculture-Department of Economics
MSU	Michigan State University
M^2	square meters
Mt	Meticais (Local currency)
NLPAG	National Land Project Advisory Group
PPS	Probability proportional to size
PSU	Primary Sampling Units
TIA	National Agricultural Survey
SPSS	Statistical Package for the Social Sciences
SRS	Simple Random Sampling
STATA	Data Analysis and Statistical Software

EXECUTIVE SUMMARY

The Government of the Republic of Mozambique and the Millennium Challenge Corporation (MCC), on behalf of the United States Government, signed a Compact Agreement, effective September 22, 2008 for a US $507 million grant, implemented over a 5-year period. The overall objective of the Program is to reduce poverty through economic growth in four Northern Provinces (Niassa, Cabo Delgado, Nampula, and Zambézia). As part of this broader initiative, the Land Tenure Services Project (or the *Land Project*) aims to establish more efficient and secure access to land by improving the policy and regulatory framework and helping beneficiaries meet their immediate needs for registered land rights and better access to land.

This report describes the impact evaluation design of activities related to 'improving land access in urban hotspot areas.' The site-specific interventions in priority bairros within Nampula city and Monapo vila are the subject of this impact evaluation. Activities to be evaluated include: a) Satellite mapping and inventory exercise; b) Capacity building of the local cadastral offices; c) Piloting a sound approach to area-wide registration of land rights.

The plan is to use a non-experimental *comparison group difference-in-difference* (DiD) design approach for this evaluation. Data will be collected at household level from both the treatment and control areas before and after the intervention. This report presents the results of the baseline survey conducted in 2010-11 of 1690 households –881 in Nampula city and 809 in Monapo vila. The results of the baseline data analysis presented in this report provide a picture of the status of surveyed households in study areas of Nampula city and Monapo vila across three broad categories: a) socio-economic characteristics (i.e., demographics, sources of income, asset holdings, and access to credit; b) land characteristics (i.e., land ownership, land markets, land investments, perceptions on tenure security and knowledge about land law and rights); and c) welfare characteristics (i.e., level of income, consumption and expenditure).

Socioeconomic and welfare characteristics of surveyed households

Results of the survey indicate that the head of the household in the study area, on average, is 41 years old, has 83% chance of ever attending a school and 77% chance of being literate. The typical respondent household has five to six members, with half of them less than 15 years of age. Approximately 27 percent of the households are headed by females. Despite the study area being urban/peri-urban, more than 80% of the households are engaged in agricultural activities. About 50% of the households derive income from self-employment, 24% from some type of salaried employment, and 22% from remittances. A household in the study area typically spends on average about 4,000 Mt/month (or $143) on food and about 2,200 Mt/month (or $80) on non-food expenses. This translates to a total expenditure per capita per day of 46 Mt or $1.66 (in $PPP). Based on the reported total expenditures, about 30-40% of people in the study area fall below the poverty line as defined by the national (16.7 Mt/day/person) and international measures (PPP $1.25/day/person). This estimated rate of headcount poverty in the study area is significantly less than the national estimates of poverty headcount in urban areas of 50%.

About 7% of the households in the study area had applied for credit in the past 12 months with an acceptance rate of 81%. Those that were denied the loan, 'insufficient collateral' was cited as

a reason by 27% of the respondents. For those that wanted credit but did not apply, reasons most cited were 'concerned about not being accepted,' 'lack of access,' and 'lack of collateral.'

In many ways, the treatment and control areas share similar characteristics (e.g., key demographics features, access to credit), but in other ways they are significantly different (assets, food consumption, expenditures). In terms of assets and food consumption the respondents in the treatment group are relatively better off. But in terms of expenditures and headcount poverty, the data show the advantageous position held by respondents in the control area.

Land ownership, land markets and perceived tenure security

A household in the study area typically has 2 land parcels--1.6 belonged to them and were in their possession, 0.1 was rented out, and 0.3 rented from others. Eighty percent of the land parcels in the study area are used for residential purpose and 20 percent for agriculture or other commercial purposes. The average size of a residential parcel is almost 600 m^2, which is one-tenth the size of an average agricultural parcel (6,235 m^2) in the study zone. A majority of the residential parcels have access to tap water (60%) and a mobile phone network (89%). Forty five percent of residential land parcels have electricity, and 42% have access to a tertiary road and 23% to an unpaved road.

More than 50% of the land parcels in the study area were acquired through purchase, which was the most common mode of acquisition. The average cost of acquiring a land parcel in the study zone was about 7,000 Mt or 23 Mt/m^2. Almost two-thirds of the land parcels located in the study zones has no documents that give the owners property rights to that parcel. For those that have some document, the most common was an affidavit of purchase/sales. Only 12 parcels in the entire sample had obtained a DUAT by the time of the baseline survey and about 50 parcel holders had initiated the process of obtaining a DUAT. However, 87% of parcel owners were interested in obtaining a DUAT and were willing to pay on average about 320 Mt for that transaction.

The hypothetical average sale price of land parcel in the study area was reported to be about 300 Mt/m^2 for residential plots and 48 Mt/m^2 for agricultural plots. Similarly, the hypothetical average monthly rental price for a land parcel in the study zone was reported to be about 25 Mt/m^2 or about 5,200 Mt for the whole parcel.

A large number of respondents did not respond to the question on whether they experienced any conflict in the past. However, in terms of potential land conflicts in the future, 18% of all parcel holders perceived to have potential land conflict in the future, mostly with formal authorities (43%) or neighbors (32%), and considered lack of DUAT (33%) and boundary errors (28%) as the main causes of conflict in the future. Also, more than 25% of respondents considered the risk of losing the parcel due to conflict to be very high, and another 12% considered that risk to be moderately high. Only 6% of the respondents perceived no risk of losing their land due to conflict. In terms of respondent's opinion about the effect of DUAT on conflicts and expropriation, a majority believed that demarcation/DUAT will make disputes more likely to be resolved (54%), will reduce the risk of expropriation of land (94%), and make the expropriation of land more transparent (93%).

In terms of the perceived effect of DUAT on the value of a parcel, a predominate majority (94%) reported the value to increase after having a DUAT. Similarly, about 57% of households were willing to pay more to purchase a parcel with DUAT than without DUAT, as against 35% who would be less willing to pay more. On the other hand, 50% of households indicated that they would be more willing to rent out their land if it had DUAT as against 42% that would rent out less with a DUAT.

The study area is characterized by a thin rental market. Of the total number of parcels surveyed in the study area, 12% were either rented-in (8%) or rented out (4%). About one-third of the rental transactions were among relatives and two-thirds involved non-relatives. Only 7% of parcels rented-in involved a contract, whereas 28% of parcels rented out were based on a rental contract. Correspondingly, only 17% of parcels rented-in involved cash payment as against 88% of parcels that were rented out. The average monthly rental rate across all rented parcels in the study area was reported to be 6 Mt/m^2 (or 407 Mt for the whole parcel) for the residential plots and 0.12 Mt/m^2 (or 4,687 Mt for the whole parcel) for agriculture plots.

About 28% of households reported making at least one type of investment on land in the 12 month prior to the survey, which affected 4% of all the parcels documented in the study area. The most common type of investment related to electricity, repairs of roof, and construction of new building/house. On average, the households in the study area spent about 100,000 Mt in the past 12 months on repairs, rehabilitation, and upgrades on their land. Two-thirds of the households indicated that they would be more likely to make improvements/investments on their land if they had DUAT. The opinion on the use of land as a collateral for credit if it had DUAT was rather mix, with 28% more likely to use it for that purpose but 17% more unlikely to do so. If the household would use the land as collateral, more than 50% indicated that they would use the credit for business purpose, 27% would use it for agriculture and 19% would use it for improvements/expansion of their existing property.

In general, the knowledge about the land law was found to be poor in the study area. Only 13% of households reported to be informed about the 1997 land law. Of those who were informed about the law, only 12% know fair amount about the law, and 76% know very little and 8% knew nothing about the content of the law.

As against the demographic characteristics of the households, the treatment and control areas in the Nampula and Monapo vila are very dissimilar in terms of parcel characteristics, behavioral variables related to land (e.g., investment, rental, sales), perceptions and opinion about land conflict and risks of expropriation, and knowledge of land law. On several of these key variables, the parcels and parcel holders differ significantly. The non-experimental nature of the research design has thus resulted in underlying incongruence between the two groups that lead to the observed differences.

In conclusion, the baseline survey provides extensive information about the land economy in the two urban hotspot areas in Nampula. At this time, the best use of the data is to create a description of the treatment and comparison groups. Following the second round of the survey, it should be possible to draw substantiated conclusions about the impact of land regularization intervention (that will result in more number of parcels with DUATs) on the parcel holders.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

Impact Evaluation of Site-specific Activities under the Land Tenure Services Project: Report of the Baseline Survey Conducted in Two Urban Areas in Northern Mozambique

1. Introduction

Mozambique has a population of more than 20 million inhabitants, approximately 70 percent of whom are located in rural areas and 30 percent in urban areas. Emerging from a sixteen-year civil war in 1992, Mozambique has grown rapidly. Despite Mozambique's rapid macro-economic growth, half of the Mozambican population still lives in poverty, many in the Northern region and in rural areas. Given Mozambique's rapid urbanization, the country's next stage of economic recovery cannot succeed without well-functioning public services in its cities.

In June 2007, realizing the need and importance for increasing the productive capacity of the population in Northern Mozambique, the Millennium Challenge Corporation (MCC) signed a five-year, $506.9 million compact with the Republic of Mozambique with the intended impact of reducing the poverty rate, increasing household income and reducing chronic malnutrition in the targeted districts. As part of this five year Compact (which entered into force in September 2008), the Land Tenure Services Project (or simply the 'Land Project') aims to establish a more efficient and secure access to land by improving the policy framework; upgrading land information systems and services; helping beneficiaries meet immediate needs for registered land rights; and better access to land for investment. The Land Project's objectives are to: (i) increase the level and value of investment on land; (ii) increase access to land; (iii) reduce the costs associated with acquiring land user rights; and (iv) resolve and prevent conflicts over land. Investments are targeted to all four Northern Provinces (Cabo Delgado, Niassa, Nampula and Zambezia), at all levels of administration – National, Provincial, and District / Municipal – and across a range of beneficiaries, including rural individual land holders, rural communities, urban land holders, and domestic and international investors.

Initiatives such as those by the Land Tenure Services project that aim to strengthen the property rights system are generally designed to result in clearly defined rights that are enforceable, transferable, and of appropriate duration and scope. An improved system should lower land-transaction costs, lower the risk of expropriation or conflict, and increase tenure security. In the medium or longer term, the system should contribute to more efficient land uses due to improved productivity, increased investment, and the development of land markets. More productive land should result in higher asset/land values and higher incomes for property owners. Over time, as land and financial markets develop formal land rights can also be used as collateral for loans.

Empirical studies suggest that impacts of land tenure projects vary considerably from country to country, depending on market development, financial institutions, legal frameworks, and beneficiary income. Land tenure reform has demonstrated impacts for economic growth that reaches the poor, but can have socially differentiated impacts that need to be measured and monitored. Monitoring and evaluation is thus essential for a results-based approach to program management. A detailed M&E plan has already been developed by the Millennium Challenge Account-Mozambique (MCA) and MCC to monitor the various Projects to determine whether

they are achieving their intended results and measure their larger impacts over time through rigorous evaluations (MCA-Mozambique 2010). In addition to performance monitoring activities that measure implementation progress and intermediate results, MCC is also committed to conducting independent impact evaluations of its programs as an integral part of its focus on results. These impact evaluations aim to measure the changes in individual, household or community income and well-being that result from a particular project or program. The distinctive feature of an impact evaluation (as versus performance monitoring or project evaluation) is the use of a counterfactual, which identifies what would have happened to the beneficiaries in the absence of the program. This counterfactual is critical to understanding the improvements in people's lives that are directly caused by the program.

For the external impact evaluation of the Land Project, MCC and MCA have partnered with Michigan State University and the Ministry of Agriculture Department of Economics (MINAG-DE), respectively, to implement the evaluation. The partnership is unique because of MSU's longstanding research and analysis capacity building initiative with MINAG-DE. MSU has had a dedicated in-country team assigned to MINAG-DE since 1992 and it has been contracted by MCC to design the impact evaluation for the Land Project, assist MINAG-DE in carrying out the baseline and follow-up surveys for MCA, conduct regular field visits for quality control and technical guidance, carry out data analysis, and write up results. This Report serves as one of the outputs of this collaboration between MSU and MINAG-DE towards the impact evaluation of the Land Tenure Services Project in Mozambique. The report first outlines the overall impact evaluation strategy for the Land Project, which is comprised of three components—an evaluation of site-specific activities in urban hotspot areas, an evaluation of site-specific activities in rural hotspot areas, and the evaluation of the overall policy monitoring and capacity building activities. A bulk of this report then focuses on the first of these three components and describes the impact evaluation design, including the sampling methodology used for the site-specific activities in urban 'hot spot' areas, and reports the results of the baseline survey conducted in 2010-11 in two urban areas—Nampula city and Monapo vila. The baseline surveys reported in this document will serve as a basis for estimating the impacts of 'site specific activities in urban hotspot areas' after a follow-up survey is completed in 2013.

2. Impact Evaluation Strategy for the Land Project

The Land Project in Mozambique is comprised of three mutually reinforcing pillar activities:

- Policy Monitoring Pillar (Pillar I): Improve the policy environment by addressing implementation problems with the existing land law, conducting regulatory reviews to improve upon it, and supporting training for predictable, speedy resolution of disputes;
- Capacity Building Pillar (Pillar II): Build the institutional capacity to implement policies and to provide quality public land-related services by investing in human and information resources; and
- Site-specific Pillar (Pillar III): Facilitate access to land use by helping individuals and businesses with clear information on land rights and access and with registering their grants-of-land use.

The Land Project will be evaluated using rigorous, quasi-experimental design methods and will address impacts of these three Project 'Pillars' through three independent evaluations as described below.

Evaluation of the Policy Monitoring Activity (Pillar I) and Capacity Building Activity (Pillar II): The coverage and scope of project activities under these two pillars ranges from national (i.e., Pillar I) to four northern provincial and district/municipal level (Pillar II). Pillar I includes activities such as: outreach and education on the 1997 Land Law; the development of institutional structures for land administration; formation of Land Policy Consultative Forum; providing technical and logistical support to monitor progress on land legislation; undertaking broad campaign of public education, outreach and raising awareness of non-judicial dispute resolution methods; expansion of legal and judicial training programs; providing advisory services to *Direcção Nacional de Terras e Florestas* (DNTF); professional development and training of staff in the use of the Land Information Management Service (LIMS). Rigorous impact evaluation is not possible for these sets of activities because of their universal coverage.[1] Thus, impact of these activities on households will be assessed through the national *Trabalho de Inquerito Agricola* (TIA) survey using a difference-in-difference approach. The 2008/09 TIA survey (which is representative at the provincial and national levels) includes questions about household knowledge of land security, transfers, access, and women's rights to land. It also includes plot level information on land ownership. Results from the 2008/09 TIA will serve as the baseline and are the subject of a separate report submitted to MCA and MCC. After Pillars I and II activities are implemented, TIA will be carried out again throughout the country in 2013 and the same questions will be included in the follow-up. Results from 2013 will be compared with results from 2009 and between the Northern Provinces and the rest of the country to tease out the causal effects of policy and capacity building activities of the Land Project.

Institutional upgrading and technical assistance (Pillar II) will be targeted to Provincial, district, and municipal offices in the four Northern Provinces. The activities will include upgrading of district land service offices and technical assistance for cadastral development in municipalities. Like Pillar I, the evaluation team will use the TIA to test the impact of Pillar II activities. The 2008/09 TIA includes questions about land transaction types, frequency, and costs. Results from the 2008/09 TIA will serve as the baseline for these key indicators. After Pillar II is implemented, TIA will be carried out again throughout the country in 2013 and the same questions will be included in the follow-up. Following implementation of the 2013 TIA, key indicators in the Northern Provinces' districts will be compared to districts across the rest of the country.

The description of this evaluation and results of the baseline TIA 2008-09 survey is the subject of another report to be submitted to MCC/MCA.

[1] Note, however, that the site specific activities (rural and urban hotspots) are in a way a cumulative sum of all these activities to be implemented because they are the smallest unit of geographic area affected by all the national, provincial, district and municipal level interventions (one built on the other). Thus in one sense, the cumulative impacts of these activities will be evaluated under the rigorous IEs of the hotspot areas.

Evaluation of Site Specific Access to Land (Pillar III): One of the major problems in the current land administration system in Mozambique is the lack of information available regarding actual land use and land use rights, natural resource distribution and existing resource rights. Pillar III of the Land Project deals with the compilation of land use and resource inventories, mapping and planning processes, and streamlining access to land in priority areas. It is focused on each of the 12 selected districts and 8 municipalities in the northern part of the country as depicted in Figure 1.

Two evaluations are planned to cover Pillar III activities related to 'improving land access in hotspot areas'--one targeted to selected districts representing rural areas, and another one targeted to selected municipalities representing urban areas. Because Pillar I and II will also affect these areas, these evaluations will test the impact of receiving Pillars I, II and III versus just receiving Pillars I and II activities. The plan is to use a non-experimental *comparison group difference-in-difference* (DiD) design approach for these evaluations. Thus, both the evaluation designs will involve a control/comparison group of hotspots that do not receive the Pillar III intervention and data will be collected at household level from both the treatment and control areas before and after the intervention. The comparison hotspots will include areas very similar to the treatment hotspot area in important ways (demographics, poverty, land use, etc.) but which will not receive the intervention. The baseline survey in rural hotspots is currently underway and its results will be reported separately. The rest of this report is devoted to describing the impact evaluation of the urban area hotspots and presenting the results of the baseline survey conducted in 2010-11 towards this evaluation.

3. Impact Evaluation Design for the Site Specific Activities in Urban Hotspots

3.1 Rationale for MCA investments in site specific activities under the Land Project [2]

A fundamental goal of land tenure reform is to enhance people's land rights and thereby provide tenure security. Land tenure has long been recognized by economists as 'a public good' just like education, health, safety and security. The nature and strength of property rights have a profound impact upon economic decision-making through their effects on expectations of returns on investment of labor and capital. This holds true in rural areas on customary land, in the informal sector and in urban areas. Tenure security is also determined by the extent to which governance systems recognize these rights and provide mechanisms for their enforcement.

The legal regime in relation to land tenure in Mozambique offers protection of land use rights (both for investment purposes and the rights acquired by existing occupiers of land) and, further, provides a framework within which informal acquired rights can be formalized, either as common holdings in the name of groups of occupiers or as individual land parcels. Both nationally and internationally, this has been recognized as a good policy framework. However, implementation has been slow and regulatory and cadastral functions are not affordable by the population at large.

[2] This section borrows heavily from MCC's Land Tenure Services Final Report, February 2007.

According to the inception report by the land project implementing contractor, HTSPE, the current land and property administration systems in Mozambique handle only a very small proportion of the actual population land needs. Procedures are largely geared to meet the applications for formal DUATs for a limited section of the population – mostly consisting of investors. Demand, in comparison to the population and numbers of households is very low, either because of the perceived difficulty and high cost of obtaining a formal DUAT, or because the title itself and the laws that underwrite it are not sufficiently well understood by all land occupants. Accurate figures are difficult to obtain but it is estimated that not more than 2-3 percent of land holdings nationally have DUATs, with a high proportion of these being provisional DUATs. In rural areas, the report states that plots allocated directly through the state represent less than 7%, that customary systems are responsible for 42% of cases, simple occupation or self-service represent 41%, and the remaining 10% of the cases occurred through informal land markets. Access through customary systems or through simple occupation remains the predominant form of land acquisition in rural Mozambique district.

The underlying rights of existing occupants, if they do not have a formal DUAT are not registered or recorded. This means that sporadic applications may be made over existing rights. There is currently no formal land user rights registry system for the majority who already occupy the land and no provision for systematic registration. This is an important feature of current land administration in Mozambique and is the source of several of its problems.

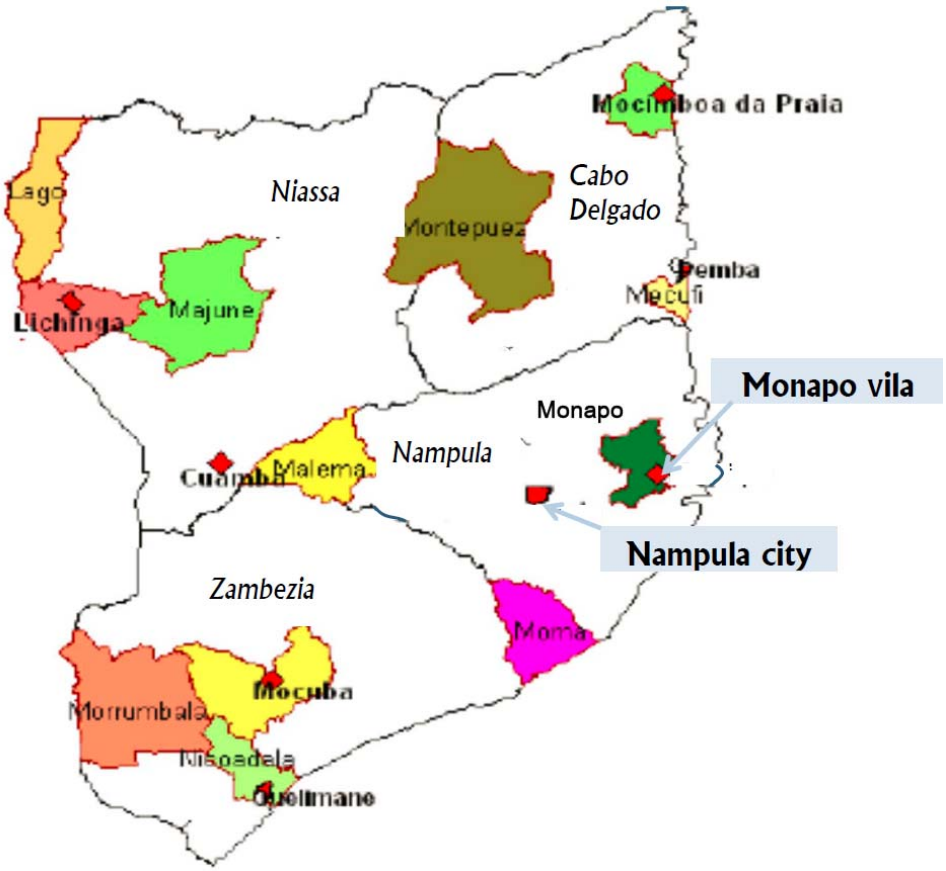
The Land Tenure Services Project under the MCA compact is designed to address many of these constraints and limitations of the land administration system in Mozambique against a background of a growing population, increasing demands for land for investment and a large and growing informal market in land. It is recognized that in order to guarantee rights of access to land and to reduce the bureaucracy associated with obtaining land title (i.e., DUAT), requires an efficient land administration system. It is this system as a whole that envisaged to play the primary role in increasing land tenure security and improving access to land. This requires significant technological and technical upgrades to provincial, district and municipal cadastral offices and there is a need for institutional strengthening and a reorientation of the land administration system in general to improve efficiency within the system. The site specific activities under pillar III of the Land Project are designed to address this need for streamlining procedures, developing and piloting approaches towards the rapid securing and formalization of land use rights and to build the capacity of relevant local authorities in implementing these procedures. The objective is to improve access to land in priority areas.

3.2 Project sites, scope of the activities and selection of sites for rigorous IE

The eight municipalities in the four Northern provinces depicted as small red spots in Figure 1 form the universe of intervention sites in urban areas for Pillar III activities. Within each of these eight municipality-governed urban areas, some areas (administratively known as '*bairros*') have been identified as priority or hotspot areas where the focus will be to pilot a sound approach to area-wide registration of land rights. In each of these priority bairros, specific interventions are planned to address some hotspot issues related to expansion, requalification and regularization. The end goal of the intervention in selected hotspot areas (i.e., also referred as 'site-specific

activities') is the establishment of land titles through parcel demarcation. The impact evaluation described in this document is focused on assessing the impacts of 'the establishment of land titles' in urban priority/hotspot bairros in these selected eight municipalities.

Figure 1. Priority geographic areas of intervention for site-specific activities in four provinces in northern Mozambique under the MCA-Mozambique Land Tenure Services



Legend: small areas in red correspond to selected municipalities (total 8—Linchinga, Cuamba, Pemba, Mocimboa da Praia, Nampula city, Monapo vila, Mocuba and Quelimane) and areas in other colors correspond to selected districts (total 12—Mecufi, Mocimboa da Praia, Montepuez, Majune, Lago, Lichinga, Monapo, Moma, Melema, Nicoadala, Morrumbala and Mocuba) for Pillar III activities

The process that resulted in the identification of the eight municipalities for Pillar III activities and then the selection of priority/hotspot bairros within these selected municipalities was conducted by NLPAG (the National Land Project Advisory Group) with active involvement and participation of the local governments. A list of the eight municipalities and the selection criteria they meet for Land Project activities is given in Table 1. The priority areas (or *bairros*) identified for site specific activities within these eight municipalities are the smallest unit of project interventions of the Land Project in urban areas. As such, the impacts to be observed at the beneficiary level in these priority areas (or *bairros*) will be a cumulative sum of all the three pillar activities of the Land Project (i.e., policy, capacity building and site specific activities).

Table 1: Selection criteria met by the eight municipalities selected for Land Project activities in four Northern provinces

	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6
Provincia da Zambézia						
Quelimane-cidade			X			X
Mocuba-cidade		X	X		X	X
Provincia de Nampula						
Monapo-Vila	X	X	X		X	X
Nampula-cidade	X		X		X	X
Provincia de C. Delgado						
Pemba-cidade	X	X			X	X
Mocimboa da Praia- vila	X	X				X
Provincia do Niassa						
Lichinga-cidade	X	X	X			X
Cuamba-cidade	X	X	X			X

Key for Criteria: 1 = high demand for DUATs; 2 = government priority; 3 = local technical capacity exists; 4 = surpport from other sources (financial and human); 5 = land use plans exist; 6 = high risk of land conflicts.

Since, collecting primary survey data from all eight hotspot areas was resource intensive and not practical, it was mutually decided by MCC/MCA and MSU to conduct the rigorous impact evaluation of the 'site-specific land intervention' only in two urban hotspot areas. It was also decided that the focus of the IE will be to evaluate the impacts of interventions targeted on hotspot issue of requalification / regularization and not expansion. Thus, two municipal areas of Monapo vila and Nampula city (prominently identified in Figure 1) were selected for this rigorous impact evaluation based on the following criteria:

- Large numbers of bairros facing the same hotspot issue in a given municipality
- Ability to identify comparison bairros to estimate the effects of the intervention in a rigorous and robust manner
- Indication that project interventions in hotspot areas are planned earlier in MCA's 5-year implementation plan (to ensure enough time to observe outcomes and impacts).

The geographic coverage includes three priority bairros in Nampula city and six priority bairros in Monapo vila (Table 2). These were selected and prioritized by the municipalities based on some set criteria and were outside the control/influence of the impact evaluation team.

Table 2. Project intervention bairros for "hotspot" site specific activities under Pillar III

Nampula City	**Monapo vila**
Muhala – Sede	Mucaca
Namutequeliua	Mecutane
Muahivire	Topelane
	Moagem
	Boa Viajem
	Metoprime

In the context of urban areas, the interventions planned in selected municipalities include support to the formalization of land use rights in informally settled areas, the systematic planning of

development areas and the parceling of land plots for subsequent attribution. It also includes the development of civic education materials and communication initiatives at local level (including seminars, workshops and public hearings) and support to local authorities in providing the public with up-to-date information on the land use and land tenure status of particular areas. The site-specific interventions in priority bairros that are subject of this impact evaluation include following activities which are implemented with technical assistance from service providers such as CENACARTA, and implementing partners (HTSPE and Verde Azul):

a) The satellite mapping and inventory exercise
b) Capacity building of the local cadastral offices
c) Piloting a sound approach to area-wide registration of land rights

3.3 Research questions addressed by the IE

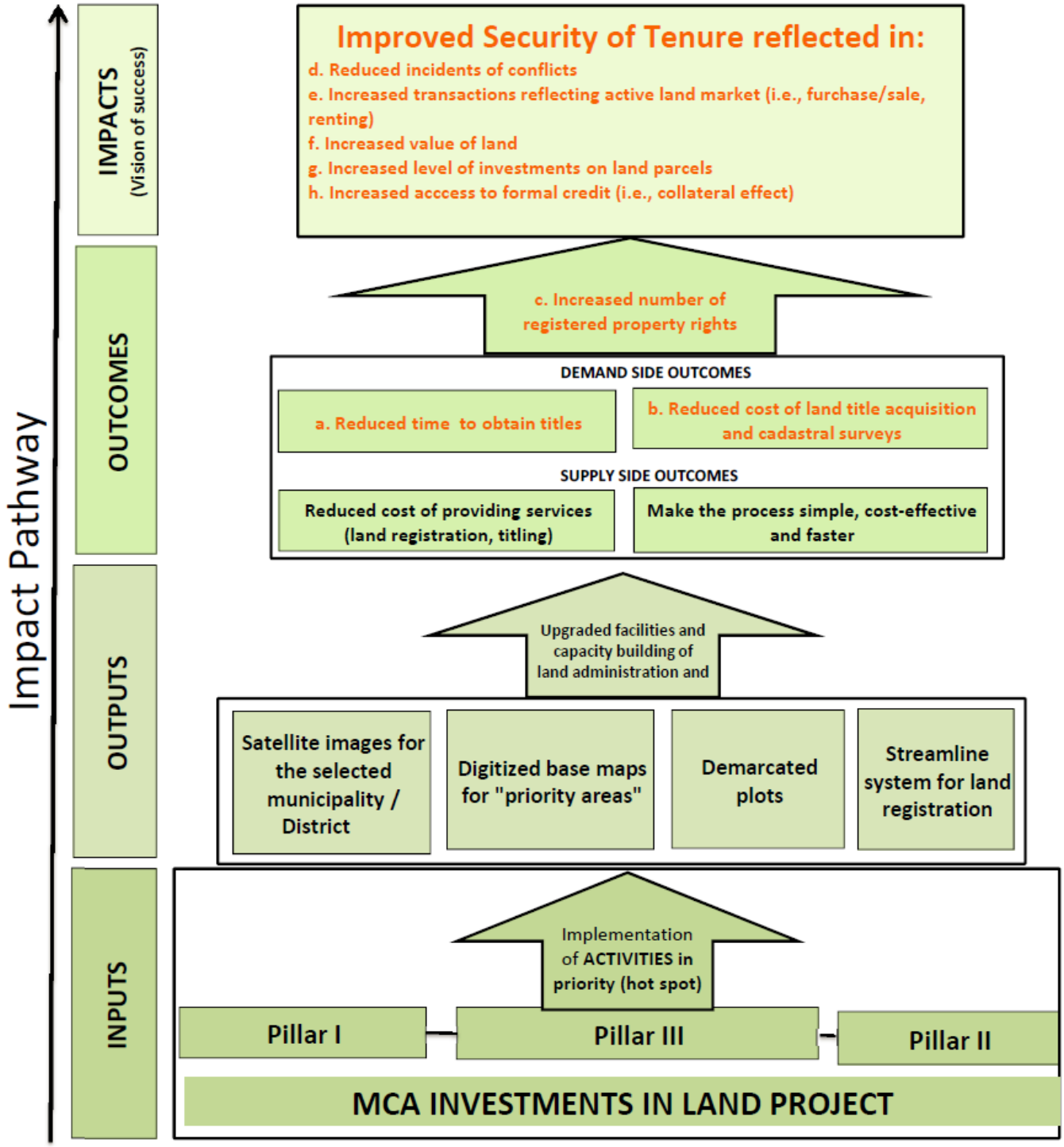
The goal of these interventions is to make the land administration units (i.e., the cadastral offices) in the selected municipality (in this case, Monapo vila and Nampula city) more efficient and well-prepared in meeting client needs (i.e., put in place procedures / infrastructure to reduce time and cost for potential clients to obtain land title acquisition and cadastral surveys). The implicit assumption is that the streamlined and improved systems of accessibility, recording, storage and service delivery for land administration and the cadastre, will bring increased demand on those, more efficient, services. Increased demand will in turn trigger improved service outlets, and commensurate changes in institutional arrangements. This will in turn clarify existing rights in land through a clearer and more accurate system of recording and registering rights and reduce the current conflicts in land.

The expected outcomes of this intervention are that this will increase the number of land users registering their lands and consequently increasing productive activities on those parcel of lands, and generating positive benefits in terms of increased income and economic growth in the region. The impact pathway hypothesized for this intervention is summarized in Table 3. Initiatives to strengthen the property rights system as envisaged in Nampula city and Monapo Vila are generally designed to result in clearly defined rights that are enforceable, transferable, and of appropriate duration and scope. An improved system should lower land-transaction costs, lower the risk of expropriation or conflict, and increase tenure security. In the medium or longer term, the system should contribute to more efficient land uses due to improved productivity, increased investment, and the development of land markets. More productive land should result in higher asset/land values and higher incomes for property owners. Over time, as land and financial markets develop formal land rights can also be used as collateral for loans.

Empirical studies suggest that impacts of land tenure projects vary considerably from country to country, depending on market development, financial institutions, legal frameworks, and beneficiary income. Land tenure reform has demonstrated impacts for economic growth that reaches the poor, but can have socially differentiated impacts that need to be measured and monitored. The purpose of the rigorous IE design for the two urban hotspot areas is to precisely measure and monitor these impacts and assess the causality in effects outlined in the impact pathway. The key research questions guiding our design of the evaluation for urban hotspot activities in Nampula City and Monapo Vila are to evaluate the extent to which there is evidence

of change in indicators of outcomes and impacts identified in Figure 2 (in red font) that can be attributed to the Land Project.

Figure 2. Impact pathway (or the logic framework) for site-specific intervention in priority bairros (i.e., to address the hotspot issue related to requalification/regularization)



Source: Authors' compilation

3.4 Impact evaluation method and approach

By conducting an impact evaluation of the Land Project activities in two urban priority areas of Nampula and Monapo we intend to quantitatively estimate the change in the situation of the population due to the cumulative execution of all the activities under the Land Project (national, provincial, municipal and bairro levels). Thus we plan to compare the outcome of the targeted population in the presence of the program relative to the population's outcome if the program had not been implemented. In other words the basic principle that guides our approach is the comparison between situations "with" the project activities and "without" the project activities, also known as "treatment effect". This is as opposed to merely comparing beneficiaries "before" and "after" the project implementation (i.e. assessing the change in the situation of the beneficiary between before and after simply assessing the difference between participants and non-participants). Unfortunately, it is not possible to compare the same population in both the states--with and without the program exposure.

Practically, to address this problem, we estimate the average impact of the program on a group of individuals by comparing them to a similar group of individuals that are not directly affected by the program. Therefore, one critical step of any impact evaluation exercise is to establish a credible control group. A number of different empirical approaches have been employed to establish the credible comparison group (or control group). The most robust approach is randomization – in which the treatment group and control group are randomly selected from all the eligible sampling units (either clusters or individuals). A randomized experiment guarantees that there are no differences in the observed and unobserved characteristics (on average) between the treatment and control group and thus, a statistically significant difference in outcomes between the two groups can be attributed to the program.

However, given the fact that the intervention bairros (or the treatment bairros) listed in Table 2 were already selected by project implementers there was no scope of random assignment. Thus, we plan to adopt a non-experimental *comparison group difference-in-difference* (DiD) design approach. Under this approach, units of observations (i.e., households) from the treatment bairros (i.e. all or a sub-set of bairros listed in Table 2 that receive project intervention before year 5) will be matched to units of observations from other bairros (that will not be receiving the project intervention by year 5) that are from the same municipalities and share similar hotspot issues and outcomes will be compared between these two groups before and after the intervention. Examining how outcomes change for households in the comparison group, who were not exposed to area-wide registration of land rights, will inform us about how those outcomes would have changed in the absence of the intervention for the treatment group.

The DiD approach essentially measures the difference of outcome indicators between participants (treatment group) and nonparticipants (comparison group) before and after program intervention. In the context of panel data (with a baseline survey and a follow up survey of the same households), DiD is a common and valid method to estimate the impact of an intervention if the assumption that unobserved heterogeneity is time invariant and uncorrelated with the treatment effect is satisfied. While the main advantage of DiD is its ability to allow for selection on unobserved factors, its assumption of constant selection bias over time may be unrealistic in practice.

Let Y be the outcome of interest (etc. land investment, land market participation, household income, off-farm employment, etc.). Our goal is to evaluate the impact of a specific intervention ***T*** (i.e., issue DUAT to urban residents) on *Y* after a time period 1. Specifically, we can achieve this evaluation through DiD as:

$$DD = E[Y_1^T - Y_0^T] - E[Y_1^C - Y_0^C] \qquad (1),$$

where the superscripts T and C refer to treatment and control households, respectively; the subscripts 1 and 0 refer to time period 1 (after the intervention) and time period 0 (the baseline period), respective; T=1 refers to Treatment group. The regression counterpart of (1) is the following:

$$Y_i = \alpha + \beta T_i + \gamma t + \delta(T_i * t) + \varepsilon_i \qquad (2)$$

Where T_i is the dummy to distinguish treatment group (T=1) from control groups (T=0), t is a time dummy (t=0 for before treatment and t=1 for after the treatment). In (2), we can further add other control variables (***X***) to increase the efficiency of the estimation. DiD is widely used in impact evaluation of policy interventions especially when the experimental data are not available (see discussion by Duflo, Glennerster and Kremer 2007; Ravallion 2005). The DiD approach was also used by similar studies on land titling projects in other countries (Deininger et al. 2011, Di Tella 2007; Field 2007).

3.5 Identifying the comparison communities and data collection plan

There are two things needed to implement the DiD IE design:
1. Identification of treatment and comparison sites, and
2. Data collection from both treatment and comparison sites before and after intervention.

The prioritized bairros listed in Table 2 are the potential pool of treatment sites for this IE. The units of impact observation will be households. Thus, households within the boundary of these listed bairros serve as the treatment group. If the time line for implementing the interventions in prioritized hotspots was such that project implementer could have staggered the implementation across these bairros over time, ideally, we could have implemented a 'pipeline' design whereby the order of project intervention across prioritized bairros could have been randomized. In that scenario, bairros randomly assigned to receive intervention in the first year could have served as treatment and bairros randomly assigned to receive the intervention in year 5 could have served as control. However, based on the discussions with municipal staff and project implementing partners, it is clear that a pipeline design is not feasible for these two selected municipalities. The reason is that the intervention bairros have been already prioritized from among a pool of all potential bairros in the municipality, and in the case of Monapo they have been assigned a priority order.

Given this reality, we are using the following strategy in each of these two municipal areas to ensure we have sufficient number of comparison households to implement the DiD design.

For Nampula, the strategy is to select two additional bairros (Muatala and Mutauanha) that are facing the same hotspot issue but is not in the priority list. Baseline data will be collected from all five bairros—the three priority bairros and two non-priority bairros. Any bairro that does not receive the intervention by Year 5 (before the follow-up survey), will also serve as an additional comparison site for the IE.[3]

For Monapo, we are following a similar strategy but the numbers are different. We have selected following bairros (which are all peri-urban) to serve as comparison bairros.[4]

Mulotine
Nachicuva
Naheruque
Micolene
Nova Cuamba

In addition, if any of the seven priorities bairro does not receive intervention before the follow-up survey planned in year 5, then that bairro will also serve as a comparison bairro. Thus, the IE plan consists of conducting baseline and follow-up surveys in five bairros (3 priority + 2 extra) in Nampula and 11 bairros (6 priority + 5 extra) in Monapo.

4. Survey Design: Sample Size, Sample Selection and Data Collection Method

4.1 Sample size

The power of the design is the probability that, for a given effect size and a given statistical significance level, we will be able to reject the hypothesis of zero effect. Sample sizes, as well as other design choices, will affect the power of an experiment. To estimate the total sample size for this IE design, we treat Nampula city and Monapo Vila as two independent evaluations, but both addressing the same impact questions for similar interventions. For each of these two urban areas, we follow the steps described below (and elaborated in Table 3) to estimate the total sample size.

In step 1, we applied the power calculation based on a simple random sampling method using the formula in equation 3 to estimate the minimum required sample size for Nampula city and Monapo Vila based on the following parameter values: a power (k) of 80% (i.e., t_{1-k}=0.84), a significance level (α) of 0.10 ($t_{\alpha/2}$=1.65), and portion of subjects allocated to treatment group (P=0.5), and a standardized minimum detectable effect size (MDE), m=(MDE/σ) of 0.25.

[3] Given the large size of each bairro in Nampula, it is likely that it may take more time to complete all the intervention activities in four bairros. If the interventions are undertaken in a sequence and it takes an average one year to complete one bairro, then this scenario is potentially possible.

[4] Ideally, we would have preferred an evaluation design that had a mix of urban and peri urban bairros in both the treatment and control sites. However, since the municipality has already selected priority bairros (which are all urban bairros) and the order in which they will be treated, we are left with only peri-urban bairros for control group.

$$n = \left[\frac{(t_{1-k} + t_{\alpha/2})^2}{m^2 * P(1-P)} \right] \qquad (3)$$

Equation (3) is basically the same as equation (7) in Duflo et al. (2007). The only difference is that we use to solve for sample size rather than for MDE and the *m* in equation 3 is the standardized MDE (i.e., minimum detectatble effect size divided by standard deviation).

The estimated minimum sample size based on this formula and the given parameter values noted above came to 397 for each city (Table 3). Table 4 shows how the sample size would change under different parameter values to achieve the power of 90%. For example, the number would change to 413 if we change P to 0.6. Alternatively, with P=0.5, the sample size estimate is 501 if we change α to 0.05. The corresponding number of observations for α=0.10 (or 0.05) would further increase to 620 (or 780) if we set *m* at 0.2 instead of 0.25.

Table 3: Steps used in estimating the sample size for the IE design

Steps	**Parameters**	**Nampula**	**Monapo Vila**
1: Apply "Simple Random Sampling" method	Power (k) of 80%	80%	80%
	Significance level (α)	0.10	0.10
	Portion of subjects allocated to treatment group (P)	0.5	0.5
	Standardized minimum detectable effect size (MDE), m=(MDE/σ)	0.25	0.25
	Estimate of minimum sample size (SRS)	**397**	**397**
2: Adjust for the design effect	Design effect (DEFF)	2.0	2.0
	Effective sample size = SRS * DEFF	**794**	**794**
3: Adjust for attrition from baseline to follow-up survey	Attrition factor	**13%**	**11%**
	Adjusted sample size = Effective sample size * (1+ attrition rate)	897	881
	Sample Size (Rounded off)	**900**	**880**

Table 4: Sample size required to achieve the power of 80% under different parameter values

		(MDE/σ)=0.25		(MDE/σ)=0.20	
P	1-P	α=0.10	α=0.05	α=0.10	α=0.05
0.50	0.50	**397**	501	620	780
0.60	0.40	413	523	681	861
0.65	0.35	436	551	646	816
0.70	0.30	472	597	738	933

In reality, as a means of saving money, the simple random sampling is rarely used because it requires the researcher to sample across all geographic areas within the domain. Thus, cluster sampling is more common than a simple random sampling approach. In this IE design, we also plan to follow this practical approach and sample households from a sub-set of enumeration areas (EAs) within a given bairro. This cost saving measure, however, does reduce the confidence level of the estimates for a given sample size. This loss of effectiveness by the use of cluster sampling, instead of simple random sampling (SRS), is the **design effect,** defined as the ratio of the actual variance under the sampling method actually used, to the variance computed under the assumption of simple random sampling.

In general, using a cluster sample generally requires either a larger sample size than a simple random sampling or using a wider confidence interval. The design effect is used to determine how much larger the sample size or confidence interval needs to be. The main components of the design effect are the intraclass correlation, and the cluster sample sizes. Given the fact that we are potentially interested in many outcome variables in this IE design and the data requirement at the EA level from previous surveys to estimate the intra class correlations for all the outcome indicators, which were not available to us, we used a simplistic approach of assuming the design effect to be 2.0. Most studies in the literature report a design effect in the range of 1 to 3[5] (Shackman 2001); so this assumption of a design effect = 2 is not unrealistic.

In second step, the estimated sample size from SRS was multiplied by the design effect (2.0) to get an effective sample size (Table 3). However, given the potential attrition rate for the longitudinal survey, in step 3 we increased the sample size for both the urban areas in the baseline survey by a factor of 13% for Nampula (which is more urbanized) and 11% for Monapo (which is peri-urban and more rural). The end result of all the three steps is an estimated total sample size of 900 households for Nampula city and 880 households for Monapo Vila (Table 3). These are the target sample size for the IE design in the two urban hotspot priority areas.

4.2 Sampling method

Once the sample size was determined as described above, the actual selection of the sample of households is done as described below. The sampling frame for the purpose of this IE is defined as "households that have land in the given municipality."

A two-stage sample design was used for selecting the households for the survey in most bairros. The sampling frame was based on the data and cartography from the 2007 Mozambique Census. The primary sampling units (PSUs) were defined as the enumeration areas (EAs), which are operational segments defined for the census enumeration. The EAs have an average of about 100 households each, which is an effective size for conducting a new listing of households in the sample EAs. The sampling frame is updated through the listing in sample EAs to represent the current population of each bairro. The instrument used in the listing exercise is provided in Annex 1.

[5] Some studies also report design effects less than 1 and more than 3.

In each of the smaller bairros of Monapo Vila with 12 or less EAs the entire bairro was listed, and one-stage sampling was used, as explained in the next section. Therefore in the case of Monapo Vila two-stage sampling was only used for the bairro of Nachicuva, which has 21 EAs in the frame. Tables 5 and 6 present the distribution of the EAs and total households in the census frame for each bairro.

In the case of the bairro of Mutauanha in Nampula City the geographic subdivisions of the bairro were changed after the 2007 Census. This bairro was subdivided into 151 quarteirões of similar size, so a sample of quarteirões was selected at the first stage with equal probability. A listing of households was then conducted in each sample quarteirão for the selection of households at the second sampling stage.

Each bairro can be considered a separate sampling stratum. Within each stratum the EAs in the sampling frame were ordered geographically in order to provide additional implicit stratification and ensure a representative geographic distribution of the sample. The units of analysis for the survey are the individual households and the persons within each household.

Table 5. Distribution of EAs and Households from 2007 Mozambique Census Frame for Bairros in Nampula City for the Impact Evaluation Survey

Domain and Bairro	Type of Residence	Number of EAs	Number of Households
Nampula City			
Muatala	Urban	77	9,731
Muhala-Sede	Urban	76	11,380
Mutauanha	Urban	72	13,438
Namutequeliua	Urban	51	9,405
Muahivire	Urban	78	11,052

Table 6. Distribution of EAs and Households from 2007 Mozambique Census Frame for Bairros in Monapo Vila for the Impact Evaluation Survey

Domain and Bairro	Type of Residence	Number of EAs	Number of Households
Monapo			
Mucaca	Peri urban	9	1,108
Mecutane	Urban	8	743
Topelane	Urban	7	676
Moajem	Urban	5	489
Boa Viagem	Urban	5	537
Metoprime	Urban	4	386
Mulotine	Peri urban	6	610
Nachicuva	Peri urban	21	2,008
Naheruque	Peri urban	6	508
Micolene	Peri urban	8	477
Nova Cuamba	Peri urban	12	1,355

4.3 Sample distribution

As elaborated earlier, it was determined that a sample of 900 households would be selected for the bairros in Nampula City, and a sample of 880 households would be selected for the bairros in Monapo Vila. In the case of a two-stage sample, another important consideration is the number of households to be selected at the second stage in each sample cluster; this will affect the dispersion of the sample and the resulting precision of the survey estimates. In the case of a socioeconomic survey such as this evaluation study the optimum number of sample households per cluster is generally between 10 and 16 households. Taking into account the overall distribution of the sample and logistical issues for the fieldwork, it was determined that it would be effective to select 15 households per cluster for the bairros in Nampula City, and 16 households per cluster for the bairros of Monapo Vila.

At the first stage a sample of 10 EAs were selected for each bairro in Nampula City except for Muahivire, where 20 sample EAs were selected because of its size. In the case of Monapo Vila it was originally planned to select 5 EAs in each bairro at the first sampling stage and select 16 households in each sample EA at the second stage, for a total sample of 80 households in each bairro. However, given that most of the bairros in Monapo Vila only had between 4 and 12 EAs in the frame, it was decided to list all the households in each of these bairros, and then select a one-stage sample of 80 households in each bairro. The only bairro in Monapo Vila where two-stage sampling was used is Nachicuva, where 5 EAs were selected out of the 21 EAs in the frame for this bairro.

For the bairros where two-stage sampling was used, the EAs were selected at the first stage systematically with probability proportional to size (PPS), where the measure of size was based on the number of households in the 2007 Census frame. This sampling procedure will control the variability in the sampling weights within each bairro. The only exception was in the case of the bairro of Mutauanha in Nampula City, where the sample quarteirões were selected with equal probabilities. Table 7 shows the distribution of the sample EAs and sample households for each bairro in Nampula City and Monapo Vila.

4.4 Sample selection procedures[6]

As indicated previously, a two-stage sample design was used for the bairros in Nampula City and for the bairro of Nachicuva in Monapo Vila. For each of these bairros the sample EAs were selected with PPS at the first sampling stage using the following procedures:

(1) The measures of size (number of households in the 2007 Census frame) were cumulated down the ordered list of EAs within the bairro. The final cumulated measure of size was equal to the total number of households in the frame for the bairro (M_h).

[6] This section and the following section are extracted from the report prepared by David Megill, the Sampling Consultant for MSU (see Megill 2011).

(2) To obtain the sampling interval for bairro h (I_h), M_h was divided by the total number of EAs to be selected in bairro h (n_h): $I_h = M_h/n_h$.

(3) A random number (R_h) between 0 and I_h was selected. The sample EAs in bairro h were identified by the following selection numbers:

$S_{hi} = R_h + [\, I_h \times (i - 1)]$, rounded up, where i = 1, 2, ..., n_h.

The i-th selected EA is the one with a cumulated measure of size closest to S_{hi} but not less than S_{hi}.

An Excel file was used for selecting the sample EAs in each bairro for the impact evaluation survey using these procedures, based on the final allocation of the sample EAs shown in Table 7. The Excel file has a separate spreadsheet for each bairro, showing the ordered list of EAs with the corresponding information from the sampling frame of EAs. These spreadsheets document the first stage systematic selection of sample EAs with PPS for each bairro. The file has a summary spreadsheet with the information from the frame for all sample EAs, and formulas for calculating the probabilities and weights based on the information in the frame.

Table 7. Distribution of Sample EAs and Households by Bairro for Urban Hotspot Impact Evaluation Survey

Domain and Bairro	Sample EAs	Sample Households
Nampula City		
Muatala	10	150
Muhala-Sede	10	150
Mutauanha	10*	150
Namutequeliua	10	150
Muahivire	20	300
Monapo		
Mucaca	All	80
Mecutane	All	80
Topelane	All	80
Moajem	All	80
Boa Viagem	All	80
Metoprime	All	80
Mulotine	All	80
Nachicuva	5	80
Naheruque	All	80
Micolene	All	80
Nova Cuamba	All	80

*Sample quarteirões

In the case of the bairro of Mutauanha in Nampula City, the sample quarteirões were selected systematically with equal probability at the first sampling stage. In this case the same first stage selection procedures were followed, but the measure of size for each quarteirão was equal to 1.

A listing of households was conducted in each sample PSU (EA or quarteirão). At the second stage the sample households were selected systematically with equal probability from the listing for each PSU. A sample of 15 households was selected in each sample PSU for the bairros in Nampula City, and 16 households were selected in each sample PSU for the bairro of Nachicuva in Monapo Vila. In the case of each of the remaining bairros in Monapo Vila, all the households in the entire bairro were listed, and a random systematic sample of 80 households was selected with equal probability from the combined listing for the bairro.

4.5 Estimation procedures

In order for the sample estimates from the impact evaluation survey to be representative of the population, it is necessary to multiply the data by a sampling weight, or expansion factor. The basic weight for each sample household would be equal to the inverse of its probability of selection (calculated by multiplying the probabilities at each sampling stage). The sampling probabilities at each stage of selection were maintained in an Excel spreadsheet with information from the sampling frame for each sample EA.

In the case of the bairros in Nampula City and the bairro of Nachicuva in Monapo Vila where a two-stage sample design was used, the overall probability of selection for sample households in the impact evaluation survey can be expressed as follows:

$$p_{hi} = \frac{n_h \times M_{hi}}{M_h} \times \frac{m_{hi}}{M'_{hi}},$$

where:

p_{hi} = probability of selection for the sample households in the i-th sample EA in bairro h
n_h = number of sample EAs selected in bairro h for the survey
M_h = total number of households in the sampling frame of EAs for bairro h
M_{hi} = total number of households in the frame for the i-th sample EA in bairro h
m_{hi} = number of sample households selected in the i-th sample EA in bairro h
M'_{hi} = total number of households listed in the i-th sample EA in bairro h

The two components of this probability of selection correspond to the individual sampling stages. The basic sampling weight, or expansion factor, is calculated as the inverse of this probability of selection. Based on the previous expression for the probability, the weight can be simplified as follows:

$$W_{hi} = \frac{M_h \times M'_{hi}}{n_h \times M_{hi} \times m_{hi}},$$

where:

W_{hi} = basic weight for the sample households in the i-th sample EA in bairro h

If m_{hi} is constant for each bairro (15 or 16, for example), the sample will be approximately self-weighting within each bairro. These weights will actually vary slightly based on the difference between the number of households listed in each sample EA and the corresponding number from the sampling frame.

In the case of the bairro of Mutauanha in Nampula City, the basic weight would be calculated in the sample way, except that for each sample quarteirão $M_{hi} = 1$, and $M_h = 151$, the total number of quarteirões in the bairro.

For the bairros in Monapo Vila where one-stage sampling of households was used, the basic probability is calculated as follows:

$$p_h = \frac{m_h}{M'_h},$$

where:

p_h = probability of selection for the sample households in bairro h
m_h = 80 = number of sample households selected in bairro h
M'_h = total number of households listed in bairro h

The basic weight for these bairros in Monapo Vila will be the inverse of this probability, expressed as follows:

$$W_h = \frac{M'_h}{m_h},$$

where:

W_h = basic weight for the sample households in bairro h

It is also important to adjust the weights to take into account the non-interviews in each sample EA or bairro. In the case of the bairros in which two-stage sampling was used, the weights are calculated at the level of the sample EA, so it is advantageous to adjust the weights at this level. In the case of the bairros with a one-stage sample of households, the weights can be adjusted at the bairro level. The final weight (W'_{hi}) for the sample households in the i-th sample EA in stratum h can be expressed as follows:

$$W'_{hi} = W_{hi} \times \frac{m_{hi}}{m'_{hi}},$$

where:

m'_{hi} = total number of sample households with completed interviews in the i-th sample EA in bairro h

In the same way, the final weight (W'_h) for the sample households in bairro h using one-stage sampling can be expressed as follows:

$$W'_{hi} = W_h \times \frac{m_h}{m'_h},$$

where:

m'_h = total number of sample households with completed interviews in bairro h

It is important to calculate sampling errors and confidence intervals for estimates of the key survey indicators. Given the stratification and clustering in the sample design, it is important to use a variance estimator that takes into account the nature of the design. The statistical software packages Stata and the Complex Samples module of SPSS have a linearized Taylor-series type of variance estimator that takes into account the sample design. It is necessary to specify the stratum, cluster and weight variables in the data file. For this survey the strata are defined as the bairros. In the case of the bairros where two-stage sampling was used, the PSUs are the EAs, so there should be a unique PSU code for each sample EA. However, for the bairros where one-stage sampling was used, the PSUs are the individual households, so each household should have a unique PSU code.

4.6 Baseline data collection

The baseline data were collected by interviewing the head of the households using a structured questionnaire. The questionnaire included more than 25 sections encompassing modules on:

- Household characteristics (demographic information by each member of the HH)
- Employment and sources of any other cash transfers
- Identification and list of all the parcels
- Land conflicts
- Rights to the land and perceptions of the risk
- Parcels rented out, rented in
- Characteristics of parcels
- Investments on land
- Perceptions about the DUAT, renting land and the land law
- Relative space occupied by crops in the plot
- Production and sales of basic food crops, cash crops, vegetables, fruits, nuts, etc.

- Agricultural practices
- Ownership of Assets
- Monthly expenditures
- Credit in the last 12 months
- Livestock and sub-products produced and sold in the last 12 months
- Consumption

The survey had detailed sections for each of the outcomes to be evaluated, both intermediate and final outcomes. In addition, each of the survey households were geo-referenced for ease of locating them for the panel survey. In households that were male-headed with a spouse present, the spouse was the respondent for the livestock and food consumption modules. The survey was designed to take between 1 and 1 ½ hours to complete.

The baseline survey was implemented from October-December 2010. If the head of the household was not present at the time of the first visit, enumerators tried to make an appointment and returned again to interview the appropriate person within the time that the survey team was in the area. Despite this strategy, the actual number of households surveyed turned out to be 1690—881 in Nampula city and 809 in Monapo vila (Table 8). A total of 90 households selected for the survey as per the sample design were not surveyed either because they refused or there was no one present at the time of the interview (due to travel status or out-migration). A field report in Portuguese on the survey implementation experience has been submitted by MINAG to MCA. A summary of this report in English is included in Annex 2 of this report.

Table 8. Number of households surveyed by type of bairro

NAMPULA CITY			**MONAPO VILA**		
	HHs interviewed			**HHs interviewed**	
Bairro	**Treatment**	**Control**	**Bairro**	**Treatment**	**Control**
Muatala		145	Mecutane	76	
Muhala-Sede	147		Boa Viagem	78	
Mutauanha		140	Metoprine	75	
Namutequeliua	150		Moagem	63	
Muahivire	299		Mucaca	74	
			Topelane	72	
			Micolene		73
			Mulotine		74
			Naherengue		78
			Nova Cuamba		69
			Nachicuva		77
Total	**596**	**285**		**438**	**371**
Overall					
Treatment			**1,034**		
Control			**656**		

Source: MCA/MINAG Urban Land Survey, 2010

5. Results

The results of the baseline data analysis presented in this section provide a picture of the status of surveyed households in study areas of Nampula city and Monapo vila across three broad categories: a) socio-economic characteristics (i.e., demographics, sources of income, asset holdings, and access to credit; b) land characteristics (i.e., land ownership, land markets, land investments, perceptions on tenure security and knowledge about land law and rights); and c) welfare characteristics (i.e., level of income, consumption and expenditure). For each characteristic, results are pooled across Nampula city and Monapo vila by treatment status (i.e., treatment and control groups). However, results separated for each municipality by treatment and control groups are presented in Annex 4 with the corresponding Table number. Also, for selected indicators, the disaggregated data for Nampula city and Monapo vila and by gender of the head of the household are presented in Tables in Annex 3 with the corresponding number. In order to determine if and where the project and control groups have different characteristics before project activities commence, T-tests were performed for each variable to compare the pooled means for the project and control groups. We identify cases where the difference between the mean values is statistically significant at 0.10 or better by the number of asterisks.

5.1 Socio-economic characteristics

5.1.1 Household demographics

Table 9 presents key demographic characteristics of the households of the study area. Results in Table 9 reveal that about 27% of the households in the study area are headed by women, the average age of the head of the household is 41 years, about 83% have at least some formal education and about 11% are currently attending school.

The household size in the study area is 5.6, which is equivalent to 4.3 in adult equivalent measure. Across the study area, a typical household has on average of one infant, two young children, and two adults. In terms of difference between the treatment and control groups, the households in the treatment groups are a bit larger in size (5.7 members), with a higher proportion of women as adult members of the household (52.1%), and have a higher literacy rate (77.3%) than control group households (Table 9).

Further analysis (Annex Table A3.9), shows that Nampula city have significantly greater number of households headed by women, more households who know how to read and write, and more households currently enrolled in school compared to Monapo vila, this pattern is also observed with regards to the household size. The male head of the households are on average one year older than their female counterparts. In terms of difference between the treatment and control sites within a municipality, the households in treatment bairros in Nampula city is larger than control households, has more adult members and higher aged head of the household (Annex Table A4.9). In Monapo vila, a significantly more heads of the households can read and write in treatment bairros and have more adult male members than in the control bairros (Annex Table A4.9).

5.1.2 Type of Employment and Income Sources

In the study area, the main sources of income are agricultural activities (80% of households engaged in crop production and 24% in livestock activities) and self-employment (ranging from cutting/collecting fire wood to purchase and sale of food products) (Table 10). The percentage of households engaged in these important activities and deriving sources of income is significantly higher in the treatment group compared to the control group.

Table 9. Demographic characteristics by bairro type

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% of households headed by women	27.1%	1034	27.8%	656	27.4%	1,690	
Age of the household head (years)	41.4	1034	40.3	656	40.9	1,690	
Education of the head:							
Know to read and write	77.3%	1034	76.0%	656	76.8%	1,690	**T>C
Currently enrolled	12.2%	1034	8.5%	656	10.6%	1,690	
Have ever been to school	83.0%	1034	83.6%	656	83.2%	1,690	
Household size:							
Total number of members	5.7	1034	5.5	656	5.6	1,690	**T>C
Total Adult Equivalent[7]	4.4	1034	4.2	656	4.3	1,690	***T>C
Women as percentage of all adults, 15 years of age or older	52.1%	1032	49.6%	656	51.1%	1,688	**T>C
Household composition: average number of members per age group							
Infant (<5 years)	1.0	1034	1.0	656	1.0	1,690	
Child (5-15 years)	1.7	1034	1.7	656	1.7	1,690	
Adult (15-45 years)	2.4	1034	2.4	656	2.4	1,690	
Adult (45-60 years)	0.4	1034	0.3	656	0.4	1,690	*T>C
Older (> 60 years)	0.1	1034	0.1	656	0.1	1,690	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

A minority of households in the study area across both treatment and control sites are involved in salaried employment, which includes teaching/health service (11%), agricultural labor (11%), and working as a mechanic, construction or factory worker (9%). Pensions and remittances are other important sources of income for the households in the study area. Results in Table 10, indicate that less than 6% of the surveyed households receive pensions (6.5% in treatment sites and 4.8% in control group). The percentage of households receiving remittances from others is 22% for the overall study population, with the percentage of households relying on this source of income significantly higher in treatment group (24%) compared to control group (19%). The percentage of households deriving sources of income from some minor categories of self-employment such as migrant worker, domestic worker, cutting grass, brick laying, tailoring, etc. is significantly higher in control groups compared to treatment areas (Table 10).

[7] Factors drawn from Deaton (1997), used by Boughton et al. (2006) and Mather and Donovan (2009) for Mozambique.

Table 10. Percentage of households reporting income from different sources and type of economic activity

	Treatment (T)		Control (C)		Total		Testing
Source of income	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**(a)**
Remittances and pensions:							
% of household that received pension	6.5%	1034	4.8%	656	5.8%	1,690	
% of household that received remittances	24.3%	1,034	19.2%	656	22.2%	1,690	*T>C
% of households engaged in agricultural activities:							
Crop production	83.3%	1,034	75.4%	656	80.0%	1,690	**T>C
Livestock	26.5%	1,034	21.6%	656	24.4%	1,690	
Salaried employment: % of households with members working as							
Agricultural laborer	13.9%	1,034	6.1%	656	10.6%	1,690	
Migrant worker	0.0%	1034	0.5%	656	0.2%	1,690	**T<C
Teacher, health service	9.1%	1,034	13.5%	656	11.0%	1,690	
Mechanic, construction, factory worker	9.0%	1034	8.1%	656	8.6%	1,690	
Manager, accountant, secretary	1.9%	1034	4.5%	656	3.0%	1,690	*T<C
Domestic worker	2.4%	1034	4.5%	656	3.3%	1,690	***T<C
Sales person, service industry	0.3%	1034	1.0%	656	0.6%	1,690	
Other salaried employee	27.2%	1034	19.1%	656	23.8%	1,690	
Self-employment: % of households engaged in collecting and selling forest and fauna products							
Cut/collect firewood	21.8%	1,034	17.4%	656	20.0%	1,690	**T>C
Charcoal production	1.2%	1,034	0.3%	656	0.8%	1,690	
Cut grass, cane, palm tree leaves	6.4%	1,034	7.8%	656	7.0%	1,690	**T<C
Cut branches	2.1%	1,034	2.0%	656	2.0%	1,690	
Collect honey, bush plants and fruits, eggs of wild animals	0.1%	1,034	0.0%	656	0.1%	1,690	
Hunting	0.1%	1,034	0.4%	656	0.2%	1,690	
Fishing	0.5%	1,034	0.5%	656	0.5%	1,690	
Wood production	0.6%	1,034	0.1%	656	0.4%	1,690	
Catching birds and reptiles	0.1%	1,034	0.6%	656	0.3%	1,690	
Other self-employment activities:							
% of households undertaking these activities	49.5%	1034	46.5%	656	48.2%	1,690	**T>C
Production of home-made beverages	4.2%	1,034	6.8%	656	5.3%	1,690	
Purchase/sale of beverages	3.1%	1,034	3.8%	656	3.4%	1,690	
Purchase/sale of food products	23.5%	1,034	19.2%	656	21.7%	1,690	**T>C
Purchase/sale of all commercial goods	3.0%	1,034	2.8%	656	2.9%	1,690	
Purchase/sale of fish	6.6%	1,034	4.5%	656	5.8%	1,690	**T>C
Purchase/sale of small size livestock and its by-product	1.1%	1,034	0.6%	656	0.9%	1,690	
Purchase/sale of medium size livestock and its by-product	4.8%	1,034	2.4%	656	3.8%	1,690	
Purchase /sale of large size livestock and its by-product	1.0%	1,034	0.1%	656	0.6%	1,690	*T>C
Handcrafts/masonry/carpentry	2.4%	1,034	2.0%	656	2.2%	1,690	
Tailoring/dressmaking	0.8%	1,034	2.3%	656	1.5%	1,690	*T<C
Radio/bike repair	0.9%	1,034	0.3%	656	0.7%	1,690	
Bricks production, bricklaying	1.5%	1,034	2.6%	656	2.0%	1,690	*T<C
Milling or agro-processing	0.5%	1,034	0.0%	656	0.3%	1,690	
Other activity	6.8%	1,034	6.4%	656	6.6%	1,690	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Disaggregation by cities, by treatment and control groups within a city or by gender of the household head reveals considerable variation in terms of relative importance of different income sources between Nampula city and Monapo Vila, between the treatment and control groups within a city as well as between male headed households and female headed households (Annex Table A3.10 and A4.10). For example, while 23% of households in Nampula are engaged in livestock production, share of households engaged in this activity is 35% in Monapo Vila.

However, the share of households engaged in livestock activity within Nampula city is more in treatment vs. control bairros (Table A4.10). Similarly, 27% of male headed households reported to have raised some animals, compared to 19% of female headed households who reported to have done the same. The difference in share of households receiving pension or remittances between the two cities and the two head groups is also statistically significant. But within a city, the difference between treatment and control sites is not statistically significant.

5.1.3 Non-land family assets

In the municipalities of Nampula city and Monapo vila, the five most common household assets in their order of abundance are beds, mobile phones, radios, television, and coal iron, while the least common assets held, not surprisingly, are washing machines, air conditioners, gas stove, and mixed stove (Table 11). Among the major assets owned, households in treatment group have significantly more cars, mobile phones, fridge and gas stoves. On the other hand, households in control villages have significantly more sewing machines and coal irons (Table 11).

Further analysis by cities (see Annex Table A3.11 and Table A4.11) suggests some vast difference in asset ownership between the two cities and the treatment status within a city, especially within Monapo vila. While more than half of households (51%) and almost one third of the households (29%) in Nampula city own television and freezer, respectively, the corresponding figures are only 19% and 12% in Monapo vila. This is however consistent with the fact that Nampula is more urban than Monapo vila. The asset ownership also tends to vary with household head's gender, but the magnitude is smaller in most cases compared to the comparison between Nampula and Monapo vila. In general, the treatment households have significantly more assets than the control bairros in both the cities for many items where the difference is statistically significant (Table A4.11).

Results in Table 12, indicate that on average households located in the treatment villages have significantly greater number of assets (6.6), assets recently purchased (0.7) as well as the total average value of recently purchased assets (US$ 200) compared to those in the control sites. This is also the case when treatment bairros are compared with control bairros within the two cities (Annex Table A4.12).

Table 11. Percentage of households owing various assets, by bairro type

Item	Treatment (T) Mean	N	Control (C) Mean	N	Total Mean	N	Testing (a)
Car, purchased new	0.6%	1,034	0.3%	656	0.5%	1,690	
Car, purchased second hand	4.8%	1,034	1.6%	656	3.5%	1,690	***T>C
Motorcycle	14.0%	1,034	13.3%	656	13.7%	1,690	
Bicycle	17.6%	1,034	18.5%	656	18.0%	1,690	
Radio	47.3%	1,034	43.3%	656	45.6%	1,690	
Sound system	24.6%	1,034	23.7%	656	24.2%	1,690	
Television	47.9%	1,034	45.4%	656	46.8%	1,690	
Washing machine	0.2%	1,034	0.2%	656	0.2%	1,690	
Air conditioner	0.7%	1,034	0.2%	656	0.5%	1,690	
Sewing machine	2.5%	1,034	5.1%	656	3.6%	1,690	***T<C
Fridge	7.6%	1,034	3.4%	656	5.8%	1,690	***T>C
Freezer	27.8%	1,034	25.6%	656	26.9%	1,690	
Electric iron	22.9%	1,034	17.8%	656	20.7%	1,690	
Coal iron	34.1%	1,034	38.0%	656	35.8%	1,690	*T<C
Fan	28.9%	1,034	22.4%	656	26.2%	1,690	
Beds (double, single, cot for children, and bunk beds)	82.5%	1,034	81.0%	656	81.8%	1,690	
Landline telephone handset	0.8%	1,034	0.2%	656	0.6%	1,690	
Mobile phone	60.2%	1,034	51.7%	656	56.6%	1,690	**T>C
Computer	4.5%	1,034	3.0%	656	3.8%	1,690	
Printer	2.2%	1,034	1.4%	656	1.9%	1,690	
Wall clocks, wrist or pocket	30.4%	1,034	28.5%	656	29.6%	1,690	
Electric stove	2.4%	1,034	2.3%	656	2.4%	1,690	
Gas stove	0.9%	1,034	0.3%	656	0.7%	1,690	**T>C
Mixed Stove	1.0%	1,034	0.5%	656	0.8%	1,690	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table 12. Average number and value of purchased assets per household

Item	Treatment (T) Mean	N	Control (C) Mean	N	Total Mean	N	Testing (a)
Average total number of assets per household	6.6	1,034	5.9	656	6.3	1,690	***T>C
Average number of assets recently purchased	0.7	1,034	0.5	656	0.6	1,690	**T>C
Total value of assets recently purchased per household ($US)	200.46	1,034	68.59	656	145.05	1,690	***T>C

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Further analysis reported in Annex Table A3.12 shows that Nampula city as well as the male-headed households has significantly greater non-farm assets and total average value of assets

compared to Monapo vila and female-headed households, respectively. For instance, these results show that the male-headed households have spent on average $166.96 in the last 12 months purchasing durable goods, twice as much as the female-headed households in the same time period.

5.1.4 Livestock assets

In Mozambique, livestock ownership is an indication of not only the wealth of a household but also a potential source of income generation. Table 13 reports that about 24% of the surveyed households raised animals in the last 12 months. Among those who raised animals, the most common form of selling animals is by slaughtering (54%), while only about 13% sold animals alive. Those who sold slaughtered animals; a significantly greater proportion is from treatment sites (61%).

Further analysis indicates that a significantly greater number of households in Monapo vila raise animals compared to those in Nampula city (see Annex Table A3.13). However, the difference between treatment and control bairros is not significant in Monapo vila (Annex Table A4.13). In Nampula city, more households in treatment bairros raised and sold animals than households in control bairros. Analyzing the gender differences in terms of livestock, survey results show that significantly greater number of male-headed households (27%) raise animals compared to female-headed households (19%) (Table A3.13).

Table 13. Production and sales of livestock and sub-products in the last 12 months

	Treatment (T)		Control (C)		Total		Testing
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**(a)**
% households that raised animal in the last 12 months	26.5%	1,034	21.6%	656	24.4%	1,690	
Among the households that raised animals:							
% that sold animals alive in the last 12 months	10.8%	320	17.6%	191	13.3%	511	
% that sold slaughtered animals in the last 12 months	60.5%	320	43.6%	191	54.2%	511	*T>C
Average Tropical Livestock Units (TLU) owned[8]	0.29	320	0.22	191	0.26	511	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

5.1.5 Access to credit

Financial services in Mozambique are scarce. Recent national surveys have shown very low level of credit access. Results in Table 14 are surprisingly higher than the national average of 3.5% and 2.6% according to MINAG (2005) and MINAG (2008); respectively. About 7% of the surveyed households in Nampula city and Monapo vila, reported having applied for credit, with no significant difference between the treatment and control bairros when pooled across the two cities. But within Nampula city, the percentage of household who applied for credit was significantly more in control bairros than in treatment bairros. The opposite was the case in

[8] Livestock Unit (LU) conversion factors: Cattle (0.65), buffalo (0.70), sheep and goat (0.10), pig (0.25) and poultry (0.01) (FAO, 2005), exclude rabbit.

Monapo vila (Annex Table A2.14). The most cited reasons for applying for credit was food consumption (28%), asset purchases (27%), and 'other uses' not disclosed (34%). Health, ceremonies and education were also reported as reasons for applying for credit by 17%, 9% and 8% of households, respectively. It is important to note that except for asset purchase, all the uses of credit reported are similar across treatment and control sites.

For those households who did not apply for credit, the main reasons provided are the concern of not being accepted (28%) no need (21%), and lack of access to credit services (20%) (Table 15, bottom panel). Lack of collateral was cited as the next important reason for not applying for credit by 10% of households in treatment areas and 15% of households in control areas.

Table 14. Access to credit in the last 12 months

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% of households that applied for credit in the last 12 months	7.1%	1,034	6.9%	656	7.0%	1,690	
Reasons for applying for credit (% of households):							
Food consumption	27.8%	84	28.9%	47	28.3%	131	
Agricultural investment	4.0%	84	5.3%	47	4.5%	131	
Ceremonies	12.0%	84	3.5%	47	8.6%	131	
Education	1.8%	84	17.0%	47	7.9%	131	
Health	2.7%	84	37.4%	47	16.7%	131	
Asset purchase	26.9%	84	27.1%	47	27.0%	131	*T<C
Travel	5.6%	84	1.9%	47	4.1%	131	
Other	36.1%	84	30.8%	47	33.9%	131	
For those who did not apply, reasons for not applying for credit (% of households):							
No need	22.7%	950	17.9%	609	20.7%	1559	
Was refused	2.4%	950	1.8%	609	2.1%	1559	
Lack of access	20.4%	950	18.7%	609	19.7%	1559	
Concerned about not being accepted	26.0%	950	30.4%	609	27.8%	1559	
Lack of collateral	10.0%	950	15.4%	609	12.3%	1559	
High transaction costs	3.0%	950	4.2%	609	3.5%	1559	
Do not want to offer collateral	3.2%	950	2.0%	609	2.7%	1559	
Do not want to have debts	8.1%	950	7.5%	609	7.9%	1559	
Other	3.7%	950	2.0%	609	3.0%	1559	**T>C

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing comparing (A) and (B), (C) and (D); (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Further analysis indicates that Monapo vila has a significantly greater number of households who applied for credit for food purchases and food consumption, while the reverse is observed for investment in agriculture and travel (Annex Table A3.14). Looking at the gender issue, the survey data indicates significantly greater male-headed households applying for credit but, significantly lower number of those households using it for investment in agriculture. The difference between treatment and control sites within a municipality in terms of reasons for applying or not applying for credit is not statistically significant (Annex Table A4.14).

In terms of sources of credit, the most common sources of credit are the bank (41%), friends (24%), and associations (13%) (Table 15). Among these major sources, friends are a major source of credit for a significantly more numbers of households in the treatment areas (29%) than in the control sites (17%). On the other hand, government and relatives seem to be the sources of credit application for a significantly more number of households in the control sites (16% and 12%, respectively) than in the treatment sites (7% and 6%, respectively) (Table 15). However, when each city is examined separately, the differences between treatment and control sites is not statistically significant for any sources of credit (Table A4.15).

Table 15. Percentage of households that applied for credit (N=131) by source of credit

	Treatment (T)		Control (C)		Total		Testing (a)
Source of credit	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Government	5.5%	84	16.0%	47	9.7%	131	
Bank	46.0%	84	33.7%	47	41.0%	131	
Associations	6.9%	84	22.3%	47	13.2%	131	
Companies	0.6%	84	0.3%	47	0.5%	131	
NGOs	2.4%	84	1.2%	47	1.9%	131	
Traders/Businessmen	0.3%	84	2.0%	47	1.0%	131	*T<C
Relatives	6.8%	84	12.1%	47	8.9%	131	
Friends	29.2%	84	16.9%	47	24.2%	131	
Other	3.8%	84	0.3%	47	2.4%	131	*T>C

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing comparing (A) and (B), (C) and (D); (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

On average, the amount of credit requested by those who accessed credit in the past 12 months (131 total households) is about $1,155, with households from the treatment sites requesting a significantly greater amount of money ($1,242) than those in the control sites ($1,027). About 16% of those who applied for credit had to present collateral (16.3% households in treatment group and 15.9% in control area) (Table 16). The success rate in obtaining the credit from the applied sources is only 81% and the amount received as loan was about $635, equivalent to about 55% of amount requested (Table 16). The average amount of loan received by households in the control area ($659) is significantly higher than the average loan amount received by households in the treatment group ($618). Similarly, the term of the loan is significantly longer for the households in the control area (1.51 years) than in the treatment area (0.83 years), which also translates in to a significantly higher amount of total loan repayment by the households in the control group(1.40 loan to repayment ratio) than in the treatment group (1.16 loan to repayment ratio). Among those that were denied loans, 27% of them across the study area were denied because of the insufficient collateral and insufficient income (Table 16).

Further analysis presented in Annex Table A3.16 indicates while there is no significant difference in share of households applying for the credit and the amount of credit requested by those who applied between the two cities, the amount received per household is significantly higher in Monapo than in Nampula (US$ 21,955 versus 13,698). However, in terms of

comparisons between treatment and control sites within the two municipalities, there is no statistically significant difference in the amount received or requested (Annex Table A4.16). In the meantime, male headed households are significantly more likely to apply for credit and tend to request significantly more credit when they applied than female headed households Annex Table A3.16).

Table 16. Amount requested and accessed per household and reasons for not accessing credit

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% of households that applied for credit	7.1%	1,034	6.9%	656	7.0%	1,690	
Among those who applied (total N=131):							
Average total amount requested per household ($US)	1,242.02	84	1,027.33	47	1,155.20	131	***T>C
Median total amount requested per household ($US)	218.10	84	181.75	47	218.10	131	***T>C
% of households that had to present collateral	16.3%	84	15.9%	47	16.1%	131	*T>C
% of households by type of collateral presented:							
House	5.6%	84	0.3%	47	3.4%	131	
Other	8.0%	84	4.1%	47	6.4%	131	
Unreported	2.8%	84	11.5%	47	6.3%	131	*T<C
% household that received credit	79.8%	84	82.8%	47	81.0%	131	
% households that were denied credit	20.2%	84	17.2%	47	19.0%	131	**T>C
Among those who received credit (total N=95):							
Average amount received per household ($US)	617.51	57	658.89	38	634.62	95	**T<C
Median amount received per household ($US)	141.77	57	181.75	38	181.75	95	**T<C
Average amount to repay per household ($US)	719.36	57	916.12	38	800.70	95	**T<C
Median amount to repay per household ($US)	141.77	57	363.50	38	218.10	95	**T<C
Average time to repay the credit (years)	0.83	57	1.51	38	1.17	95	*T<C
Among those who were denied credit (total N=36):							
% of household by reasons for not getting credit:							
Insufficient income	7.7%	27	60.1%	9	26.9%	36	
Insufficient collateral	31.6%	27	19.2%	9	27.0%	36	
Other debts	1.6%	27	0.0%	9	1.0%	36	
Other reason	56.6%	27	18.8%	9	42.8%	36	**T>C

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
Exchange rate: 1.00USD=27.51

5.2 Land ownership, land markets and perceived tenure security

Respondents were asked a detailed set of questions on land assets that include parcel locations, parcel characteristics in terms of size, use type, mode of acquisition, cost of transaction, lease documents, market participation, land value, perception about land tenure security, etc. In this section, we present the baseline findings on all these aspects.

5.2.1 Profile of land parcels surveyed in terms of location, size, use, and ownership status

The baseline data set contains an inventory of 3,992 parcels reported as being 'in possession' by the 1,690 households surveyed in the Nampula city and Monapo vila. Table 17 provides an overview of the location of these parcels in terms of those falling within the study areas (treatment and control bairros) versus those falling outside the study boundaries. These parcels are also categorized by the main use of the parcel. Not surprisingly, a majority of parcels are used for residence (1950) or agriculture purposes (1898). Very few parcels were reported to be used mainly for commerce (22) and some were reported as vacant parcels or their use was not reported (117) (the last column.in Table 17).

A majority of parcels that are mainly used for agriculture fall outside the study boundaries (1,469 out of 1,898 agriculture parcels). This is expected given the fact that our study area comprises mainly of households residing in urban and peri-urban. The four gray shaded cells in Table 17, which are parcels in the treatment and control areas mainly used for residence and agriculture purposes (total 2,154 parcels) are the focus of the baseline analysis reported in this section.

Table 17. Location of parcels documented in baseline survey by main use

Parcel Location	**Main use of parcel**					
	Residence	**Agriculture**	**Commerce**	**Other**	**Not used or use not reported**	**Total**
Treatment	1,221	326	11	2	24	1,584
Control	504	103	4	1	9	621
Outside the study boundaries	225	1,469	7	2	84	1,787
Total	1950	1898	22	5	117	3,992

Source: MCA/MINAG's Urban Land Survey, 2010

Table 18 provides the breakdown of the 3,848 parcels mainly used for residence and agriculture purposes in terms of their location by treatment sites (1,547 parcels), control sites (607 parcels) and outside the study area (1,694). Of the 2,154 parcels located in the study area, 52% (1,132 parcels) are located in Nampula city and 48% (1,022 parcels) are located in Monapo vila (Table 18). In terms of the ownership status, a majority of parcels (1,900 out of 2,154) located in the study area (i.e., treatment and control bairros selected for this study), belong to the households surveyed and were in their possession at the time of the survey (Table 19). One hundred sixty parcels (comprised of 121 parcels in treatment bairros and 39 in control bairros) were rented-in or borrowed from others, and 94 parcels (68 in treatment and 26 in control areas) were rented-out or lent to others at the time of the survey. The relatively small number of parcels rented-in or rented-out (about 11.7% share in total) indicate the small size of the land rental market in Nampula and Monapo cities. However, there are no national data on the size of land rental markets to be able to do any comparative analysis. Further breakdown of the parcel ownership status by the main use of parcel suggests that a majority of the parcels rented-in are for agriculture purpose (121 out of 160) and a majority of parcels rented out are for residential purpose (85 out of 94) (Table 19 and Annex Table A3.19 and A4.19).

Table 20 reports the number and size of parcels owned and rented, and distribution of parcels by use type in both the treatment and control groups. On average, a household in the sample owns 2

parcels with 1.6 parcels currently in owner's possession and 0.1 parcels being rented out to other households and 0.3 parcels rented-in or borrowed from others (top panel of the Table). Unlike the case for the number of parcels owned, households in treatment group rented-in significantly more parcels than those in control group (0.4 versus 0.1). When comparing the treatment and control sites within the two cities, treatment households in Nampula city on average own more parcels, have more number of parcels rented-out and rented-in than control households. The difference in the number of ownership and rental status of parcels is not statistically different between treatment and control sites in Monapo vila (Annex Table A4.20).

Table 18. Location of the households and their parcels in relation to the boundaries of the study area \a

		Location of the parcels used for residence and agriculture purpose only			
	Number of households	**In the study area**			**Outside the study area**
Location of the household		**Treatment**	**Control**	**Total**	
Nampula					
Treatment	596	794	4	798	365
Control	285	172	162	334	108
Total	881	966	166	1,132	473
Monapo					
Treatment	438	544	18	562	639
Control	371	37	423	460	582
Total	809	581	441	1,022	1,221
Overall					
Treatment	1,064	1,338	22	1,360	1,004
Control	565	209	585	794	690
Total	**1,690**	**1,547**	**607**	**2,154**	**1,694**

Source: MCA/MINAG's Urban Land Survey, 2010
\a Includes parcels used for agriculture and residence purpose only

Table 19. Number of parcel by type and by location

	Location of parcel		
Type of parcel	treatment	control	Total
1. Belong to hh and currently in their possession	**1,358**	**542**	**1,900**
Residential parcels:	*1,135*	*466*	*1,601*
Agriculture parcels:	*223*	*76*	*299*
1. Rented-out or lent to others	**68**	**26**	**94**
Residential parcels:	*64*	*21*	*85*
Agriculture parcels:	*4*	*5*	*9*
2. Rented-in or borrowed from others	**121**	**39**	**160**
Residential parcels:	*22*	*17*	*39*
Agriculture parcels:	*99*	*22*	*121*
Total	**1,547**	**607**	**2,154**

Average size of parcels across all types and uses is 1,596 m^2 with some variation between parcels in owner's possession and rental parcels (middle panel of the Table). The average size of parcels in owner's possession is significantly smaller for the treatment group than for the control group (1358 m^2 vs.1591 m^2). Similarly, for the parcels that were rented out to others, the parcel size is significantly smaller in the treatment group (464 m^2) than that in the control group (960 m^2). Compared to the parcel size for those rented out, the average size for rented-in parcels is almost eight times larger (4327 m^2 vs. 541 m^2), and they are significantly larger in treatment areas (4432 m^2) than in control areas (3599 m^2) (Table 20). However, the difference in parcel size is not statistically significant between treatment and control sites within the two municipalities (Annex Table A4.20).

Table 20. Number of land parcels and parcel size

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Average number of parcels per hh:							
Parcels belong to hh and currently in their possession	1.6	1,034	1.6	656	1.6	1,690	
Parcels rented-out or lent to others	0.1	1,034	0.1	656	0.1	1,690	
Parcels rented-in or borrowed	0.4	1,034	0.1	656	0.3	1,690	***T>C
Average total no. of parcels per hh	2.1	1,034	1.8	656	2.0	1,690	
Average total area of parcels (m^2) owned by a hh (b)	1,577.9	1,543	1,682.9	604	1,596.4	2,147	***T>C
Average parcel area (m^2) by parcel type:							
Parcels that belong to hh and currently in their possession	1,357.5	1354	1,590.7	539	1,399.8	1,893	*T<C
Parcels rented-out or lent to others	463.8	68	959.8	26	540.6	94	**T<C
Parcels rented-in or borrowed	4,432.4	121	3,598.5	39	4,326.7	160	**T>C
Average parcel area (m^2) by parcel's main use:							
Residence	633.3	1217	420.7	501	594.7	1,718	**T>C
Agriculture	5,801.0	326	8,664.2	103	6,235.6	429	**T<C

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 7 parcels with no information on the land size

By the use type, residential plots account for a majority of parcels among the sampled households. As expected, agricultural parcels are much larger than residential parcels (6,235 m^2 versus 595 m^2) (Table 20)[9]. Comparison between the two groups reveal that the residential plot size is significantly larger in treatment group (633 m^2) than in control group (421 m^2) and the

[9] The plot size figures for the residential plot are more reliable than those for agricultural plots, as respondents were able to provide plot size in square meters for majority of the residential plots (close to 98%), and for a small proportion of agricultural plots (<20%). For majority of agricultural plots, they reported the size in acres, which are then converted into square meters.

opposite is true for the agricultural plots. However, this difference only exists in households sampled in Nampula city (Annex Table A4.20).

The aggregation, however, masks considerable variation across location and head's gender (see Annex Table A3.20). For example, the number of parcels is higher in Monapo Vila than in Nampula (2.4 versus 1.5). While the agricultural plots are significantly bigger in Monapo Vila than in Nampula city (7739 m^2 vs. 5910 m^2), the average size of residential plots is similar in both areas (592 m^2 vs. 613 m^2). Compared to female-headed households, male-headed households tend to own larger residential and agricultural plots. However, the size difference in agricultural plots between male-headed households and female-headed households is statistically insignificant.

Table 21 reports the use of agricultural land parcels located in the treatment and control bairros. Of the 424 agricultural parcels that reported the land use, 95% reported its use for annual crops, 42% for permanent crops and 10% kept it fallow. None of the parcels reported to be used for grazing activities. Other than the fallow use, there was no significant difference in the use of agricultural land for different purposes (Table 21 and Annex Table A4.21).

Table 21: Types of agricultural uses of land parcels

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% of parcels used for the following agricultural purposes (b):							
Annual crops	95.5%	321	91.2%	103	94.9%	424	
Permanent crops	41.8%	321	40.5%	103	41.6%	424	
Fallow	10.9%	321	7.5%	103	10.4%	424	**T>C
Grazing	0.0%	321	0.0%	103	0.0%	424	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) For those parcels used for agriculture 5 did not report the use

5.2.2. Characteristics of residential parcels

Respondents were asked to provide information on parcel characteristics in terms of access to road, water, electricity, and communication services. The summary descriptive is reported in Table 22. Tap water and private well are the two major water sources for the residential parcels in the study area with 59% of residential parcels (59% in treatment and 62% in the control area) and 22% (23% in treatment area and 17% in the control area) reported to have parcels accessible to tap water and private well, respectively. Less than 10% of residential parcels in both the treatment and control areas reported having access to water from other sources (i.e., river/lake, public fountain and borehole) (Table 22).

In terms of road access, more than 40% of the parcels in the sample are connected to a tertiary road. In addition, 15% and 4% of parcels reported to have parcels connected to a secondary and

primary road, respectively. Twenty three percent of households (22% in treatment and 30% in the control area) reported to have parcels connected to unpaved road (Table 22).

Almost 45% of residential parcels reported to have access to electricity (Table 22). While the landline phone is only available to 1% of the parcels; 90% of them (91% in treatment and 86% in control area) have access to a mobile phone network. But as reported in the previous section, 57% of households (60% in treatment and 52% in control area) actually own a mobile phone. Testing of mean difference between the control group and the treatment group suggests that accessibility to various services and amenities is in general better in the treatment area than in control area.

Table 22: Access to utility and infrastructure in parcels used for residence purpose (b)

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% parcels by source of water most used in the parcels:							
Tap	58.5%	1,541	62.4%	603	59.2%	2,144	
Borehole	2.1%	1,541	3.7%	603	2.4%	2,144	
Well private	23.3%	1,541	16.5%	603	22.1%	2,144	**T>C
Public fountain	7.3%	1,541	8.2%	603	7.5%	2,144	
River/lake	6.9%	1,541	7.9%	603	7.1%	2,144	
Other	1.9%	1,541	1.3%	603	1.8%	2,144	
% parcels by route of access most used in the parcels:							
Primary road	3.3%	1,541	7.1%	603	4.0%	2,144	*T<C
Secondary road	15.3%	1,541	14.7%	603	15.2%	2,144	
Tertiary road	43.1%	1,541	35.4%	603	41.7%	2,144	*T>C
Unpaved road	21.7%	1,541	30.0%	603	23.2%	2,144	**T<C
Other	16.6%	1,541	12.7%	603	15.9%	2,144	**T>C
% of parcels with other amenities on the parcels (c):							
%hh that have electricity in their parcels	45.4%	1541	41.4%	603	44.7%	2144	**T>C
% hh that have landline in their parcels	1.2%	1541	0.9%	603	1.1%	2144	***T>C
% hh that have access to mobile network in their parcels	90.6%	1541	85.8%	603	89.8%	2144	***T>C
% hh owning parcels with fruit trees (d)	66.7%	1535	56.5%	605	64.9%	2140	*T>C
Average total number of fruit trees per hh per parcel	8.2	968	3.9	334	7.5	1302	***T>C
Average number of buildings per parcel (e)	1.2	1545	1.2	607	1.2	2152	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 10 parcels with no information on the access to services
(d) 14 parcels in did not report whether there was fruit trees on the parcels.
(e) 2 parcels did not report the number of buildings

Comparison between the two cities and between treatment and control areas within the city shows significant difference in access to utility and infrastructure by residential parcels (Annex Table A3.22 and A4.22). For example, almost 62% of residential plots are connected with tap water in Nampula city (significantly more in the control bairros); only 43% of residential plots in Monapo are connected with tap water (but no significantly difference between treatment and control bairros). On the other hand, a significantly higher number of residential plots in Monapo (13%) rely on rivers/lakes as the main water source than in Nampula (6.1%) (but no significant difference between treatment and control bairros within a city). Consistent with the case of tap water, the share of parcels that are connected with electricity (or mobile network) is also significantly higher in Nampula than in Monapo Vila (48% vs. 23%, or 91% vs. 82% for mobile network). Within Nampula, the share of parcels with electricity is significantly higher in control bairros than in treatment bairros (A4.22).

5.2.3. Land acquisition

The sample includes 1,979 observations on parcels located in the treatment and control areas that are owned by the surveyed households and are either currently in their possession or rented out/lent to others, and for which the form of acquisition was reported. Table 23 reports the share of these 3,475 parcels acquired through different acquisition modes. We note that 51% of the parcels were acquired through land purchase, which is the most common mode of land acquisition in the study area. Inheritance is the second most important mode of transaction with 17% of parcels being acquired through that mode. In addition, 14% and 11% of parcels were acquired through cession by relatives and occupation, respectively. About 8% of parcels were acquired from traditional or formal authorities (Table 23).

Table 23. Parcel distribution by mode of acquisition (for parcels in the possession of the households and those rented-out)

	Treatment (T)		Control (C)		Total		Testing (a)
Item (b)	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Ceded by traditional authorities	4.0%	1,416	6.6%	563	4.5%	1,979	**T<C
Ceded by formal authorities	2.7%	1,416	2.6%	563	2.7%	1,979	
Ceded by relatives	13.3%	1,416	14.3%	563	13.5%	1,979	*T<C
Occupied	10.9%	1,416	9.1%	563	10.6%	1,979	
Purchased	51.3%	1,416	50.9%	563	51.2%	1,979	**T>C
Inherited	17.1%	1,416	16.0%	563	16.9%	1,979	
Other	0.7%	1,416	0.5%	563	0.6%	1,979	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted, no significant was found differences

(b) 15 parcels did not report the form of acquisition

A formal t-test of equality of shares of parcels acquired via each of the different transaction modes between the treatment and control group yields significant differences for the following forms of acquisition—ceded by traditional authorities (4% in treatment vs. 4.5% in control areas), ceded by relatives (13.3% in treatment vs. 14.3% in control areas), and purchased (51.3%

in treatment vs. 50.9% in control areas). The difference in acquisition through other forms of acquisition is relatively small between two groups (Table 23).

Comparison across location yields additional insights (see Annex Table A3.23). The importance of each of the different modes of acquisition in both locations is extremely similar. First of all, purchase is the most important mode in both locations (51% in Nampula city and 52% in Monapo Vila). The percentage of parcels acquired by each individual mode is insignificant between the two locations for five of the six main modes of acquisition. The percentage of parcels acquired through illegal occupation is significantly higher in Nampula city than in Monapo vila (11% vs. 7%). In terms of comparison between treatment and control bairros within the two cities, the importance of different modes of acquisition is not statistically significant in Nampula. In Monapo, the only significant difference is in the mode of acquiring land through traditional authorities with the share of that mode in control bairros being 6.7% as versus 3.6% in treatment bairros (Annex Table A4.23).

Table 24. Agencies involved in and the cost of land acquisition (for parcels in the possession of the households and those rented-out)

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% by people involved in the acquisition of parcel (b):							
Community leaders	87.2%	851	88.5%	333	87.5%	1184	
Local court	2.6%	851	2.1%	333	2.5%	1184	*T>C
District authorities	0.4%	851	0.0%	333	0.3%	1184	
Lawyer	2.7%	851	2.2%	333	2.6%	1184	*T>C
Other	20.2%	851	19.9%	333	20.2%	1184	
Average No. of agencies involved	1.13	851	1.13	333	1.13	1184	
Average total cost of acquiring the parcel with involvement of an agent/institution(Mt):							
Community leaders	19.88	723	13.28	289	18.71	1012	***T>C
Local court	54.08	20	1,673.39	8	304.09	28	*T<C
District authorities	1.00	1	n/a	0	1.00	1	
Lawyer	164.69	27	0.00	7	139.61	34	**T>C
Other	0.23	168	59.90	69	10.72	237	**T>C
Value paid to acquire the parcel aside from the above fees (Mt)	6,878.90	851	7,659.27	333	7,014.33	1184	**T<C
Total value paid for acquisition of the parcel (Mt)	6,901.48	851	7,718.54	333	7,043.28	1184	**T<C
Total value paid for acquisition of the parcel(Mt/m2) (c)	19.29	847	40.11	331	22.91	1178	***T<C

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) Multiple agents/authorities are allowed. Ten parcels had missing data on the agents involved in land acquisition
(c) There are 138 missing values generated in the estimation of acquisition cost per area due to the fact that the area was not reported

In terms of agency involved in land acquisition (Table 24), almost 88% of the land acquisition involves community leaders, with the involvement not significantly different in the treatment groups (87%) and the control group (89%). Other agencies (unidentified) were involved in

acquisition of 20% of the parcels. Local court and lawyer were involved in another 5% of the parcel acquisitions (roughly 2.5% each). Only 0.3% of land acquisition involved district authorities, suggesting that land acquisition is mainly a local matter. An average acquisition involves 1.13 agencies, although many parcels were acquired without any involvement of an agent or an authority (Table 24).

Comparing agency's involvement between the treatment and control groups, the data show that there are significantly more transactions involving courts and lawyers in the treatment area than in the control area (2.6% vs. 2.1% for courts and 2.7% vs. 2.2% for lawyers) (Table 24). In Monapo, land transactions involving lawyers were significantly more in the treatment areas than in control areas (Annex Table A4.24). Other than this, the differences in the involvement of different agencies was not statistically significant in Nampula or Monapo.

In terms of cost, the average payment to acquire a parcel is about 7,000 MT per parcel with a huge and statistically significant discrepancy between the treatment and control group. The payment in the control areas is 7,659 MT, which is about 800 MT more than the payment (6,879 MT) in the treatment areas. The average fee paid to community leaders, local courts and lawyers during the land acquisition process represents only a minor cost when averaged across all the parcels in the sample (Table 24).

Like the case of mode of acquisition, agency's involvement in land acquisition between the locations is also very similar (Annex Table A3.24). Community leaders are involved in majority of the land acquisitions in both locations (87% in Nampula and 88% in Monapo vila). Local courts and lawyers, each are involved in 2% of the land acquisitions in both locations. The involvement of the district authorities is negligible in both locations. The difference in cost of involving different agencies in land acquisition between the two locations is more noticeable. On average, the cost of involving community leaders, local court, lawyer is in general higher in Monapo vila than Nampula city. The average total cost of acquiring a parcel in Monapo vila is 50% higher than that in Nampula (32 Mt/m^2 vs. 21 Mt/m^2). However, this difference is not statistically significant.

5.2.4. Land documents

As expected, a majority of land parcels do not have any land documents (65% on average across the treatment and control groups) (Table 25). Among those parcels that do have some kind of land documents, the documents are mostly informal. Twenty nine percent of the land parcels (28.7% in the treatment area and 29.3% in the control area) have affidavit of purchase/sales. Less than 5% of parcels have some kind of formal legal documents (2.4% with provisional title, 2.1% with certificate of cadastral services, and 0.4% with DUAT) (Table 25). Comparing land documents across location and gender of the head of hh, there is very little difference in land documents between male-headed households and female-headed households (Annex Table A3.25). For example, while 32% of the parcels in Monapo have affidavit of purchase/sales, 28% of parcels in Nampula have the same type of document. Similarly, the type of land documents possessed by parcel holders is very similar across the treatment and control bairros within the two cities (Annex Table A4.25).

Respondents were asked to provide detailed information on procedures and cost of obtaining DUAT. Specific questions included time taken, formal and informal payments to different government agencies to obtain DUAT. It turns out that most of the questions on DUAT are not relevant in the baseline survey because only 12 parcels in the entire sample (10 in the treatment area and 2 in the control area) have received DUAT (Table 25). Due to the extremely small sample size, we are not able to provide a detailed discussion on these questions.

Table 25: Types of Land Documents Currently in Possession by Parcel Holders (for parcels in the possession of the households and those rented-out)

Item	Treatment (T)		Control (C)		Total		Testing (a)
	Mean	N	Mean	N	Mean	N	
% parcels by type of documents currently existent that give them property rights to the parcel (b):							
DUAT	0.5%	1,420	0.0%	567	0.4%	1,987	***T>C
Provisional title	2.2%	1,420	3.2%	567	2.4%	1,987	**T<C
Certificate of cadastral services	2.1%	1,420	2.4%	567	2.1%	1,987	
Affidavit of purchase/sales	28.7%	1,420	29.3%	567	28.8%	1,987	*T<C
Other	1.2%	1,420	0.8%	567	1.1%	1,987	
None	65.4%	1,420	64.3%	567	65.2%	1,987	*T<C

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted, no significant difference was found
(b) 7 parcels did not provide information about the type of documents that confers the use right of the parcels

The extremely low incidence of actual DUAT does not seem to imply that DUAT is not valuable to households. As indicated in Table 26, on average 2.4% of parcel holders (2.2% in treatment areas and 2.9% in control areas) have initiated the process of obtaining DUAT at the time of the baseline survey. As indicated in Annex Table A4.26, a significantly more households in control villages in Monapo (3.9%) have initiated the process of obtaining DUAT than in the treatment villages (2.0%). Among the remainder parcel holders across the two cities that have neither obtained nor initiated the process of obtaining DUAT, 87% (87.4% in treatment group and 85% in the control group) are interested in obtaining DUAT (Table 26). In terms of willingness to pay to obtain a DUAT, an average parcel holder is willing to pay 320 MT to obtain a DUAT. On average, households in the treatment area are willing to pay significantly less per parcel to obtain DUAT than those in the control area (307 MT in the treatment area compared to 381 MT for the latter). This difference also holds in terms of willingness to pay for DUAT on per square meter basis also. The willingness to pay for obtaining DUAT per square meter is much higher for residential parcels (which are smaller) than for agricultural parcels (which are larger), implying that the cost components represent fixed costs that do not vary with parcel size (Table 26).

Households' interests in obtaining DUAT and their willingness to pay for DUAT are surprisingly similar in both locations (Annex Table A3.26). For example, share of households who are interested in obtaining DUAT is 87% in Nampula city, and 86% in Monapo vila. Similarly, an average household from both locations are willing to pay roughly 320 MT. The difference between male headed households and female headed households is also very smaller

Table 26: Interest and willingness to pay for DUAT (for parcels in the possession of the households and those rented-out)

Item	Treatment (T)		Control (C)		Total		Testing (a)
	Mean	N	Mean	N	Mean	N	
% parcels that have no DUAT and have initiated the process of obtaining DUAT (b)	2.2%	1,406	2.9%	562	2.4%	1,968	
Among the parcel with no DUAT and have not initiated the process of obtaining it:							
% parcels in which there is an interest in obtaining DUAT	87.4%	1,369	85.0%	543	87.0%	1,912	
Average amount per parcel that the hh is willing to pay to obtain DUAT (MT) (c)	306.61	1,213	380.91	480	319.83	1,693	**T<C
Average amount per parcel that the hh is willing to pay to obtain DUAT per square meter (MT/m2) (d)	1.26	1209	1.76	476	1.35	1685	*T>C
Average amount per parcel that the hh is willing to pay to obtain DUAT per square meter per main use of the parcel (MT/m2):							
Residence	1.41	1017	2.01	404	1.51	1421	*T<C
Agriculture	0.17	192	0.18	72	0.18	264	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing: * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

(b) 6 parcels did not report whether they have initiated the process of obtaining DUAT and thus not included in this analysis.

(c) 301 parcels did not report the value they are willing to pay for obtaining DUAT

(d) 645 parcels generated missing values in the estimation of willingness to pay for DUAT per area

5.2.5. Hypothetical land sales and land rental prices

Respondents were also asked to provide information on hypothetical land prices (both rental and sale) for the parcels they own (either in their possession or rented out). The results of this section are reported in Table 27. The average hypothetical land sales price among surveyed parcel holders is 66,517 MT or 267 MT/m^2, ranging from 64,556 MT (or 314.33 MT/m^2) in control area to 66,959 MT (or 256.47 MT/m^2) in the treatment area. And the hypothetical rental price is roughly 5,186 MT/month, varying from 2,071 MT/month in the control area to 5,886 MT/month in the control area (Table 27). T-test for mean differences of sale and rental prices between the treatment and control groups suggest that both the sale price and rental price is significantly higher in the treatment area than in the control area for most types of land use (Table 27). Also, among the types of parcels by main use, the hypothetical value of residential parcels is significantly higher than the value for agriculture use on a per square meter basis.

Disaggregation of hypothetical sale and rental prices by cities suggest a considerable variation across regions and gender of the head of the household but no statistical difference (Annex Table A3.27 and A4.27). Comparison of treatment and control areas within Nampula city also suggests

similar variation but no statistical difference (Table A4.27). In Monapo, for two of the indicators (average rental value of the whole parcel and per square meter) in Table A4.27 the baseline values are significantly higher in the treatment bairros than in the control bairros.

Table 27. Hypothetical sale and rental prices of parcels belonging to the household surveyed

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Average total value the parcel could be sold for (MT) (b)	66,959.38	866	64,556.73	361	66,517.63	1,227	**T>C
Average total value per main plot use:							
Residence	66,428.87	720	62,123.48	310	65,619.78	1,030	**T>C
Agriculture	70,311.34	146	83,634.78	51	72,405.50	197	**T<C
Average total value the parcel could be sold for (MT/m^2) (c)	256.47	864	314.33	358	267.07	1,222	**T<C
Value per main use:							
Residence	289.21	718	350.39	307	300.67	1,025	*T<C
Agriculture	50.46	146	33.96	51	47.86	197	***T>C
Average value a room for housing if the parcel could be rented out for (MT/month) (d)	563.90	556	345.97	227	526.50	783	**T>C
Average value a room for commercial purposes in the parcel could be rented out for (MT/month) (e)	548.00	476	653.01	189	564.94	665	*T<C
Average value the whole parcel could be rented out for (MT/month) (f)	5,886.16	746	2,071.17	322	5,186.38	1,068	**T>C
Average monthly value the whole parcel could be rented out for (MT/m^2) (g)	28.79	745	7.89	320	24.97	1,065	***T>C

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Notes

(b) 770 parcels provided no hypothetical value

(c) For this calculation, 772 missing values were generated on the parcels without land size value

(d) 1,211 parcels with no information on the rental value

(e) 1,329 parcels with no information on the rental value

(f) 926 parcels with no information on the rental value

(g) 3 missing data due to missing information on land size

5.2.6. Land conflict and perceived risks

The respondents were asked to provide information on actual land conflicts they have experienced in the past and potential conflicts they perceive to occur in the future. Their responses are summarized in Table 28. Unfortunately, only 67 parcel holders responded to the question on whether they experienced any conflict in the past. Out of these 67 respondents, there were only two households that had experienced land conflicts at the time of obtaining the parcel. For such a small number of incidents, the responses on the nature of the conflict do not provide any meaningful insight and are therefore not reported.

In terms of potential land conflicts in the future, 18% of all parcel holders perceived to have potential land conflict in the future. The difference between the treatment and control group is not statistically significant. For this sub-set of respondents that perceived to have conflict in future (parcel holders of 353 parcels), the most common response to the question "with whom they perceived to have conflict with" was formal authorities (43% of respondents, with no significant difference between treatment and control group). Neighbors and family were cited as the second and third most common source of conflict (32% and 11%, respectively). About four percent and 3.3% also mentioned traditional leaders and immigrants as potential sources of conflict, respectively. Except for neighbors where the difference is significant between treatment and control groups, the difference is not significant for all other categories of responses (Table 28).

Respondents were also asked about the nature of the potential conflicts. Potential conflicts were noted to be most commonly related to the loss of parcels due to lack of DUATs (33%). This is followed by issues related to boundary (28%), confiscation by authority (19%), and disagreement between heirs (inheritance issues – 8%). Incomplete demarcations was cited as the cause of conflict by significantly more parcel holders in the treatment areas than in the control areas, and weak cadastral services and boundary errors were cited as causes of conflict by a significantly more parcel owners in the control areas (Table 28).

Finally, respondents were also asked how probable they think the potential conflicts would result in the loss of their parcel (ranging from "highly probable" to "not probable". More than half of households (51% overall, or 52% in the treatment area, which is significantly higher than 47% in the control area) felt it is somewhat probable that they would lose their parcel as a result of a conflict, followed by "highly probable" (26%) and "moderately probable" (12%) (Table 28). Only 6% of households think it is not probable and another 4% didn't know how to answer this question. Except for the "somewhat probable" category, the difference for the other categories is not statistically significantly.

The comparisons between the two cities and between male-headed and female-headed households are summarized in Annex Table A3.28. While there are very few incidents in the past for all groups, the difference for many categories related to perceived future conflicts is statistically significant between Nampula city and Monapo vila and between male-headed households and female headed households. The comparison between the treatment and control

bairros within the two cities is presented in Annex Table A4.28. The perceived future conflicts and types of conflicts varies between the two groups but in Monapo vila the differences in these perceptions are not statistically significant. In Nampula, the percentage parcel holders citing neighbors as the source of conflict and boundary issues as the cause of conflict were significantly more in the control bairros than in the treatment bairros (Annex Table A4.28).

Table 28. Land conflicts experienced in the past and/or perceived in the future

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% parcels that experienced land conflicts (b)	3.4%	44	1.5%	23	3.0%	67	***T>C
% parcels concerned of having conflict in future (c)	17.9%	1,420	17.6%	567	17.8%	1,987	
Among hh concerned, % parcels s citing the following entities as the potential cause of conflict:							
Traditional leaders	3.8%	250	3.5%	103	3.7%	353	
Formal authorities	43.9%	250	36.3%	103	42.5%	353	
Family	12.0%	250	8.1%	103	11.3%	353	
Neighbors	29.1%	250	46.2%	103	32.2%	353	**T<C
Firms	6.2%	250	3.1%	103	5.6%	353	
Immigrants	3.8%	250	1.0%	103	3.3%	353	
Other	1.2%	250	1.9%	103	1.3%	353	
Among hh concerned, % hhs citing the following issues as potential cause of conflict							
Boundary errors	25.0%	250	41.1%	103	27.8%	353	**T<C
Weak cadastral services	1.8%	250	2.2%	103	1.9%	353	**T<C
Disagreement between heirs	7.8%	250	6.9%	103	7.6%	353	
Incomplete demarcation	1.9%	250	1.2%	103	1.8%	353	**T>C
Sales to more than one person	0.0%	250	0.4%	103	0.1%	353	
Poor consultation with community leader	2.2%	250	2.9%	103	2.3%	353	
Lost parcel due to lack of DUAT	34.4%	250	26.1%	103	33.0%	353	
Parcel recovered by the authorities	19.4%	250	15.8%	103	18.8%	353	
Other	5.3%	250	3.3%	103	4.9%	353	
Among hh concerned, % hhs reporting the following as the level of probability of losing the parcel due to conflict:							
Highly probable	24.2%	250	31.1%	103	25.5%	353	
Moderately probable	11.5%	250	12.0%	103	11.6%	353	
Somewhat probable	51.5%	250	47.2%	103	50.7%	353	**T>C
Not probable	6.0%	250	5.8%	103	6.0%	353	
Does not know	4.5%	250	3.8%	103	4.4%	353	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%
(b) 1,927 parcels did not respond to the question and are thus treated as missing observations
(c) 7 parcels did not respond to the question about the concern of having land conflict in future and are thus considered missing observations.

5.2.7. Land market

Respondents were asked to provide information on rental participation and the contractual details such as relationship with rental partners and contract length. The results are reported in Table 29 for parcels rented-out and in Table 30 for parcels rented-in.

Table 29. Information on parcels rented-out

	Treatment		Control		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hh that have parcels rented out or lent to other	7.9%	1,034	5.0%	656	6.7%	1,690	
% parcels rented-out	3.8%	1547	3.3%	607	3.7%	2154	*T>C
For those that have rented out/lent to others:							
% of parcels by the relationship of the tenant to the owner of the parcel (b):							
Head	1.5%	62	2.9%	25	1.8%	87	
Spouse	1.5%	62	0.0%	25	1.1%	87	
Child	0.6%	62	3.4%	25	1.3%	87	
Sibling	6.2%	62	19.3%	25	9.6%	87	***T<C
Parent	0.0%	62	0.0%	25	0.0%	87	
Niece/nephew	3.1%	62	4.9%	25	3.5%	87	**T<C
Other relatives	13.6%	62	24.4%	25	16.4%	87	**T<C
Nonrelatives	73.7%	62	45.2%	25	66.2%	87	**T>C
% of parcel holders receiving payment in cash	97.7%	66	14.8%	21	87.5%	87	***T>C
% of parcel holders with rental contract with the tenants	28.1%	65	30.7%	20	28.4%	85	
Average number of years since the tenant acquired the use right over this parcel up to now	4.0	63	4.0	19	4.0	82	
% of parcel holders renting those buildings	95.4%	41	34.9%	12	88.4%	62	***T>C
Average number of buildings per parcel within the parcels rented-out	0.96	66	0.81	21	0.95	87	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

(b) 7 parcels did not provide information on the relationship of the tenant with the owner

Overall, very few households rent out land parcels (3.8% in the treatment and 3.3% in the control area) (Table 29). In terms of relationship between tenants and landlords, about one-third of renting transaction involved some kind of relationship, with renting between siblings the most common (9.6%) and prevalent significantly more in control areas (19.3%) than in treatment areas (6.2%). A majority of rental transactions (88%) involve renting of buildings with significant difference between treatment and control area (95% and 35% in the treatment and control areas, respectively). Eighty eight percent of the rental transactions involve cash payment, with significantly more in the treatment areas (98%) than in the control areas (15%). Only 28% of rental transactions have formal written contracts and average rental length is 4 years.

Table 30. Information on renting-in parcels

Item	Treatment (T) Mean	N	Control (C) Mean	N	Total Mean	N	Testing (a)
% hhs that have parcels rented-in or borrowed from other	23.5%	1,034	10.2%	656	17.9%	1,690	***T>C
% parcels rented-in or borrowed from others	8.2%	1,547	5.6%	607	7.8%	2,154	***T>C
For those that have rented in/borrowed from others:							
% parcels by the relationship of the owner of the parcel with the HH renting-in the parcel (b):							
Head	0.0%	106	0.0%	38	0.0%	144	
Spouse	0.0%	106	5.5%	38	0.7%	144	
Child	0.0%	106	0.0%	38	0.0%	144	
Sibling	3.9%	106	2.8%	38	3.7%	144	*T>C
Parent	0.3%	106	2.0%	38	0.5%	144	
Niece/nephew	3.4%	106	0.0%	38	3.0%	144	**T>C
Grandchild	0.0%	106	0.0%	38	0.0%	144	
Other relative	25.0%	106	12.7%	38	23.4%	144	*T>C
Nonrelatives	67.5%	106	77.0%	38	68.7%	144	**T<C
% parcels reporting having rental contract	7.2%	105	5.4%	39	7.0%	144	*T>C
% parcels by people involved in the rental process :							
Community leaders	9.1%	105	0.9%	39	8.1%	144	***T>C
Local court	0.0%	105	0.0%	39	0.0%	144	
District authority	0.0%	105	0.8%	39	0.1%	144	
Lawyer	0.0%	105	0.0%	39	0.0%	144	
Other	16.4%	105	8.3%	39	15.3%	144	*T>C
% parcels with no involvement of an agent/institution in the renting process	75.0%	105	90.1%	39	77.0%	144	*T<C
For the parcels with at least one agent involved, average No. of people involved in the rental of a parcel (c)	1.02	22	1.00	5	1.02	27	
Average total cost paid for the renting process per parcel (Mt)	1.16	22	0.00	5	1.10	27	**T>C
% hhs reporting payment in cash	17.3%	72	22.9%	5	16.1%	35	
Average time past since the parcels had use right (years)	5.98	106	5.89	39	5.97	145	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 16parcels did not reported their rental information
(c) 133 parcels with no information on agents involved in land acquisition
(d) 127 parcels with no information on rental rate

Compared to renting out, renting in is more common as illustrated by the fact that 18% of all the households (24% in the treatment area and 10% in the control area) rented in land parcels (Table 30). In terms of relationship between the renters and landlords, 69% of the transactions were between non-relatives, 23% between other relatives, and the rest were between family members. Only 7% of rental transactions have formal contracts. About 8% of the renting transactions involve community leaders (Table 30). The treatment and control areas differ significantly on many aspects of the rental markets from the perspective of tenants of the parcels located in the study area (Table 30 and Annex Table A4.30).

Table 31 provides the average size of rented parcels in the study area, and monthly rental value per parcel and per square meter by parcel use. The average size of rental land is 1860 m^2 (1890 m^2 in the treatment area and 1612 m^2 in the control area with no statistical difference between the two groups though), which encompasses 407 m^2 of rental land for residence purpose and 4687 m^2 for agriculture purpose (Table 31). The average monthly rental value of 118 parcels in the study area of Monapo and Nampula cities is estimated to be about 4 Mt/m^2), with the rental value significantly more in the control area (12.8 Mt) than in the treatment area (2.9 Mt). As indicated by the breakdown in Table A4.31, the rental value is significantly more in the control areas of Nampula than in treatment areas. The average rental value of residential parcels across the two cities is 6 Mt/m^2 compared with 0.12 Mt/m^2 for agricultural parcels. Again, the rental value for residential parcels is significantly higher in control areas than in the treatment areas (Table 31); with most of this higher value observed in the control areas of Nampula city than in treatment areas (Annex Table A4.31).

Table 31. Information on rental values of parcels in the treatment and control areas by parcel use

Item	Treatment (T) Mean	N	Control (C) Mean	N	Total Mean	N	Testing (a)
Average monthly rent paid per parcels rented (Mt/month) (b)	982.99	91	3,853.20	27	1,298.07	118	**T<C
Average area of land currently rented per parcel (m^2)	1,890.17	91	1,612.92	27	1,859.73	118	
Average monthly rent paid per parcels rented-in (Mt/m^2)	2.90	91	12.80	27	3.99	118	**T<C
Monthly rental rate by use (for agriculture and residence use only):							
Residence							
Average total size of land currently rented (m^2)	1,013.10	64	5,589.83	18	1,535.09	82	***T<C
Average area of land currently rented per parcel (m^2)	380.66	64	613.73	18	407.24	82	
Average total value of rent per parcel (Mt/m2)	4.34	64	18.63	18	5.97	82	**T<C
Agriculture							
Average total size of land currently rented (m^2)	925.19	27	53.21	9	836.72	36	
Average area of land currently rented per parcel (m^2)	4,787.27	27	3,799.29	9	4,687.03	36	
Average total value of rent per parcel (Mt/m2)	0.13	27	0.05	9	0.12	36	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) A total of 254 parcels are rented (in/out) of which 124 are used for residence and 130 for agriculture. Out of 254 parcels, 36 parcels do not have information on rental values.

In terms of past rental participation, only 1.7% of households (or 29 households) reported renting in parcels in the last five years but having stopped renting-in in the past 0.30 years (0.34 years in the treatment area and 0.28 years in the control area) (Table 32). Given the small sample size of households reporting past rental, it is difficult to derive any meaningful comparisons across treatment and control areas.

Table 32: Rental participation in the past 5 years

	Treatmen (T)t		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hhs that rented-in parcels in the last 5 years	1.4%	1034	2.3%	656	1.7%	1690	*T<C
Average area of land rented-in in the last 5 years per household (m2)	443.99	4	649.71	9	578.21	13	
% hh with rental agreement	57.8%	4	18.5%	9	33.3%	13	**T>C
% hh by uses of parcels rented-in:							
Residence	100.0%	4	83.2%	9	89.6%	13	***T>C
Agriculture	0.0%	4	16.8%	9	10.4%	13	***T<C
Commerce	0.0%	4	0.0%	9	0.0%	13	
Time past since stopped renting (years)	0.34	4	0.28	9	0.30	13	
% hhs by reasons why stopped renting parcels:							
Owner needed the parcels	22.4%	4	19.5%	9	20.6%	13	
Household did not need parcel	57.8%	4	80.5%	9	71.9%	13	*T<C
Other reason	19.9%	4	0.0%	9	7.5%	13	
Average rental rate at the time the households stopped renting (Mt)	212.17	3	298.28	6	265.59	9	**T<C
Rental rate per use:							
Residence	212.17	3	298.28	6	265.59	9	**T<C
Agriculture	n/a	0	n/a	0	n/a	0	
Commerce	n/a	0	n/a	0	n/a	0	
Average rental rate at the time the households stopped renting (Mt/m^2)	1.06	3	0.90	6	0.96	9	*T>C
Rental rate per use:							
Residence	1.06	3	0.90	6	0.96	9	
Agriculture	n/a	0	n/a	0	n/a	0	
Commerce	n/a	0	n/a	0	n/a	0	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population

5.2.8. Land investment

Respondents were asked questions on various types of investments made on land parcels in the past 12 months. Table 33 summarizes shares of households who made land investment and the total value of investment during the past 12 months.

Twenty eight percent of households (28% in the treatment and 24% in the control area) made at least one type of investment in the past 12 months. The most popular types of investments are

related to roof improvement, construction of new buildings/houses and electrification with 39%, 27%, 17% of parcels in the project area observed these improvements respectively. These are followed by repairs of existing buildings (15%), sewage, drainage, toilet (12%), and facilities for water supply (12%). Less than 2% in the study area observed investment related to increase in the size of the parcel (Table 33).

Table 33: Types of land investment made in the past 12 months

	Treatment		Control		Total		Testing
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hh that made at least one type of investment	27.6%	1,034	24.3%	656	26.2%	1690	
% parcels that benefited from an investment	19.5%	1,547	28.7%	607	21.1%	2,154	***T<C
For those that made investments, % parcels by type of investment made:							
increasing the parcel size	1.7%	341	1.0%	173	1.6%	514	
constructions of new buildings/houses	27.8%	341	25.9%	173	27.3%	514	
repairs, improvements, rehabilitation of buildings	16.2%	341	11.8%	173	15.1%	514	
repairs, improvement, rehabilitations of roofs	37.5%	341	43.2%	173	38.9%	514	
sewage, drainage, toilets	12.0%	341	13.7%	173	12.4%	514	
facilities for water supply	11.1%	341	13.9%	173	11.8%	514	
Electricity	16.8%	341	18.2%	173	17.1%	514	
landline service	0.0%	341	0.0%	173	0.0%	514	
Irrigation	0.0%	341	0.0%	173	0.0%	514	
Average investment cost per parcel by type (Mt):							
increasing the parcel size	--	0	---	0	---	0	
constructions of new buildings/houses (b)	266,388.70	40	1,355,598.00	17	481,438.70	57	**T<C
repairs, improvements and rehabilitation of buildings	120,412.00	18	14,290.85	12	90,347.32	30	
repairs, improvement and rehabilitations of roofs on the buildings	7,641.28	71	4,186.38	37	6,836.99	108	
sewage, drainage, toilets	931.47	24	723.25	12	874.57	36	
facilities for water supply	33,378.47	7	209,064.10	2	76,014.05	9	**T<C
Electricity	10,384.64	8	2,574.74	8	7,548.93	16	
landline service	---	0	---	0	---	0	
Irrigation	---	0	---	0	---	0	
Total Average investment cost per parcel (Mt)	38,874.75	341	128,640.50	173	60,370.58	514	*T<C
Total Average investment cost per parcel per m^2 (Mt)(c)	131.25	341	731.17	171	273.31	512	**T<C

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(b) one large investment on control of 7,200,000Mt
(c) 2 parcels without area size

In terms of the cost of investment, the most expensive investment is building new houses. For those that made this type of investment (57 parcels), the average cost of building a new house was 481,438.70 Mt (266,388.70 Mt in the treatment and 1,355,598.00 Mt in the control area). The average cost of repairing existing house (for 30 parcels that made this investment) was 90,347.32 Mt. Average investment in fixing roofs, which was one of the most common types of investment, is estimated to be 6,836.99 Mt for the 108 parcels that reported this investment category. Regardless of the seemingly big difference between the treatment and control group, the monetary value of investment is not significantly different between the two groups (Table 33).

There is a considerable variation in parcel investment across the two locations and between the treatment and control areas within a city (Annex Table A3.33 and A4.33). For example, 32% of households in Monapo vila made any investment in the past 12 months, only 25% in Nampula did the same. The type and cost of investment also vary across locations. While water supply is the most important investment in Nampula (14% of parcels), the most important investment in Monapo vila is sewage, drainage, toilets (18%). The average cost of investment is relatively higher in Nampula than in Monapo (310 MT vs. 103 MT per m^2).

5.2.9. Perception of land law

Respondents were asked questions on perceived impact of DUAT on parcel value, market participation, conflicts, collateralization, and expropriations. Table 34 summarizes respondents' perceived impact of DUAT on land value. In spite of the fact that very few households have received DUAT in the past, predominate majority of households (94%) felt that DUAT would increase land value. Only 2.3% (or 2%) of respondents perceived DUAT to have no effect (or even negative effect) on land value. And the remaining 1.6% of respondents' answered "Do not know". Except for the "Do not know" category, the difference in perceived effect of DUAT on land value between the treatment and the control groups is not statistically significant.

The perceived impact of DUAT on land value is also highly consistent between Nampula city and Monapo vila, between male-headed households and female-headed households (see Annex Table A3.34), as well as between the treatment and control bairros within the two focused study areas (Table A4.34).

Table 34. Percentage households by their opinion on the effect of DUAT on the value of parcel

	Treatment (T)		Control (C)		Total		Testing (a)
Item	Mean	N	Mean	N	Mean	N	
Increase	93.9%	1034	94.5%	656	94.1%	1690	
Decrease	2.1%	1034	1.9%	656	2.0%	1690	
Do not affect	2.3%	1034	2.4%	656	2.3%	1690	
Do not know	1.7%	1034	1.2%	656	1.6%	1690	**T>C
Total	100.0%	1034	100.0%	656	100.0%	1690	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted, no significant was found differences

As expected, a larger proportion of households (57% overall) are willing to pay more for land with DUAT than parcel without DUAT (Top panel, Table 35). About 35% of the respondents across the board (36% in the treatment to 34% in the control group) are willing to pay less for parcels with DUAT than parcels without DUAT. Among the remaining 8% of respondents, 4% is willing to pay the same amount for land with or without DUAT, and the other 4% selected "Don't know" as their answers. A formal test for mean difference between the treatment and control groups reveals that share of respondents who are willing to pay less is higher in the treatment than in the control area. However, the magnitude of difference is quite small (36% vs. 34%) (Table 35).

Disaggregating the sample by city or by gender of household heads suggests the overall story does not vary much over the subsamples. For example, 58% of respondents in Nampula city and 52% in Monapo Vila are willing to pay more for parcels with DUAT than parcels without DUAT. Likewise, 57% of male-headed and a similar percentage of female headed households are willing to do the same (See Annex Table A3.35). In terms of comparison between treatment and control areas within a city, the percentage of respondents who are willing to pay more is significantly higher in treatment bairros than in control bairros (42% vs. 32%) (Annex Table A4.35).

Table 35. Percentage of households by their willingness to pay, willingness to sell and willingness to rent out in the case of DUAT

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hh willing to pay more, less or same for purchasing parcel with DUAT than that without DUAT:							
More	55.7%	1034	59.0%	656	56.9%	1690	
Less	36.1%	1034	33.7%	656	35.3%	1690	***T>C
Same	3.6%	1034	4.5%	656	3.9%	1690	
DNK	4.6%	1034	2.8%	656	3.9%	1690	
Total	100.0%	1034	100.0%	656	100.0%	1690	
% hh more willing to sell property in the case of DUAT:							
Yes	36.0%	1034	31.4%	656	34.3%	1690	
No	54.2%	1034	61.4%	656	56.8%	1690	*T<C
DNK	9.8%	1034	7.2%	656	8.9%	1690	**T>C
Total	100.0%	1034	100.0%	656	100.0%	1690	
% hh more willing to rent out property in the case of DUAT:							
Yes	52.4%	1034	45.4%	656	49.9%	1690	*T>C
No	39.3%	1034	46.3%	656	41.8%	1690	**T<C
DNK	8.3%	1034	8.3%	656	8.3%	1690	
Total	100.0%	1034	100.0%	656	100.0%	1690	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted, no significant was found differences

It is also interesting to note that households are less likely to sell their parcels with DUAT than those without DUAT. Fifty seven percent of households (54% in the treatment area and 47% in the control area) are less willing to sell property with DUAT, which is compared to 34% households (36% in the treatment and 31% in the control area) who are more willing to do so. The remaining 9% of households answered "Don't know" (Table 35). Again, the perception is consistent between the two cities and between male-headed and female-headed households (see Annex Table A3.35).

Unlike the case of land sale, more households would be willing to rent out property if they would have DUAT. For example, 50% of households in the entire sample would be more willing to rent out parcels with DUAT compared to parcels without DUAT (Table 35). On the other hand, 42% of households are less likely to rent out parcels with DUAT than those without DUAT. A mean difference test indicates significant difference between treatment and control areas. The share of households who are willing (or not willing) to rent out land with DUAT is significantly higher (lower) in the treatment group than in the control group. Again, the perception is similar no matter whether a household is located in Nampula city or in Monapo vila or no matter whether a household is headed by a male member or by a female member (Annex Table A3.35). In terms of comparison between the treatment and control bairros within a city, the percentage of households willing to rent out property in case of DUAT is significantly higher in treatment areas of Nampula than in control areas (Annex Table A4.35).

Respondents were also asked to provide their perception of the effects of DUAT on land conflicts and expropriation. The descriptive findings are summarized in Table 36. Except for a few minor categories, the mean difference is not significant between the treatment and control groups (Table 36 and Table A4.36), so our discussion mainly focuses on the overall sample. In general, households felt that demarcation/DUAT would lead to fewer land disputes. Overall, 39% of households (or 20% of households) perceived DUAT to make disputes 'more unlikely' (or somewhat unlikely), compared to 21% (or 16%) of households who perceived DUAT to make disputes more likely (or somewhat more likely).

The perceived impact of demarcation/DUAT on conflict resolution is even more consistent. More than half of the households (55% in the treatment area and 52% in the control area) felt that demarcation/DUAT would make land disputes more likely to be resolved. This is further complemented by another quarter of the households who felt that demarcation/DUAT would make land dispute somewhat likely to be resolved (25% in both the treatment and control areas). On the other hand, 16% of households felt that demarcation/DUAT would make disputes less likely or somewhat less likely to be resolved. The findings are also highly consistent across cities and head's gender (See Annex Table A3.36).

The perception on DUAT's impact on expropriation of land is much more consistent than in the case of land disputes. Overall 94% of households (94% in the treatment area and 93% in the control area) felt that demarcation/DUAT would reduce the risk of land expropriation. This is consistent with the fact that 93% of households in both the treatment and control areas felt that DUAT would make the expropriation process more transparent. The perception on the incident of expropriation as well as the transparency of the expropriation process is also highly consistent across the two urban areas and the gender of the head of the household (Annex Table A3.36).

Table 36. Households' opinion about the effect of DUAT on conflicts and expropriation

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hh believing that demarcation/DUAT will make disputes more or less likely to occur							
More likely	22.5%	1034	18.1%	656	20.9%	1690	
Somewhat likely	15.4%	1034	16.6%	656	15.9%	1690	
Somewhat unlikely	20.2%	1034	18.4%	656	19.6%	1690	
More unlikely	37.1%	1034	41.8%	656	38.8%	1690	
DNK	4.8%	1034	5.0%	656	4.8%	1690	
Total	100.0%	1034	99.9%	656	99.9%	1690	
% hh believing that demarcation/DUAT will make disputes more or less likely to be resolved							
More likely	55.1%	1034	52.4%	656	54.1%	1690	
Somewhat likely	25.1%	1034	25.3%	656	25.2%	1690	
Somewhat unlikely	7.8%	1034	7.9%	656	7.8%	1690	
More unlikely	8.1%	1034	8.1%	656	8.1%	1690	
DNK	3.9%	1034	6.3%	656	4.8%	1690	
Total	100.0%	1034	100.0%	656	100.0%	1690	
HHs' opinion about DUAT reducing the risk of expropriation of land: % hhs							
Yes	93.7%	1034	93.4%	656	93.6%	1690	
No	1.8%	1034	2.1%	656	1.9%	1690	
DNK	4.5%	1034	4.5%	656	4.5%	1690	
Total	100.0%	1034	100.0%	656	100.0%	1690	
HHs' opinion about DUAT making the expropriation of land more transparent: % hhs							
Yes	92.2%	1034	93.9%	656	92.8%	1690	
No	3.3%	1034	1.8%	656	2.8%	1690	***T<C
DNK	4.4%	1034	4.3%	656	4.4%	1690	
Total	100.0%	1034	100.0%	656	100.0%	1690	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted, no significant was found differences

The data also reveal strong positive impact of DUAT on land investment (Table 37). A majority of the households (65% overall, 64% in treatment area and 66% in the control area) felt that demarcation/DUAT would make land improvement/investment more likely. And another 21% (22% in treatment area and 20% in the control area) felt that DUAT would make land investment somewhat likely. Only 2.4% (or 4%) of households felt that DUAT would make land investment less (or somewhat less) likely. In terms of differences between treatment and control bairros within the two cities, the difference in opinion is statistically significant only in Nampula (Annex A4.37).

Compared to the case of land investment, the responses on impact of DUAT on households' ability to obtain collateralized credit are much more diverse. Less than half of the households felt that DUAT would be more likely or somewhat more likely to help obtain credit (overall, 28% "more likely" and 19% "somewhat more likely"). In the meantime, 19% (or 17%) of households felt that DUAT would be somewhat unlikely (or more unlikely) to help obtain credits. And 16%

of households could not know how to answer the question. Testing for mean difference between the treatment and the control group shows weakly significant (10%) and economically small difference in two of the categories ("somewhat unlikely" and "more unlikely"). However, there seems to be a considerable regional variation (see Annex Table A3.37). For example, while 39.4% of households in Nampula city perceived that DUAT is more likely to help use land as collateral, only 29% of households in Monapo vila perceived so.

In terms of the main purposes of the potential loan to be obtained by using land as collateral, a majority of households would use their loans to support production related activities. Overall, 27% of households (34% in both the treatment and control area) and 54% of households (50% in the treatment and 46% in the control area) indicated using the credit to support agriculture and business related activities, respectively. The remaining 19% of households would use the credit to improve buildings Table 37).

Table 37. Households' opinion about the effect of DUAT on investment and collateralization

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
hhs' opinion about making improvement or investments on their properties in the case of DUAT: % hhs							
More likely	64.4%	1034	66.6%	656	65.2%	1690	*T<C
Somewhat likely	21.8%	1034	20.2%	656	21.2%	1690	**T>C
Somewhat unlikely	4.6%	1034	3.9%	656	4.3%	1690	
More unlikely	2.6%	1034	1.9%	656	2.4%	1690	
DNK	6.7%	1034	7.4%	656	6.9%	1690	
Total	100.0%	1034	100.0%	656	100.0%	1690	
hhs' opinion about using their parcels as collateral to obtain credit in the case of DUAT: % hhs							
More likely	30.8%	1034	26.0%	656	28.4%	1690	
Somewhat likely	17.5%	1034	21.9%	656	19.0%	1690	
Somewhat unlikely	17.9%	1034	20.9%	656	19.0%	1690	*T<C
More unlikely	17.8%	1034	15.0%	656	16.8%	1690	*T>C
DNK	16.0%	1034	16.3%	656	16.7%	1690	
Total	100.0%	1034	100.0%	656	100.0%	1690	
% hh by purposes to which they would use the credit for if the hh is able to use land as collateral							
Agriculture	34.0%	1034	33.5%	656	26.9%	1690	
Make improvements/expand property	16.0%	1034	20.1%	656	19.0%	1690	
Business	50.0%	1034	46.3%	656	54.1%	1690	
Total	100.0%	1034	100.0%	656	100.0%	1690	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

5.2.10. Knowledge about land law

Respondents were asked questions on their knowledge about the land law and their perception on the effectiveness of the land law. Table 38 summarizes respondents' knowledge about women's land rights according to the land law.

Table 38. Knowledge about women's rights under the land law of 1997

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hhs reporting that women have the right to inherit land on equal basis as their brothers							
Yes	80.1%	1034	76.4%	656	78.8%	1690	
No	12.8%	1034	16.1%	656	13.4%	1690	
Don't know	7.5%	1034	7.8%	656	7.6%	1690	
Total	100%	1034	100%	656	100%	1690	
% hhs reporting that women have the right to maintain a piece of their ex-husband's land in case of divorce							
Yes	81.4%	1034	79.1%	656	80.6%	1690	
No	13.9%	1034	17.1%	656	15.0%	1690	
Don't know	4.7%	1034	3.8%	656	4.4%	1690	
Total	100%	1034	100%	656	100%	1690	
% hhs reporting that women have the right to apply for a formal land title							
Yes	89.5%	1034	87.4%	656	88.7%	1690	
No	7.3%	1034	8.1%	656	7.6%	1690	
Don't know	3.2%	1034	4.5%	656	3.7%	1690	
Total	100%	1034	100%	656	100%	1690	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

A majority of households (79% overall, 80% in the treatment group and 76% in the control group) perceived that women have rights to inherit land on equal basis as their brothers. And 81% (81% in the treatment and 79% in the control area) also perceived that women have the right to maintain a piece of their ex-husband's land in case of divorce. The number of respondents who perceived women to have the right to apply for formal land titles is even higher (89% overall, 90% in the treatment and 87% in the control area). A formal test for the mean difference between treatment and control area suggests no significant difference between the two groups in all the categories (Table 38). The findings about women's rights are also consistent no matter whether a household is located in Nampula city or Monapo vila or whether a household is headed by a male or a female member (see Annex Table A3.38). In terms of comparison between treatment and control bairros within a city, there is no statistically significant difference in various categories of knowledge about women's rights in Monapo vila. But in Nampula, a significantly more respondents in control bairros reported that women did not have right to inherit land on equal basis as their broghers (Annex Table A4.38). But other than this one

category, the responses were consistent between treatment and control bairros in Nampula as well.

Based on the survey responses, it appears that the land law was poorly implemented. Only 13% of households (12% in the treatment and 14% in the control area) reported to be informed about the 1997 land law (top row of Table 39). Of those who were informed about the law, only 12% know fair amount about the law, and 76% know very little about the law and 8% knew nothing about the content of the law. The knowledge about the law between the treatment and control group is not statistically different within the two cities (Annex Table A4.39) and across the two cities (Table 39).

Table 39. Perceptions about the land law of 1997

	Treatment (T)		Control(C)		Total		Testing
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**(a)**
% hh informed about the 1997's land law	12.2%	1034	14.3%	656	13.0%	1690	
If informed, how much the hh knows about the land law							
None	5.5%	137	12.3%	102	8.2%	239	
A little	76.6%	137	74.8%	102	75.9%	239	
A fair amount	12.8%	137	9.7%	102	11.6%	239	
A lot	5.1%	137	3.2%	102	4.4%	239	
Total	100.0%	137	100.0%	102	100.0%	239	
If informed, % hhs by the means that they received information of land law							
Local leaders	27.7%	137	12.6%	102	21.8%	239	
Dissemination by authorities	35.2%	137	35.5%	102	35.3%	239	
Others	37.1%	137	51.9%	102	42.9%	239	
Total	100.0%	137	100.0%	102	100.0%	239	
If informed, % hhs that received information about the land law of 1997	5.6%	137	12.4%	102	8.3%	239	***T<C
If informed, % hhs that knows specific rights of the land law of 1997	60.1%	137	42.7%	102	53.3%	239	
The opinions of informed HH's about how the land law strengthens land tenure: % hhs							
Very useful	73.5%	137	66.7%	102	70.8%	239	**T>C
Somewhat useful	22.1%	137	22.9%	102	22.4%	239	**T<C
Useless	0.1%	137	0.9%	102	0.4%	239	
Cannot say	4.2%	137	9.5%	102	6.3%	239	
Total	100.0%	137	100.0%	102	100.0%	239	
% of the informed hhs that think that in accordance with the land law of 1997 have right to sell or buy land							
Yes	7.6%	137	5.9%	102	6.9%	239	
No	51.3%	137	52.7%	102	51.9%	239	
DNK	41.0%	137	41.4%	102	41.2%	239	
Total	100.0%	137	100.0%	102	100.0%	239	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

In terms of means by which the respondents were informed about the law, 22% reported to receive the information from local leaders, 35% from government authorities, and 43% from other sources (Table 39). There is no statistical difference in the three sources between the treatment and control areas. On the other hand, there seems to be considerable variation across city and gender of the household head (Annex A3.39). While the percentage of households receiving information from local leaders, authorities, and others is 33%, 36% and 31%, respectively in Monapo, the corresponding figures are 20%, 35% and 45% in Nampula. Similarly, 30% of female headed households received information from local heads, but only 19% of male-headed households did so (Annex A3.39).

Of those who were informed about the land law, only 8% of them (with significant difference between the treatment and control, 6% versus 12%) received dissemination materials (Table 39). On the other hand, more than half of the households (53% overall ranging from 73% in the control area to 60% in the treatment area) who were informed know the specific rights stipulated in the land law of 1997. There is considerable variation in knowledge of the specifics of the law between male headed households and female-headed households (47% versus 73%, reported in Annex A3.39).

In terms of usefulness of the land law, 71% overall with significantly higher share of respondents in the treatment than in the control area - 74% vs. 67% (especially in Nampula city, as indicated in Annex Table A4.39) felt the law was very useful, and another 22% (22% in the control and 23% in the treatment) felt the law is somewhat useful. Less than 1% of households felt the law was useless. The rest of them could not answer (Table 39).

Finally, of those who are informed about the law, only 7% of the households (8% in the treatment area and 6% in the control area) thought that land purchase/sale is allowed by the 1997 Land Law. More than half of those who are informed about the law (52% overall, 51% in the treatment area and 53% in the control area) do not think 1997 Land Law allows land transactions through purchase/sale. And the remaining 41% did not know how to answer this question.

5.3. Household consumption, expenditure and prevalence of poverty: Baseline assessment

The ultimate goal of increasing land tenure security through the Land Project is to positively impact the welfare of the population as measured by food consumption and expenditure. Although these types of indicators take a long time to realize impact at the household or a community level and may be beyond the scope of this impact evaluation, we did collect quantitative data that provides a baseline assessment of the characteristics of the households in the study area in terms of their status with regards to food consumption, dietary diversity, and total expenditures. The estimates of per capita expenditures are also used to assess the poverty status of the study area as defined by the global measure of income poverty (i.e., people living on less than $1.25 per day) and also by the poverty line defined by the Government of Mozambique for urban areas in Nampula. The results of this baseline analysis are presented in this section.

5.3.1. Food consumption and household dietary diversity

Table 40 presents the status of households in the study area with regards to food consumption expenditures by different types of foods. The total average value of food consumption per household in the study area is estimated to be around 3,942 per month. In value terms, the consumption of basic food (cereals, roots and tubers) captures the highest share in the food expenditure basket (1,270.69 Mt/month) followed by meat and animal products (1,165.15 MT/month). These two food items (basic food and meats/animal products), together account for more than 60% of the value of monthly food consumption by the households. The share of other foods and legumes/vegetables in the monthly food expenditure ranks third and fourth among all the types of foods consumed. The value of consumption of fruits/nuts and restaurant foods/beverages is respectively, 189.03 MT and 43.30 MT per month, which are the two lowest value food consumption categories (Table 40). For all the other food items, the values of food consumption in the control sites are significantly higher compared to the treatment sites. However, the value of household food consumption in treatment and control areas within the two cities is more similar as very few categories of food have statistically different value in across treatment and control bairros within Nampula and Monapo (Annext Table A4.40).

Table 40. Value of household food consumption per month (Mt)

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Basic food (cereals, roots and tubers)	1,130.45	1034	1,362.75	656	1,270.69	1,690	***T<C
Legumes/vegetables	488.70	1034	567.70	656	536.39	1,690	***T<C
Fruits and Nuts	177.84	1034	196.37	656	189.03	1,690	***T<C
Meats and animal products (including fish)	1,107.71	1034	1,202.87	656	1,165.15	1,690	***T<C
Other foods (sugar, condiments, beverages, vegetable oil)	614.52	1034	817.83	656	737.26	1,690	**T<C
Meals and beverages in restaurants	62.19	1034	30.91	656	43.30	1,690	
Value of total food consumption (Mt)	3,581.41	1034	4,178.42	656	3,941.83	1,690	***T<C
Value of total food consumption (USD)	130.19	1034	151.89	656	143.29	1,690	***T<C
Value of total food consumption per capita per day (Mt)	25.75	1034	29.42	656	27.96	1,690	***T<C
Value of total food consumption per capita per day (USD)	0.94	1034	1.07	656	1.02	1,690	***T<C

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

The composition of different categories of food consumed by the households over the past seven days prior to the day of the survey interview is used to compose a dietary diversity score for the study area. The Household Dietary Diversity Score (HDDS) is considered to be highly correlated to the economic status of households and provides a proxy for the quality dimension of food security. The HDDS is comprised of the following twelve food groups: 1"Staple cereals" 2"tubers" 3"meat" 4"eggs" 5"fish and other sea food" 6"legumes" 7"vegetables" 8"fruit" 9"milk and milk products" 10"oil and oil seeds" 11"sugar" 12" Miscellaneous" (Swindale and Bilinsky, 2006). The highest possible score a household can get for dietary diversity is 12 (which is considered the most diverse diet) and the lowest 1 (least diverse diet).

The survey results presented in Table 41 show a medium to high level of average dietary diversity among households in the study area. In both the treatment and control groups, the households consume, on average, foods from at least 9 different food groups. Comparison among sites, indicate that contrary to the significantly higher value of food consumption in the control sites, the treatment sites have greater and statistically significant dietary diversity score than the control site (Table 41). Much of this difference is due to the statistically higher level of HDDS in Monapo in treatment bairros compared with control bairros (Annex Table A4.41).

Not surprisingly, the most commonly consumed food groups which are part of the diets of more than 90% of the study area population are cereals, vegetables, oil and oilseeds, fish, legumes and fruits (in descending order of importance). Meat, eggs and milk are the least consumed food categories, each being part of the diets of 30%, 21% and 17% of the population, respectively, in the study area. Household participation in the consumption of protein and micronutrient rich foods such as tubers, meat, egg, fish, legumes, oil and sugar is significantly higher among the treatment group than among the control group (Table 41).

Table 41. Household participation in each food group and the overall HDDS by the treatment and control groups

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Staple cereals	94.4%	1,034	93.3%	656	94.0%	1,690	
Tubers	84.8%	1,034	81.6%	656	83.5%	1,690	**T<C
Meat	32.1%	1,034	26.8%	656	30.0%	1,690	*T>C
Eggs	22.3%	1,034	17.7%	656	20.5%	1,690	**T>C
Fish and shellfish or other seed food	95.0%	1,034	92.0%	656	93.8%	1,690	**T>C
Legumes	89.1%	1,034	86.5%	656	88.1%	1,690	
Vegetables	94.4%	1,034	95.5%	656	94.8%	1,690	
Fruit	88.1%	1,034	87.2%	656	87.8%	1,690	
Milk and milk products	19.0%	1,034	13.0%	656	16.6%	1,690	
Oil and oil seeds	94.4%	1,034	93.5%	656	94.0%	1,690	
Sugar	89.5%	1,034	85.1%	656	87.8%	1,690	***T>C
Miscellaneous	98.4%	1,034	98.9%	656	98.6%	1,690	
Household Dietary Diversity (HDDS)	9.01	1,034	8.71	656	8.90	1,690	***T>C

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

5.3.2 Household expenditures on non-food items

Table 42 summarizes the average monthly non-food expenditures in the study area. Results indicate that on average, the households in the study area spend about 2,210.04Mt per month with almost 24% spent on clothing, 23% spent on transportation and 13% on fuel. Expenses that account for less than 10% of the non-food expenditures are health (8%), rent, utilities and household security (7%), miscellaneous assets and services (7%), communication (7%) and the household durable goods, small electrics and domestic services (6%).Statistical analysis shows that households in control zones have significantly higher expenses on rent; utilities and household security. and miscellaneous assets and services compared to those in treatment zones. This difference is more pronounced in Monapo vila than in Nampula city (see Annex Table

A4.42) The transportation expenses paid by the households in the treatment sites are significantly greater than those paid by the households in the control sites in both the cities.

Adding the food and non-food expenditures together gives the total monthly expenditure per household of 6,150 meticas (Table 42). Converted at the market exchange rate, this is equivalent to US$ 223 of average total expenditure per household in the overall study area.

Table 42. Average monthly non-food expenditures per household (Mt) by municipality

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Clothing (Mt/month)	485.24	1,034	566.25	656	519.26	1,690	
Rent, utilities and household security (Mt/month)	102.47	1,034	215.90	656	150.11	1,690	***T<C
Household appliances, accessories (Mt/month)	32.98	1,034	49.43	656	39.89	1,690	
Household durable goods, electricity, domestic services (Mt/month)	120.29	1,034	142.26	656	129.51	1,690	
Health (Mt/month)	156.79	1,034	197.55	656	173.91	1,690	
Transportation (Mt/month)	602.55	1,033	361.10	655	501.19	1,688	***T>C
Communication (Mt/month)	154.75	1,034	164.30	656	158.76	1,690	
Culture and recreation (Mt/month)	39.25	1,034	35.59	656	37.71	1,690	
Fuel (Mt/month)	296.61	1,033	249.10	655	276.67	1,688	**T>C
Education (Mt/month)	76.44	1,034	72.71	656	74.87	1,690	
Miscellaneous assets and services (Mt/month)	122.46	1,034	187.57	656	149.80	1,690	***T<C
Average total monthly household expenditures on non-food items (Mt)	2,188.47	1,034	2,240.47	656	2,210.31	1,690	
Average total monthly household expenditures on food (Mt)	4,058.97	1,034	3,775.14	656	3,939.78	1,690	
Total household monthly expenditures (Mt)	6,247.44	1,034	6,015.61	656	6,150.09	1,690	
Total household monthly expenditures (US)	227.10	1,034	218.67	656	223.56	1,690	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (Treatment) and (Control): * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted, no significant was found differences

5.3.3 Prevalence of poverty in the study area

Table 43 shows the baseline assessment of the prevalence of poverty in the study area as measured by the percent of individuals living on less than $1.25 per day (the global poverty line) and 14.77 Mt/day (the national poverty line), where 'living' is measured based on expenditure. The expenditure approach of estimating the prevalence of poverty is based on total food and non-food expenditures reported in Table 43. For the global poverty measure, the total expenditures are first converted into USD by using the 2010 PPP exchange rate (14.77 Mt/dollar) and expressed as "per day" measures. These estimates are then divided by total household size. The household level per capita expenditure is then applied to all the members of the household to calculate the percent of people living on less than $1.25 per day.

As indicated in Table 43, 30 to 35% of people in the study area live below poverty line, which is about 20-25 percentage points less than the national estimate of poverty headcount in Mozambique. For example, the recent report on poverty assessment in Mozambique, indicates a national poverty headcount of 54.7% in 2008/09 (Ministry of Planning and Development, 2010). This source also indicates that the headcount poverty in urban areas of Mozambique in 2008 was 50%. The poverty headcount based on the global measure of $1.25/day for the whole country was estimated to be 60% in 2008. Since the

expenditure estimates, especially the value of food consumption, are based on short recall data (i.e., 7 days for food consumption and one month for most non-food expenditures), it is possible that the estimated total expenditures may be biased upward as they are not adjusted for seasonality and possible lean periods encountered over the year. Thus, we caution against using these estimates for purposes beyond this study. These are most useful as a baseline comparison of treatment versus control sites.

Statistical analysis indicates that the treatment sites have significantly higher proportion of people under poverty compared to the control sites, spending on average $1.47 per day per person. Comparison across regions, show that Nampula is better-off than Monapo vila (Annex Table A3.43); but the disparity the treatment and control bairros is greater within Monapo than within Nampula (Annex Table A4.43). Although, out of scope of this report, analysis of severity and inequality of poverty in the area of study can help to understand the structure of poverty as a guide for development programs in the region.

Table 43. Percent of individuals living on less than $1.25 per day (based on PPP exchange rate) and less than 16.7 Mt per day (based on national poverty line)

	Treatment (T)		Control (C)		Total		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Average per capita expenditures per day (USD PPP)	1.56	66.798	1.73	103,629	1.66	170,427	***T<C
% individuals in poverty based on global measure (i.e., <$1.25/day)	37.0%	66,798	29.2%	103,629	32.2%	170,427	***T>C
Average per capita expenditures per day (Meticas)	42.95	66,798	47.56	103,629	45.73	170,427	***T<C
% individuals in poverty based on national poverty line (i.e., <16.7 Mt/day) (b)	44.5%	66,798	39.1%	103,629	41.2%	170,427	**T>C
Actual number of people per group	*5,665*		*3,683*		*9,348*		

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing comparing (T) and (C): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

(b) Using the urban Nampula's poverty line (16.7 Mt/day/person) from Ministry of Planning and Development (2010)

6. Discussion and Conclusions

This baseline survey provides extensive information on household characteristics, land ownership, land acquisition, land use, parcel characteristics, land investment, land conflict and perceived risks, land market (sales and rental), and perceptions and knowledge about the land law. It provides insights into the household economies and land market dynamics of two urban areas – Nampula city and Monapo vila, which are two of the eight municipal areas being targeted by the '*Site Specific Access to Land*' project activities of MCA-Mozambique. The purpose of this report has been to present the baseline assessment of the study area, while also describing the context and design of the impact study. This final section begins with a summary of the results in terms of: a) baseline assessment of the indicators identified in Figure 2; and b) insights they reveal about the land economy in general and the targeted population more specifically. The report closes by identifying key conclusions and methodological implications that have emerged from this baseline assessment.

6.1 Baseline assessment of the outcome and impact indicators of the Land Project in urban areas

The logic framework of the Land Project depicted in Figure 2 identified eight outcome and impact indicators as the focus of this evaluation. Table 44 provides a summary assessment of the baseline scenario of these indicators that were presented in various tables throughout the report. The values are for the entire sample of households in the two urban areas—Nampula city and Monapo Vila. They represent the baseline value for the planned impact evaluation so as to attribute the change in these indicators to the Land Project (to be observed after the intervention). As noted throughout the report, some of these indicator values are based on very few observations and were either not calculated (e.g., the time and cost of obtaining DUAT) or estimated but with a cautionary note on the low statistical power on the robustness of results.

Table 44: Baseline assessment of key outcome and impact indicators

Indicator	Baseline value (N in parenthesis)	Expected effect of the land project
a. Time to obtain title\a	--	Negative (i.e., time is expected to reduce)
b. Cost of obtaining title\a	--	Negative (i.e., cost is expected to reduce)
c. Registered property rights (DUATs) (% of parcels and number of parcels)	0.4% (1,987) 12	Positive (i.e., number of registered parcels is expected to go up)
d. Incidents of conflicts i. % of parcels experiencing conflicts in the past \b ii. % parcels concerned of having conflict in future	 3% (67) 18% (1,987)	Negative (i.e., number of conflicts is expected to reduce)
e. Transactions reflecting active land market i. % parcels rented out ii. % parcels rented in or borrowed	 3.7% (2,154) 7.8% (2,154)	Positive (i.e., rental activity is expected to go up)
f. Value of land i. Residential plots: Average total value of rent per parcel (Mt/500 m^2) \b ii. Agricultural plots: Average total value of rent per parcel (Mt/500 m^2) \b iii. Average total value of rent per parcel (Mt/500 m^2) \b	 2,985 (82) 60 (36) 1,995 (118)	Positive (i.e., value of land as measured by rental rate is expected to go up)
g. Investments on land parcels i. % parcels that benefited from an investment i. Total average investment cost per parcel per 500 m^2 (Mt)	 21% (2,154) 136,655 (512)	Positive (i.e., investments on land improvement is expected to go up)
h. Access to formal credit i. % households that applied for credit ii. % of households that applied for credit that had to present collateral \b ii. % of households that applied for credit and were denied because of insufficient collateral \b	 7% (1,690) 16% (131) 27% (36)	Positive (i.e., number of people accessing credit using land as a collateral is expected to go up)

\a Number of registered parcels (12) in the sample is too low to estimate this indicator

\b Caution: Numbers of observations are too few to derive robust estimates of these indicators

6.2 Key results and conclusions on comparison between treatment and control areas

The results of the baseline survey analysis (pooled results as well as disaggregated results by city as presented in Annex 4) indicates that in many ways, the treatment and control areas share similar socioeconomic characteristics (e.g., key demographics features, access to credit), but in other ways they are significantly different (assets, food consumption, expenditures). In terms of assets and food consumption diversity index the respondents in the treatment group are relatively better off. But in terms of expenditures and headcount poverty, the data show the advantageous position held by respondents in the control area.

Almost two-thirds of the land parcels located in the study zones has no documents that give the owners property rights to that parcel. For those that have some document, the most common was an affidavit of purchase/sales. Only 12 parcels in the entire sample had obtained a DUAT by the time of the baseline survey and about 50 parcel holders had initiated the process of obtaining a DUAT. However, 87% of parcel owners were interested in obtaining a DUAT and were willing to pay on average about 320 Mt for that transaction.

The hypothetical average sale price of land parcel in the study area was reported to be about 300 Mt/m^2 for residential plots and 48 Mt/m^2 for agricultural plots. Similarly, the hypothetical average monthly rental price for a land parcel in the study zone was reported to be about 25 Mt/m^2 or about 5,200 Mt for the whole parcel.

The study area is characterized by a thin rental market. Of the total number of parcels surveyed in the study area, 12% were either rented-in (8%) or rented out (4%). The average monthly rental rate across all rented parcels in the study area was reported to be 6 Mt/m^2 (or 407 Mt for the whole parcel) for the residential plots and 0.12 Mt/m^2 (or 4,687 Mt for the whole parcel) for agriculture plots.

In general, the knowledge about the land law was found to be poor in the study area. Only 13% of households reported to be informed about the 1997 land law. Of those who were informed about the law, only 12% know fair amount about the law, and 76% know very little and 8% knew nothing about the content of the law.

As against the demographic characteristics of the households, the treatment and control areas in the Nampula and Monapo vila are very dissimilar in terms of parcel characteristics, behavioral variables related to land (e.g., investment, rental, sales), perceptions and opinion about land conflict and risks of expropriation, and knowledge of land law. On several of these key variables, the parcels and parcel holders differ significantly. The non-experimental nature of the research design has thus resulted in underlying incongruence between the two groups that lead to the observed differences.

6.3 Methodological implications

The research plan for the overall impact assessment includes a quasi-experimental design which relies on two rounds of survey data from both the treatment and control areas within the

Nampula city and Monapo vila: 1) baseline data before the intervention (2010-11) and 2) data from a follow-up survey planned in 2013. The type of analysis planned for impact evaluation is to calculate the changes that occur in the outcome variables over the two to three year period and to compare what happens (on average) to surveyed households in treatment areas with what happens (on average) to households in the non-treated areas. Given the similar locational distribution of the two samples, we would expect any external factors which occur during the two-three year period to affect both populations equally. If, on a given outcome/impact variable, the change that occurs in the treatment area is more favorable than the change that occurs to non-treatment area, then that would be evidence in favor of the impact hypothesis.

However, the analysis of the longitudinal data also needs to include statistical controls for multiple effects that could be due to other independent variables. For example, we know from the baseline results that the treatment and control samples differ in their sources and level of income. We also know that higher and more diverse initial income levels could contribute to changes in other impact variables, such as food consumption and expenditures. Through the use of multivariate techniques, we can control for the effects of higher average income levels and attempt to better isolate the actual relationship between tenure security and, as in the example, expenditures and food consumption.

The combination of the longitudinal data and the multivariate analysis will allow a much more accurate and precise impact assessment than is possible through comparing individual means in the baseline data. Thus, a general implication of the baseline results for the larger impact evaluation is the critical need for good-quality second-round survey data and the importance of analyzing the resulting longitudinal data with multivariate statistical techniques. The quality of the baseline survey data was in general good (with some exceptions noted below). As long as the second-round data collection is based on the same questionnaire and meets the same quality, there should be no major problems with creating the longitudinal data set.

A more specific recommendation for the second round of the survey is to carefully record the information on the size of the parcels, time and mode of acquisition of land, and values associated with rent, sales, purchase, and investments. For the baseline survey, these data were collected, but some ambiguities and missing data have emerged. Since the research plan for the second round survey calls for interviewing the same respondents that are included in the baseline, there will be an opportunity during the second round to verify, correct, and properly document these ‘missing’ data. This is necessary because some of these data will provide critical variables in the statistical analysis.

In conclusion, the baseline survey provides extensive information about the land economy in the two urban hotspot areas in Nampula province. In the interest of brevity, this report has presented results by treatment and control areas pooled across the two cities. The reader is invited to turn to the extensive tables in the appendix for information disaggregated by the two urban areas and the gender of the head of the household. At this time, the best use of the data is to create a description of the treatment and comparison groups. Following the second round of the survey, it should be possible to draw substantiated conclusions about the impact of land regularization intervention (that will result in more number of parcels with DUATs) on the parcel holders.

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Annex 1. Survey Instrument Used for the Listing Exercise

LISTING: Baseline survey for the Impact Assessment of the MCA's land interventions in Urban Areas **EA** |__|__|__|

DISTRICT	**P.A.**	**VILLAGE**
BAIRRO	**E.A. (CÓDIGO DO INE)**	**CELULA/QUARTEIRÃO**
GPS LATITUDE |__|__|º |__|__| ,	**GPS LONGITUDE** |__|__|º |__|__| ,	**ENUEMERATOR**

L01	L02	L03	L04	L05	L06	L07	L08	L09	L10
Nº	Formal name of the head	Common/popular Name	Sex	Has any HH member undertaken agricultural activity as self-employment?	Does the HH have plot/parcel within (Monapo vila or Nampula city) which belongs to a HH member, even if borrowed from other, rented or do not use?	**MARK WITH X IF THE ANSWER IS YES IN L06.**	Contact number	Numbering for sellection	Sellected
			1 M 2 F	1 Yes 2 No	1 Yes 2 No				

Annex 2. Field Report for the Baseline Survey for Impact Evaluation of MCA Land Interventions in Urban Areas[10]

This report summarizes the activities undertaken for implementing the urban land baseline survey of MCC/MCA's land tenure project, implemented by MINAG with technical support of MSU. The field work was implemented in two phases, namely: (a) training of enumerators and (b) data collection.

Training

A total of 30 candidates were recruited and trained in Nampula city for about three weeks, from September 4th to September 25th, 2010. The training took place at the Provincial Directorate of Agriculture and was facilitated by the MINAG staff and in-country MSU staff. The training had the objectives of improving the enumerator's interview skills, familiarize them with the questionnaire. During the training, a guest speaker was invited to present to the enumerators the relevant aspects of land law in Mozambique and their technical aspects. After 3 weeks of training, 25 successful enumerators were selected of which 20 were enumerators and 5 team supervisors.

After 3 weeks of training, the enumerators were capable of understanding the questionnaire, using correctly the GPS for geo-referencing the households but we felt that there was a need for more practice in the field before the actual data collection start. To address this concern, one week was dedicated to this activity in Monapo vila. This exercise was helpful, because the enumerators were able to review once again the questionnaire in order to master the questionnaire in terms of sequence and the flow of the questionnaire.

Data collection

The actual data collection started on October 12th, 2010, in Monapo vila. The voluntary participation of households constitutes a key element for success and high quality of data collected. To guarantee that the respondents are aware of the baseline survey, the local authorities were communicated by the municipality in order to mobilize and disseminate this information so that people know the objectives and procedures of the survey in order to avoid misinterpretations, misunderstandings or refusal to participate. In the case of Monapo, one staff member of the Distrital Directorate of Agriculture was assigned the task of facilitating the contact with local authorities as well as with the selected households.

In Monapo, the team started by listing the households in each selected bairro using the listing procedures described in the listing sheet (Annex 1). This task was done in the first week (October 14 -26, 2010) covering the 11 bairros and listing a total of 3.861 households. This activity helped the team to familiarize themselves with the area as well as to understand the boundaries and particularities of each bairro. The selected households were informed in advance about the date of their interviews. The actual interviews started on October 29th, 2010 in bairro Naherengue in Monapo vila.

[10] The Field Report was prepared by MINAG, the survey implementing entity. The Portuguese version of the Field Report was submitted by MINAG to MCA in Maputo on 03/24/2012.

In Monapo vila, some bairros were listed entirely while others not. In those bairros listed entirely, 80 households were selected (Boa Viagem, Mecutane, Metoprime, Micolene, Moagem, Mulotine, Mucaca, Naheruque, Topelane) while in those that were not listed entirely, 16 households were selected in each enumeration area (Nachicuva and Nova Cuamba with a total of 5 enumeration areas). In Nampula, the survey was implemented in 5 bairros (Muatala, Namutequeliua, Muhaivire, Muhala, and Mutauanha), in each 15 households were randomly selected in each enumeration area.

One of the main problems in implementing the survey in Monapo was the high rate of absentees. To overcome this problem, if the head of the household was not present at the time of the first visit, the enumerators attempted to make an appointment and return again to interview the appropriate person, provided that this return visit is possible within the time that the survey team was in the area. In households that are male-headed with a spouse present, the spouse was the respondent for the sections that she was comfortable giving correct answers (e.g. food consumption module). The survey was designed to take between 1.5 and 2 hours.

While the field work was taking place, the data entry clerks were recruited and trained. The data entry of questionnaires partly was done in Nampula and the remaining part was done in Maputo. The subsequent data cleaning, information processing was done in Maputo and data analysis as well as the drafting of the report is being done in East Lansing. The data collected was entered in CsPro and analyzed in STATA.

Supervision and data quality control

To assess the quality of information gathered by enumerators, each team supervisor was responsible for reviewing each completed questionnaire and verifying some selected questions in the households already interviewed and compares them with the answers already contained in the questionnaires duly filled in the same families. If the answers were different, the enumerator was advised to complete or correct the inconsistencies, making a second visit to the household in question in the presence of the supervisor.

The survey covered 1,690 households in both Nampula and Monapo as reported in Table A2.1. Table A2.2, presents the classification of each bairro covered by the survey in terms of its (treatment or control). It is important to note that, Muhaivire was initially sampled as a control site, but subsequently, it has been changed to a treatment site. The total number of surveyed households by the type of bairro is presented in Table A2.3.

Final comments

Implementing surveys of this type in urban areas poses some difficulties. As many households have formal occupation, most of the times, the enumerators were advised to use a flexible schedule to meet and interview the households. Most frequently, the enumerators had to interview the households after 5:00pm because this is the only available time the households had because during the day were unavailable. This resulted that the survey extended its duration.

The implementation of the survey was delayed a few weeks until December 2010 due to several logistical and bureaucratic hurdles. But in general, the data collected reflects the opinions of the surveyed households and the sample previously designed was achieved.

Table A2.1. Urban land survey's sample

NAMPULA CITY			MONAPO VILA		
Bairro	**HHs interviewed**	**Population**	**Bairro**	**HHs interviewed**	**Population**
Muatala	145	3,149	Mecutane	76	305
Muhala-Sede	147	6,292	Boa Viagem	78	186
Mutauanha	140	7,253	Metoprine	75	154
Namutequeliua	150	4,389	Moagem	63	357
Muahivire	299	4,933	Mucaca	74	563
			Topelane	72	383
			Micolene	73	239
			Mulotine	74	310
			Naherengue	78	221
			Nova Cuamba	69	695
			Nachicuva	77	840
Total	**881**	**26,015**		**809**	**4,253**
Overall	**1,690**	**30,268**			

Source: MCA/MINAG Urban Land Survey, 2010

Table A2.2. Baseline Survey, Urban areas, Control and Treatment bairros

Distrit	***Administrative Post***	***Bairro***	**Control or Treatment**
Monapo	Monapo-Sede	Mecutane	Treatment
Monapo	Monapo-Sede	Boa Viagem	Treatment
Monapo	Monapo-Sede	Metoprine	Treatment
Monapo	Monapo-Sede	Moagem	Treatment
Monapo	Monapo-Sede	Mucaca	Treatment
Monapo	Monapo-Sede	Topelane	Treatment
Monapo	*Monapo-Sede*	*Micolene*	*Control*
Monapo	*Monapo-Sede*	*Mulotine*	*Control*
Monapo	*Monapo-Sede*	*Naherengue*	*Control*
Monapo	*Monapo-Sede*	*Nova Cuamba*	*Control*
Monapo	*Monapo-Sede*	*Nachicuva*	*Control*
Nampula Cidade	Muhala	Nametequeliua	Treatment
Nampula Cidade	Muhala	Muhale-Sede	Treatment
Nampula Cidade	Muhala	Muahivire	**Treatment***
Nampula Cidade	*Muatala*	*Mutauanha*	*Control*
Nampula Cidade	*Muatala*	*Muatala*	*Control*

Table A2.3. Number of households surveyed by type of bairro

NAMPULA CITY			MONAPO VILA		
	HHs interviewed			HHs interviewed	
Bairro	**Treatment**	**Control**	**Bairro**	**Treatment**	**Control**
Muatala		145	Mecutane	76	
Muhala-Sede	147		Boa Viagem	78	
Mutauanha		140	Metoprine	75	
Namutequeliua	150		Moagem	63	
Muahivire	299		Mucaca	74	
			Topelane	72	
			Micolene		73
			Mulotine		74
			Naherengue		78
			Nova Cuamba		69
			Nachicuva		77
Total	**596**	**285**		**438**	**371**
Overall					
Treatment			**1,034**		
Control			**656**		

Source: MCA/MINAG Urban Land Survey, 2010

Annex 3. Key results presented by the two urban areas and the gender of the head of the household

Note: Table numbers (after A3) correspond to the Tables presenting similar results by treatment and control areas in the main body of the report.

Table A3.9. Demographic characteristics

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% hh headed by women	28.4	245	22.6	182	27.6	427					*A>B	
Age of the household head (years)	40.9	880	41.1	809	40.9	1,689	41.1	1,262	40.5	427		*C>D
Education of the head:												
Know to read and write	79%	880	63%	809	77%	1,689	77%	1,263	77%	426	***A>B	
Currently enrolled	11%	878	7%	809	11%	1,687	9%	1,262	15%	425	***A>B	
Have ever been to school	85%	776	75%	738	83%	1,514	83%	1,140	86%	374		
Household size:												
Total number of members	5.7	881	5.2	809	5.6	1,690	5.7	1,263	5.6	427	***A>B	***C>D
Total Adult Equivalent(b)	4.3	881	3.9	809	4.3	1,690	4.3	1,263	4.2	427	***A>B	***C>D
Women as percentage of all adults, 15 years of age or older	51%	881	52%	809	51%	1,690	0.5	1,263	0.6	427		***C<D
Household composition: average number of members per age group												
Infant (<5 years)	1.0	881	1.0	809	1.0	1,690	1.0	1,263	0.9	427		*C>D
Child (5-15 years)	1.7	881	1.6	809	1.7	1,690	1.7	1,263	1.8	427		
Adult (15-45 years)	2.5	881	2.1	809	2.4	1,690	2.4	1,263	2.4	427	***A>B	***C>D
Adult (45-60 years)	0.4	881	0.4	809	0.4	1,690	0.4	1,263	0.4	427		
Older (> 60 years)	0.1	881	0.1	809	0.1	1,690	0.1	1,263	0.1	427		

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(b)Factors drawn from Deaton (1997), used by Boughton et al. (2006) and Mather and Donovan (2009) for Mozambique.

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table A3.10. Percentage of households reporting income from different sources and type of economic activity

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
Remittances and pensions												
% hh received pension	6.2%	881	3.3%	809	5.8%	1,690	6.1%	1263	5.0%	427	**A>B	
% hh received remittances	21.6%	881	25.8%	809	22.2%	1690	19.6%	1263	28.9%	427	***A>B	***C>D
% of households engaged in agricultural activities:												
Crop	82.8%	881	85.8%	809	84.3%	1,690	86.0%	1,263	79.6%	427	*A<B	***C<D
Livestock	23%	881	35%	809	24%	1,690	27%	1,263	19%	427	***A<B	***C>D
Salaried employment: % households with members working as												
Agricultural laborer	11.9%	881	2.4%	809	10.6%	1,690	11.3%	1,263	8.7%	427	***A>B	
Migrant worker	0.1%	881	0.6%	809	0.2%	1,690	0.1%	1263	0.4%	427		
Teacher, health service	10.7%	881	12.3%	809	11.0%	1,690	10.9%	1,263	11.2%	427		
Mechanic, construction, factory worker	8.3%	881	10.5%	809	8.6%	1,690	8.7%	1263	8.3%	427		
Manager, accountant, secretary	2.7%	881	4.5%	809	3.0%	1,690	2.8%	1263	3.6%	427		
Domestic worker	3.0%	881	4.9%	809	3.3%	1,690	3.6%	1263	2.4%	427	**A<B	*C>D
Sales person, service industry	0.6%	881	0.3%	809	0.6%	1,690	0.8%	1263	0.0%	427	**A<B	
Other salaried employee	23.3%	881	27.1%	809	23.8%	1,690	24.2%	1263	22.8%	427		
Self-employment: Forest and Fauna products												
Cut/collect firewood	14.6%	881	53.5%	809	20.0%	1690	22.5%	1263	13.3%	427	***A<B	**C>D
Charcoal production	0.7%	881	1.4%	809	0.8%	1690	1.1%	1263	0.2%	427	**A<B	*C>D
Cut grass, cane, palm tree leaves	4.1%	881	24.9%	809	7.0%	1690	7.3%	1263	6.3%	427	***A<B	
Cut branches	1.1%	881	7.5%	809	2.0%	1690	2.4%	1263	1.0%	427	***A<B	*C>D
Collect honey, bush plants and fruits, eggs of wild animals	0.1%	881	0.2%	809	0.1%	1690	0.1%	1263	0.1%	427		
Hunting	0.2%	881	0.5%	809	0.2%	1690	0.3%	1263	0.0%	427		**C>D
Fishing	0.3%	881	1.9%	809	0.5%	1690	0.5%	1263	0.5%	427	***A<B	
Wood production	0.4%	881	0.3%	809	0.4%	1690	0.5%	1263	0.0%	427		
Catching birds and reptiles	0.2%	881	0.5%	809	0.3%	1690	0.4%	1263	0.0%	427		**C>D
Cut/collect firewood	78.4%	881	9.3%	809	68.7%	1690	64.9%	1263	78.6%	427		***C>D
Unreported	14.6%	881	53.5%	809	20.0%	1690	22.5%	1263	13.3%	427	***A<B	**C>D
Other self-employment activities:												
% of households undertaking these activities	59.4%	881	47.3%	809	57.7%	1,690	55.3%	1,263	64.2%	427	***A>B	
Production of home-made beverages	5.2%	881	4.1%	809	5.1%	1,690	4.6%	1,263	6.4%	427		*C<D
Purchase/sale of beverages	3.5%	881	2.5%	809	3.4%	1,690	2.9%	1,263	4.6%	427	*A>B	
Purchase/sale of food products	23.3%	881	13.4%	809	21.9%	1,690	19.1%	1,263	29.4%	427	***A>B	***C<D
Purchase/sale of all commercial goods	2.8%	881	3.6%	809	2.9%	1,690	3.1%	1,263	2.5%	427		*C>D
Purchase/sale of fish	5.7%	881	5.8%	809	5.8%	1,690	6.6%	1,263	3.5%	427		
Purchase/sale of small size livestock and its by-product	0.9%	881	1.0%	809	0.9%	1,690	0.6%	1,263	1.7%	427		
Purchase/sale of medium size livestock and its by-product	3.9%	881	3.1%	809	3.8%	1,690	4.0%	1,263	3.3%	427		
Purchase /sale of large size livestock and its by-product	0.7%	881	0.4%	809	0.6%	1,690	0.2%	1,263	1.8%	427		*C<D
Handcrafts/masonry/carpentry	2.3%	881	2.0%	809	2.2%	1,690	2.5%	1,263	1.5%	427		**C>D

Tailoring/dressmaking	1.3%	881	2.4%	809	1.5%	1,690	1.8%	1,263	0.5%	427	***C>D
Radio/bike repair	0.6%	881	1.2%	809	0.7%	1,690	0.9%	1,263	0.0%	427	***C>D
Bricks production, bricklaying	2.1%	881	1.2%	809	2.0%	1,690	2.1%	1,263	1.5%	427	
Milling or agro-processing	0.3%	881	0.2%	809	0.3%	1,690	0.2%	1,263	0.6%	427	
Other activity	6.7%	881	6.3%	809	6.7%	1,690	6.5%	1,263	7.0%	427	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (A) and (B), (C) and (D); * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
If not noted, no significant was found differences

Table A3.11. Percentage of households owing various assets, by district and gender of the head

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
Car, purchased new	0.5%	881	0.2%	809	0.5%	1690	0.4%	1263	0.7%	427		
Car, purchased second hand	3.9%	881	1.1%	809	3.5%	1690	3.9%	1263	2.3%	427	***A>B	
Motorcycle	13.5%	881	15.1%	809	13.7%	1690	15.1%	1263	10.2%	427		**C>D
Bicycle	15.8%	881	30.9%	809	18.0%	1690	20.2%	1263	11.9%	427	***A<B	***C>D
Radio	45.9%	881	44.2%	809	45.6%	1690	49.2%	1263	36.3%	427	**A>B	**C>D
Sound system	26.1%	881	12.5%	809	24.2%	1690	24.8%	1263	22.7%	427	***A>B	***C>D
Television	51.3%	881	19.5%	809	46.8%	1690	47.3%	1263	45.7%	427	***A>B	
Washing machine	0.1%	881	0.5%	809	0.2%	1690	0.1%	1263	0.3%	427		
Air conditioner	0.5%	881	0.9%	809	0.5%	1690	0.5%	1263	0.6%	427		
Sewing machine	3.6%	881	3.2%	809	3.6%	1690	3.9%	1263	2.7%	427		
Fridge	6.5%	881	2.0%	809	5.8%	1690	5.9%	1263	5.7%	427	***A>B	***C>D
Freezer	29.3%	881	11.6%	809	26.9%	1690	26.8%	1263	26.9%	427	***A>B	
Electric iron	23.1%	881	6.5%	809	20.7%	1690	20.4%	1263	21.6%	427	***A>B	
Coal iron	36.4%	881	31.7%	809	35.8%	1690	37.1%	1263	32.3%	427	***A>B	***C>D
Fan	28.0%	881	14.8%	809	26.2%	1690	26.8%	1263	24.4%	427	***A>B	***C>D
Beds (double, single, cot for children, and bunk beds)	84.6%	881	64.8%	809	81.8%	1690	82.3%	1263	80.7%	427	***A>B	***C>D
Landline telephone handset	0.5%	881	1.2%	809	0.6%	1690	0.6%	1263	0.6%	427		
Mobile phone	59.8%	881	37.3%	809	56.6%	1690	55.8%	1263	58.8%	427	***A>B	
Computer	4.2%	881	1.5%	809	3.8%	1690	3.8%	1263	3.8%	427	***A>B	
Printer	2.0%	881	1.2%	809	1.9%	1690	2.2%	1263	1.2%	427	**A>B	**C>D
Wall clocks, wrist or pocket	29.9%	881	27.7%	809	29.6%	1690	31.5%	1263	24.6%	427		
Electric stove	2.6%	881	1.2%	809	2.4%	1690	2.6%	1263	1.8%	427	***A>B	***C>D
Gas stove	0.6%	881	1.0%	809	0.7%	1690	0.7%	1263	0.5%	427		
Mixed Stove	0.1%	881	5.0%	809	0.8%	1690	0.9%	1263	0.4%	427	***A<B	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (A), (B) and (C), (D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted, no significant was found differences

Table A3.12. Average number and value of purchased assets per household

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
Average total number of assets per household	6.6	881	4.5	809	6.3	1,690	6.5	1,263	5.9	427	***A>B	***C>D
Average number of assets recently purchased	0.6	881	0.6	809	0.6	1,690	0.7	1,263	0.5	427		***C>D
Total value of assets recently purchased per household (Mt)	154.70	881	86.01	809	145.05	1,690	166.96	1,263	87.43	427	*A>B	***C>D
Total value of assets recently purchased per household (Mt)	4,255.69	881	2,366.06	809	3,990.20	1,690	4,593.07	1,263	2,405.23	427	*A>B	***C>D

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing (A), (B) and (C), (D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%

Table A3.13. Production and sales of livestock and sub-products in the last 12 months

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% hhs that raised animal in the last 12 months	22.7%	881	34.9%	809	24.4%	1,690	26.7%	1,263	18.6%	427	***A<B	***C>D
Among the households that raised animals:												
% hhs that sold animals alive in the last 12 months	10.8%	216	23.2%	295	13.3%	511	13.5%	406	12.6%	105	***A<B	
% hhs that sold slaughtered animals in the last 12 months	54.1%	216	54.7%	295	54.2%	511	54.8%	406	52.2%	105		
Average Tropical Livestock Units*	0.27	216	0.24	295	0.26	511	0.28	406	0.21	105		*C>D

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population
(a) Significance testing comparing (A) and (B), (C) and (D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
*Livestock Unit (LU) conversion factors: Cattle (0.65), buffalo (0.70), sheep and goats (0.10), pigs (0.25) and poultry (0.01) (FAO, 2005), exclude rabbits.

Table A3.14. Access to credit in the last 12 months

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% of households that applied for credit in the last 12 months	7.4%	881	6.7%	809	7.0%	1690	7.4%	1263	5.9%	427		***C>D
Reasons for applying for credit (% of households):												
Food consumption	20.3%	67	36.8%	64	28.3%	131	34.0%	109	10.3%	22		**C>D
Agricultural investment	4.6%	67	4.4%	64	4.5%	131	5.5%	109	1.5%	22		**C>D
Ceremonies	10.8%	67	6.2%	64	8.6%	131	6.5%	109	15.0%	22	*A>B	
Education	2.0%	67	14.3%	64	7.9%	131	9.7%	109	2.5%	22		
Health	30.5%	67	2.0%	64	16.7%	131	21.3%	109	2.7%	22		
Asset purchase	31.9%	67	21.7%	64	27.0%	131	23.5%	109	37.7%	22		
Travel	7.9%	67	0.0%	64	4.1%	131	5.4%	109	0.0%	22	*A>B	
Other	33.0%	67	35.0%	64	33.9%	131	30.4%	109	45.0%	22		
For those who did not apply, reasons for not applying for credit (% of households):												
No need	20.5%	814	20.9%	745	20.7%	1559	19.6%	1153	23.7%	406		
Was refused	2.5%	814	1.8%	745	2.1%	1559	2.0%	1153	2.4%	406		
Lack of access	19.9%	814	19.5%	745	19.7%	1559	20.4%	1153	17.8%	406		
Concerned about not being accepted	28.0%	814	27.7%	745	27.8%	1559	27.6%	1153	28.5%	406		
Lack of collateral	11.6%	814	12.9%	745	12.3%	1559	13.1%	1153	10.2%	406		
High transaction costs	4.3%	814	2.7%	745	3.5%	1559	3.4%	1153	3.8%	406		
Do not want to offer collateral	2.0%	814	3.4%	745	2.7%	1559	2.6%	1153	3.1%	406		
Do not want to have debts	7.8%	814	8.0%	745	7.9%	1559	8.3%	1153	6.8%	406		
Other	2.8%	814	3.1%	745	3.0%	1559	3.1%	1153	2.7%	406		

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (A) and (B), (C) and (D); * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table A3.15. Percentage of households that applied for credit by source of credit

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)
	A		B				C		D		
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Government	6.4%	67	13.3%	64	9.7%	131	11.2%	109	5.3%	22	
Bank	42.6%	67	39.4%	64	41.0%	131	39.4%	109	46.3%	22	
Associations	15.2%	67	11.0%	64	13.2%	131	11.4%	109	18.6%	22	
Companies	0.3%	67	0.7%	64	0.5%	131	0.6%	109	0.0%	22	*C>D
NGOs	0.0%	67	4.0%	64	1.9%	131	2.5%	109	0.0%	22	**C>D
Traders/Businessmen	1.2%	67	0.7%	64	1.0%	131	1.1%	109	0.6%	22	
Relatives	12.9%	67	4.7%	64	8.9%	131	6.8%	109	15.7%	22	
Friends	22.1%	67	26.6%	64	24.2%	131	27.7%	109	13.5%	22	
Other	0.9%	67	4.0%	64	2.4%	131	3.1%	109	0.0%	22	***C>D
Government	6.4%	67	13.3%	64	9.7%	131	11.2%	109	5.3%	22	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (A) and (B), (C) and (D); * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table A3.16. Amount requested and accessed per household and reasons for not accessing credit

Item	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N		
% of households that applied for credit in the last 12 months	7.4%	881	6.7%	809	7.0%	1690	7.4%	1263	5.9%	427		***C>D
Among those who applied (total N=131):												
Average total amount requested per household ($US)	1,096.69	67	1,217.37	64	1,154.78	131	1,378.20	109	461.72	22		***C>D
Median total amount requested per household ($US)	254.45	67	181.75	64	218.10	131	254.45	109	181.75	22		***C>D
% of households that had to present collateral	13.4%	67	19.1%	64	16.1%	131	18.2%	109	9.7%	22		
% of households by type of collateral presented:												
House	6.6%	67	0.0%	65	3.4%	132	0.7%	111	12.5%	21	**A>B	
Other	5.2%	67	7.5%	65	6.3%	132	8.0%	111	0.6%	21		
Unreported	1.6%	67	11.6%	65	6.4%	132	9.5%	111	0.0%	21		
% household that received credit	85.2%	67	76.5%	64	81.0%	131	75.7%	109	97.4%	22		
% households that were denied credit	14.8%	67	23.5%	64	19.0%	131	24.3%	109	2.6%	22		**A>B
Among those who received credit (total N=95):												
Average amount received per household ($US)	497.93	49	798.11	46	634.39	95	726.93	76	411.22	19	**A<C	
Median amount received per household ($US)	181.75	49	181.75	46	181.75	95	145.40	76	181.75	19	**A<C	
Average amount to repay per household ($US)	598.55	49	1,042.62	46	800.41	95	844.35	76	694.46	19	**A<B	
Median amount to repay per household ($US)	218.10	49	472.56	46	218.10	95	145.40	76	363.50	19	**A<B	
Average time to repay the credit (years)	0.97	49	1.0	46	1.0	95	0.87	76	1.23	19		
Among those who were denied credit (total N=36):												
% of household by reasons for not getting credit:												
Insufficient income	8.6%	18	39.3%	18	26.9%	36	27.8%	33	0.0%	3	**A<B	**C>D
Insufficient collateral	12.2%	18	37.1%	18	27.0%	36	27.1%	33	24.5%	3	***A<B	
Other debts	2.5%	18	0.0%	18	1.0%	36	1.0%	33	0.0%	3	**A>B	
Other reason	73.5%	18	21.9%	18	42.8%	36	42.3%	33	57.6%	3	***A>B	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table A3.19. Number of parcel by type of use by location and gender of the household head

Type of parcel		Location of parcel: Nampula	Location of parcel: Monapo	Total	Male-headed	Female-headed
Belong to hh and currently in their possession		1,014	886	1,900	1,404	496
	Residential parcels:	874	727	1,601	1,196	405
	Agriculture parcels:	140	159	299	208	91
Rented-out or lent to others		43	51	94	76	18
	Residential parcels:	42	43	85	68	17
	Agriculture parcels:	1	8	9	8	1
Rented-in or borrowed from others		77	83	160	122	38
	Residential parcels:	9	30	39	33	6
	Agriculture parcels:	68	53	121	89	32
Total		**1,134**	**1,020**	**2,154**	**1,602**	**552**

Source: MCA/MINAG's Urban Land Survey, 2010

Table A3.20. Number of land parcels and parcel characteristics

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
Average number of parcels per hh:												
Parcels belong to hh and currently in their possession	1.5	881	2.4	809	1.6	1690	1.7	1263	1.5	427	***A<B	***C>D
Parcels rented-out or lent to others	0.1	881	0.1	809	0.1	1690	0.1	1263	0.1	427	***A<B	
Parcels rented-in or borrowed	0.3	881	0.4	809	0.3	1690	0.3	1263	0.3	427	***A<B	*C>D
Average total no. of parcels per hh	1.9	881	2.9	809	2.0	1690	2.1	1263	1.9	427	***A<B	***C>D
Average total area of parcels (m2) owned by a hh(b)	1,498.8	1130	2,175.4	1017	1,596.4	2147	1,775.5	1596	1,111.0	551	**A<B	**C<D
Average parcel area (m^2) by parcel type:												
Parcels that belong to hh and currently in their possession	1,290.5	1010	2,062.3	883	1,399.8	1893	1,565.8	1398	950.6	495	**A<B	**C<D
Parcels rented-out or lent to others	404.4	43	1,143.2	51	540.6	94	519.7	76	601.5	18	**A<B	
Parcels rented-in or borrowed	4,397.4	77	3,939.6	83	4,326.7	160	4,772.3	122	3,137.5	38		
Average parcel area (m^2) by parcel's main use:												
Residence	591.8	921	613.4	797	594.7	1718	655.9	1291	428.9	427		***C>D
Agriculture	5,910.0	209	7,738.9	220	6,235.6	429	6,971.3	305	4,253.6	124	**A<B	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (A) and (B), (C) and (D); * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 7 parcels with no information on the land size

Table A3.21: Types of agricultural uses of land parcels

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)
	A		B				C		D		
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hh using the parcels for residential purposes	100.0%	809	100.0%	881	100.0%	1,690	100.0%	1263	100.0%	427	
% parcels used for residential purposes	83.0%	1134	78.1%	1020	82.3%	2154	82.3%	1602	82.3%	552	
% of all parcels used for the following agricultural purposes (b):											
Annual crops	95.6%	207	91.7%	217	94.9%	424	96.0%	300	92.0%	124	*C>D
Permanent crops	43.0%	207	35.2%	217	41.6%	424	45.4%	300	31.6%	124	**C>D
Fallow	11.8%	207	4.0%	217	10.4%	424	11.2%	300	8.2%	124	
Grazing	0.0%	207	0.0%	217	0.0%	424	0.0%	300	0.0%	124	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing comparing (A) and (B), (C) and (D); * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) For those parcels used for agriculture, 5 did not report their type of use

Table A3.22: Access to utility and infrastructure in parcels used for residence purpose (b)

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% parcels by source of water most used in the parcels:												
Tap	62.0%	1131	42.6%	1013	59.2%	2144	57.7%	1592	63.3%	552	***A>B	**C<D
Borehole	1.8%	1131	5.7%	1013	2.4%	2144	3.0%	1592	0.8%	552	***A<B	***C>D
Well private	21.2%	1131	27.2%	1013	22.1%	2144	24.0%	1592	16.8%	552	**A<B	***C>D
Public fountain	7.4%	1131	7.8%	1013	7.4%	2144	7.0%	1592	8.7%	552		
River/lake	6.1%	1131	13.0%	1013	7.1%	2144	7.2%	1592	6.7%	552	***A<B	
Other	1.4%	1131	3.6%	1013	1.7%	2144	1.0%	1592	3.7%	552	***A<B	***C<D
% parcels by route of access most used in the parcels:												
Primary road	2.7%	1131	11.7%	1013	4.0%	2144	3.9%	1592	4.2%	552	***A<B	
Secondary road	14.7%	1131	18.3%	1013	15.2%	2144	15.6%	1592	14.2%	552		
Tertiary road	42.5%	1131	36.8%	1013	41.7%	2,144	42.7%	1592	39.0%	552	*T>C	
Unpaved road	23.5%	1131	21.5%	1013	23.2%	2,144	22.7%	1592	24.4%	552		
Other	16.6%	1131	11.7%	1013	15.9%	2,144	15.1%	1592	18.1%	552	**A>B	*C<D
% of parcels with other amenities on the parcels (c):												
% parcels that have electricity in their parcels	48.3%	1131	23.3%	1013	44.7%	2,144	44.1%	1592	46.2%	552	***A>B	
% parcels that have landline in their parcels	1.1%	1131	1.1%	1013	1.1%	2,144	0.8%	1592	1.8%	552		*C<D
% parcels that have access to mobile network in their parcels	91.1%	1131	81.8%	1013	89.8%	2,144	89.2%	1592	91.3%	552	***A>B	
% parcels with fruit trees (d)	66.3%	1132	56.3%	1008	64.9%	2,140	67.5%	1588	57.9%	552	***A>B	***C>D
Average total number of fruit trees per parcel	7.8	737	5.3	565	7.5	1,302	8.0	1001	6.0	301	***A>B	
Average number of buildings per parcel	1.2	1132	1.0	1020	1.2	2,152	1.2	1600	1.2	552	***A>B	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 10 parcels with no information on the access to services
(d) 14 parcels in did not report whether there was fruit trees on the parcels.
(e) 2 parcels did not report the number of buildings

Table A3.23. Parcel distribution by mode of acquisition

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)
	A		B				C		D		
Item (b)	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Ceded by traditional authorities	4.4%	1049	5.2%	930	4.5%	1979	4.1%	1564	6.0%	415	*C<D
Ceded by formal authorities	2.5%	1049	3.7%	930	2.7%	1979	2.3%	1564	4.3%	415	**C<D
Ceded by relatives	13.1%	1049	15.4%	930	13.5%	1979	14.7%	1564	8.5%	415	***C>D
Occupied	11.2%	1049	6.8%	930	10.6%	1979	10.4%	1564	11.1%	415	**A>B
Purchased	51.1%	1049	51.7%	930	51.2%	1979	52.6%	1564	45.6%	415	**C>D
Inherited	17.0%	1049	16.7%	930	16.9%	1979	15.0%	1564	24.6%	415	***C<D
Other	0.7%	1049	0.4%	930	0.6%	1979	0.8%	1564	0.0%	415	*C>D

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 15 parcels did not report the form of acquisition

Table A3.24. Agencies involved in and the cost of land acquisition (for parcels in the possession of the households and those rented-out)

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% parcels by people involved in the acquisition of parcel (b):												
Community leaders	87.4%	618	87.9%	566	87.5%	1184	89.8%	936	78.9%	248		**C>D
Local court	2.6%	618	2.4%	566	2.5%	1184	3.1%	936	0.6%	248		
District authorities	0.4%	618	0.0%	566	0.3%	1184	0.4%	936	0.0%	248		*C>D
Lawyer	2.7%	618	1.9%	566	2.6%	1184	2.5%	936	3.0%	248		
Other	20.2%	618	20.3%	566	20.2%	1184	18.8%	936	25.2%	248		
Average No. of agencies involved	1.13	618	1.13	566	1.13	1184	1.15	936	1.08	248		
Average total cost of acquiring the parcel with involvement of (Mt):												
Community leaders	15.77	530	36.20	482	18.71	1012	16.91	809	26.24	203	*A<B	
Local court	212.87	15	913.11	13	304.09	28	271.93	23	858.56	5	**A<B	
District authorities	1.00	1	.	0	1.00	1	1.00	1	.	0		
Lawyer	30.83	19	1,014.02	15	139.61	34	187.13	29	0.00	5	***A<B	*C<D
Other	0.22	123	73.55	114	10.72	237	14.71	177	0.00	60		
Value paid to acquire the parcel aside from the above fees (Mt)	7,059.94	618	6,744.44	566	7,014.33	1184	7,574.21	936	4,946.67	248	***A>B	**C<D
Total value paid for acquisition of the parcel (Mt)	7,079.51	618	6,828.87	566	7,043.28	1184	7,604.04	936	4,972.36	248	***A>B	**C<D
Total value paid for acquisition of the parcel(Mt/m2) (c)	21.38	616	32.02	562	22.91	1178	24.36	931	17.60	247		

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

(b) Multiple agents/authorities are allowed. Ten parcels had missing data on the agents involved in land acquisition

(c) There are 138 missing values generated in the estimation of acquisition cost per area due to the fact that the area was not reported

Table A3.25: Types of Land Documents Currently in Possession by Parcel Holder

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)
	A		B				C		D		
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% parcels by type of documents currently existent that give them property rights to the parcel (b):											
DUAT	0.5%	1054	0.2%	933	0.4%	1987	0.5%	1572	0.1%	415	
Provisional title	2.4%	1054	2.2%	933	2.4%	1987	2.4%	1572	2.1%	415	
Certificate of cadastral services	2.1%	1054	2.2%	933	2.1%	1987	2.2%	1572	1.9%	415	
Affidavit of purchase/sales	28.3%	1054	31.6%	933	28.8%	1987	28.8%	1572	28.7%	415	
Other	1.1%	1054	1.2%	933	1.1%	1987	0.9%	1572	1.7%	415	
None	65.6%	1054	62.5%	933	65.2%	1987	65.1%	1572	65.4%	415	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%. (b) 7parcels did not provide information about the type of documents that confers the use right of the parcels

Table A3.26: Interest and willingness to pay for DUAT

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)
	A		B				C		D		
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% parcels that have no DUAT and have initiated the process of obtaining DUAT (b)	2.2%	1046	3.0%	922	2.4%	1968	2.4%	1555	2.3%	413	
Among the parcel with no DUAT and have not initiated the process of obtaining it:											
% parcels in which there is an interest in obtaining DUAT	87.2%	1019	85.9%	893	87.0%	1912	86.6%	1509	88.5%	403	
Average amount per parcel that the hh is willing to pay to obtain DUAT (MT) (c)	319.83	905	319.81	788	319.83	1693	289.58	1340	433.47	353	***C<D
Average amount per parcel that the hh is willing to pay to obtain DUAT per square meter (MT/m2) (d)	1.37	901	1.20	784	1.35	1685	1.29	1333	1.56	352	
Average amount per parcel that the hh is willing to pay to obtain DUAT per square meter per main use of the parcel (MT/m2):											
Residence	1.53	777	1.41	644	1.51	1421	1.45	1122	1.76	299	
Agriculture	0.16	124	0.24	140	0.18	264	0.18	211	0.16	53	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing: * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 6 parcels did not report whether they have initiated the process of obtaining DUAT and thus not included in this analysis.
(c) 301 parcels did not report the value they are willing to pay for obtaining DUAT
(d) 645 parcels generated missing values in the estimation of willingness to pay for DUAT per area

Table A3.27. Hypothetical sale and rental prices of parcels belonging to the household surveyed

Item	NAMPULA CITY A Mean	N	MONAPO VILA B Mean	N	Total Mean	N	Male-headed C Mean	N	Female-headed D Mean	N	Testing (a)
Average total value the parcel could be sold for (MT) (b)	64,715.53	653	77,510.47	574	66,517.63	1227	65,834.19	961	69,065.09	266	
Average total value per main plot use:											
Residence	63,502.02	554	79,298.42	476	65,619.78	1030	64,511.31	807	69,777.79	223	
Agriculture	73,173.83	99	69,027.41	98	72,405.50	197	74,597.93	154	64,562.35	43	
Average total value the parcel could be sold for (MT/m2) (c)	257.24	651	327.20	571	267.07	1222	274.03	956	241.27	266	
Value per main use:											
Residence	288.80	552	377.55	473	300.67	1025	308.03	802	273.23	223	
Agriculture	38.25	99	90.12	98	47.86	197	50.23	154	39.38	43	
Average value a room for housing in the parcel could be rented out for (MT/month) (d)	548.67	407	387.60	376	526.50	783	591.45	615	293.86	168	
Average value a room for commercial purposes in the parcel could be rented out for (MT/month) (e)	560.74	346	591.49	319	564.94	665	529.30	526	704.05	139	
Average value the whole parcel could be rented out for (MT/month) (f)	5,484.51	560	3,410.71	508	5,186.38	1068	5,766.49	832	3,019.38	236	
Average monthly value the whole parcel could be rented out for (MT/m^2) (g)	26.78	558	14.17	507	24.97	1065	26.42	829	19.58	236	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 770 parcels with no hypothetical value
(c) For this calculation, 772 missing values were generated on the parcels without land size value
(d) 1,211 parcels with no information on the rental value
(e) 1,329 parcels with no information on the rental value
(f) 926 parcels with no information on the rental value
(g) 3 missing data due to missing information on land size

Table A3.28. Land conflicts experienced in the past and/or perceived in the future

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% parcels that experienced land conflicts (b)	3.1%	34	2.0%	33	3.0%	67	3.9%	48	0.0%	19		**C>D
% parcels concerned of having conflict in future (c)	18.1%	1053	16.0%	934	17.8%	1987	16.7%	1572	22.2%	415	***A>B	***C<D
Among hh concerned, % parcels s citing the following people as the potential cause of conflict:												
Traditional leaders	3.1%	197	8.0%	156	3.7%	353	3.5%	273	4.3%	80	***A<B	
Formal authorities	42.1%	197	45.2%	156	42.5%	353	48.0%	273	26.6%	80		***C>D
Family	11.4%	197	10.1%	156	11.3%	353	10.7%	273	12.9%	80		**C<D
Neighbors	33.7%	197	22.1%	156	32.2%	353	28.0%	273	44.3%	80	***A>B	***C<D
Firms	5.2%	197	8.1%	156	5.6%	353	5.5%	273	6.0%	80	***A<B	
Immigrants	3.4%	197	2.5%	156	3.3%	353	2.7%	273	5.1%	80	*A>B	**C<D
Other	1.0%	197	3.5%	156	1.3%	353	1.6%	273	0.5%	80	**A<B	*C>D
Unreported	0.0%	197	0.5%	156	0.1%	353	0.0%	273	0.3%	80	*A<B	
Among hh concerned, % parcels citing the following types of issues as potential cause of conflict												
Boundary errors	29.0%	197	20.2%	156	27.8%	353	24.0%	273	39.1%	80		**C>D
Weak cadastral services	1.5%	197	4.6%	156	1.9%	353	2.5%	273	0.0%	80	*A<B	
Disagreement between heirs	6.4%	197	15.9%	156	7.6%	353	7.3%	273	8.6%	80	*A<B	
Incomplete demarcation	1.7%	197	2.6%	156	1.8%	353	1.0%	273	4.1%	80		**C<D
Sales to more than one person	0.0%	197	0.5%	156	0.1%	353	0.1%	273	0.0%	80	***A<B	
Poor consultation with community leader	2.6%	197	0.4%	156	2.3%	353	2.5%	273	1.8%	80		
Lost parcel due to lack of DUAT	32.4%	197	36.4%	156	33.0%	353	36.2%	273	23.4%	80	***A<B	**C>D
Parcel recovered by the authorities	19.1%	197	16.9%	156	18.8%	353	21.5%	273	10.8%	80		***C>D
Other	5.4%	197	1.9%	156	4.9%	353	2.5%	273	11.9%	80	***A>B	***C<D
Unreported	2.0%	197	0.5%	156	1.8%	353	2.3%	273	0.3%	80		
Among hh concerned, % parcels reporting the following as the level of probability of losing the parcel due to conflict:												
Highly probable	25.6%	197	24.7%	156	25.5%	353	27.5%	273	19.5%	80		
Moderately probable	11.6%	197	12.0%	156	11.6%	353	11.8%	273	11.2%	80		
Somewhat probable	51.2%	197	47.8%	156	50.7%	353	49.9%	273	53.2%	80	*A>B	
Not probable	5.8%	197	7.2%	156	6.0%	353	5.6%	273	7.2%	80	*A<B	
Does not know	3.9%	197	7.7%	156	4.4%	353	3.0%	273	8.7%	80	*A<B	***C<D
Unreported	2.0%	197	0.5%	156	1.8%	353	2.3%	273	0.3%	80		

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) 1,927 parcels did not respond to the question and are thus treated as missing observations
(c) 7 parcels did not respond to the question about the concern of having land conflict in future and are thus considered missing observations.

Table A3.29. Information on renting -out parcels

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)
	A		B				C		D		
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hh that have parcels rented out or lent to other	6.3%	937	9.5%	753	6.7%	1690	6.6%	1263	7.1%	427	***A<B
% parcels rented-out	3.5%	1132	4.8%	1022	3.7%	2154	3.8%	1602	3.5%	552	
For those that have rented out/lent to others (b):											
% parcels by the relationship of the tenant to the owner of the parcel in the HH:											
Head	1.3%	42	4.5%	45	1.8%	87	2.1%	73	0.0%	14	
Spouse	1.3%	42	0.0%	45	1.1%	87	1.3%	73	0.0%	14	
Child	0.0%	42	7.9%	45	1.3%	87	0.7%	73	5.1%	14	**A<B
Sibling	5.8%	42	28.7%	45	9.6%	87	8.4%	73	17.2%	14	***A<B
Parent	0.0%	42	0.0%	45	0.0%	87	0.0%	73	0.0%	14	
Niece/nephew	2.0%	42	11.4%	45	3.5%	87	4.1%	73	0.0%	14	*A<B
Other relative	15.1%	42	23.0%	45	16.4%	87	17.3%	73	10.9%	14	
Nonrelatives	74.6%	42	24.5%	45	66.2%	87	66.1%	73	66.9%	14	***A>B
Monthly rental rate (MT/month)	1,896.16	42	0.00	43	1,587.85	85	1,834.06	71	71.06	14	
Average total size of land currently rented out (m2)	402.94	42	1,204.48	43	533.27	85	494.47	71	772.30	14	**A<B
Average total value received for rent per parcel per month(Mt/m2)	7.37	42	0.00	43	6.17	85	7.08	71	0.57	14	
Average number of years since the tenant acquired the use right over this parcel up to now	3.6	41	5.9	41	4.0	82	4.2	68	2.6	14	
% parcels in which the payment is in cash	83.8%	43	2.8%	51	68.9%	94	71.5%	77	53.3%	17	***A>B
% parcels with rental contract with the tenants	31.1%	42	14.2%	43	28.4%	85	25.4%	71	46.7%	14	
Average total number of buildings in the parcels rented out	1.0	42	0.7	45	0.9	87	0.9	73	1.0	14	**A>B
% parcels renting out those buildings	94.9%	33	39.4%	29	88.4%	62	89.8%	54	78.9%	8	***A>B

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

(b) 7 parcels did not provide information on the relationship of the tenant with the owner

Table A3.30. Information on renting- in parcels

Item	NAMPULA CITY A Mean	N	MONAPO VILA B Mean	N	Total Mean	N	Male-headed C Mean	N	Female-headed D Mean	N	Testing (a)	
% hhs that have parcels rented-in or borrowed from other	18.5%	817	17.7%	873	17.9%	1,690	17.7%	1,263	18.5%	427	***A>B	
% parcels rented-in or borrowed from other	7.7%	1134	8.3%	1020	7.8%	2154	7.7%	1602	7.9%	552		
For those that have rented out/lent to others:												
% parcels by the relationship of the owner of the parcel with the HH renting-in the parcel (b):												
Head	0.0%	76	0.0%	68	0.0%	144	0.0%	108	0.0%	36		
Spouse	0.0%	76	5.2%	68	0.7%	144	1.0%	108	0.0%	36	*A<B	
Child	0.0%	76	0.0%	68	0.0%	144	0.0%	108	0.0%	36		
Sibling	3.8%	76	3.1%	68	3.7%	144	5.2%	108	0.0%	36		***C<D
Parent	0.3%	76	1.9%	68	0.5%	144	0.4%	108	1.0%	36		
Niece/nephew	3.4%	76	0.0%	68	3.0%	144	3.7%	108	1.1%	36	**A<B	
Grandchild	0.0%	76	0.0%	68	0.0%	144	0.0%	108	0.0%	36		
Other relative	24.3%	76	17.7%	68	23.4%	144	17.8%	108	37.9%	36		***C<D
Nonrelatives	68.1%	76	72.1%	68	68.7%	144	72.0%	108	60.1%	36		**C>D
% parcels reporting having rental contract (c)	7.1%	76	6.4%	68	7.0%	144	4.8%	107	12.6%	37		
% parcels by people involved in the rental process												
Community leasers	9.0%	76	2.0%	68	8.1%	144	4.5%	107	17.1%	37		**C<D
Local court	0.0%	76	0.0%	68	0.0%	144	0.0%	107	0.0%	37		
District authority	0.0%	76	0.7%	68	0.1%	144	0.1%	107	0.0%	37		
Lawyer	0.0%	76	0.0%	68	0.0%	144	0.0%	107	0.0%	37		
Other	17.3%	76	3.0%	68	15.3%	144	20.0%	107	3.5%	37		**C>D
% parcels with no involvement of an agent/institution in the renting process	74.2%	76	94.3%	68	77.0%	144	76.0%	107	79.4%	37	**A<B	
For the parcels with at least one agent involved, average No. of people involved in the rental of a parcel (d)	1.02	20	1.00	7	1.02	27	1.03	21	1.00	6		
Average total cost paid for the renting process per parcel (Mt) (d)	1.14	20	0.00	7	1.10	27	0.00	21	4.40	6		
Average monthly rent paid per parcels rented-in (Mt/month)	826.18	23	359.62	10	788.07	33	59.89	24	2,206.05	9		**C<D
Average area of land currently rented-in per parcel (m2)	4,252.41	23	3,540.26	10	4,194.25	33	3,850.63	24	4,863.36	9		

Average monthly rent paid per parcels rented-in (Mt/month/m2)	0.12	23	0.44	10	0.15	33	0.08	24	0.29	9	
% parcels reporting payment in cash	17.5%	77	15.3%	69	17.2%	146	16.5%	109	19.0%	37	
Average total number of buildings in the parcels rented-in	30.7%	18	22.7%	10	29.8%	28	42.5%	18	6.0%	10	*C>D
% parcels renting in those buildings	30.7%	18	22.7%	10	29.8%	28	42.5%	18	6.0%	10	*C>D

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
((b) 16 parcels did not reported their rental information
(c) 133 parcels with no information on agents involved in land acquisition
(d) 127 parcels with no information on rental rate

Table A3.31. Information on rental values (rented-in and out)

	Nampula (A)		Monapo (B)		Total		Male-headed (C)		Female-headed (D)		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Average monthly rent paid per parcels rented (Mt/month) (b)	1,485.40	65	79.85	53	1,298.07	118	1,491.68	94	693.88	24	
Average area of land currently rented per parcel (m2)	1,880.7	65	1,723.1	53	1,859.7	118	1,880.9	94	1,793.7	24	
Average monthly rent paid per parcels rented-in (Mt/m2)	4.59	65	0.10	53	3.99	118	4.32	94	2.95	24	
Residence	1,793.88	43	14.75	39	1,535.09	82	1,666.59	66	1,086.27	16	
Average total size of land currently rented (m2)	339.0	43	808.4	39	407.2	82	432.4	66	321.4	16	
Average area of land currently rented per parcel (m2)	6.97	43	0.11	39	5.97	82	6.34	66	4.72	16	
Average total value received for rent per parcel (Mt/m2)	1,793.88	43	14.75	39	1,535.09	82	1,666.59	66	1,086.27	16	
Agriculture											
Average total size of land currently rented (m2)	909.14	22	248.10	14	836.72	36	1,129.02	28	62.09	8	
Average area of land currently rented per parcel (m2)	4,760.9	22	4,087.0	14	4,687.0	36	4,884.3	28	4,164.3	8	
Average total value received for rent per parcel (Mt/m2)	0.13	22	0.07	14	0.12	36	0.13	28	0.10	8	

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
(b) A total of 254 parcels are rented (in/out) of which 124 are used for residence and 130 for agriculture. Out of 254 parcels, 36 parcels do not have information on rental values.

Table A3.32: Rental participation in the past 5 years

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Item	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N		
% hhs that rented-in parcels in the last 5 years	1.2%	881	2.2%	809	1.7%	1690	2.0%	1263	0.9%	427	***A<B	***C>D
Average area of land rented-in in the last 5 years per household (m2)	533.75	7	814.63	4	578.21	11	526.88	9	n/a	0	***A<B	
% hh with rental agreement	41.2%	8	0.0%	5	33.3%	13	35.6%	11	n/a	0	***A>B	
% hh by uses of parcels rented-in:												
Residence	100.0%	8	45.2%	5	89.6%	13	94.4%	11	19.1%	2	***A>B	**C>D
Agriculture	0.0%	8	54.8%	5	10.4%	13	5.6%	11	80.9%	2		
Commerce	0.0%	8	0.0%	5	0.0%	13	0.0%	11	0.0%	2		
Time past since stopped renting (years)	0.33	8	0.17	5	0.30	13	0.32	11	0	2		**C>D
% hhs by reasons why stopped renting parcels:												
Owner needed the parcels	11.0%	8	61.2%	5	20.6%	13	20.7%	11	19.1%	2	***A<B	
Household did not need parcel	79.7%	8	38.8%	5	71.9%	13	71.3%	11	80.9%	2	***A<B	***C<D
Other reason	9.3%	8	0.0%	5	7.5%	13	8.0%	11	0.0%	2	***A<B	***C>D
Average rental rate at the time the households stopped renting (Mt)	278.43	7	119.14	2	265.59	9	266.62	8	200.00	1	***A>B	
Rental rate per use:												
Residence	278.43	7	119.14	2	265.59	9	266.62	8	200.00	1	***A>B	
Agriculture	n/a	0	n/a	0	n/a	0	n/a	0	n/a	0		
Commerce	n/a	0	n/a	0	n/a	0	n/a	0	n/a	0		
Average rental rate at the time the households stopped renting (Mt/m^2)	0.93	7	1.30	2	0.96	9	0.91	8	2.00	1	***A<B	***C<D
Rental rate per use:												
Residence	0.93	7	1.30	2	0.96	9	0.91	8	2.00	1	***A<B	***C<D
Agriculture	n/a	0	n/a	0	n/a	0	n/a	0	n/a	0		
Commerce	n/a	0	n/a	0	n/a	0	n/a	0	n/a	0		

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table A3.33: Types of land investment made in the past 12 months

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% hh that made at least one type of investment	25.2%	881	32.4%	809	26.2%	1,690	27.1%	1,263	23.9%	427	**A<B	
% parcels that have at least one investment	20.3%	1134	25.9%	1020	21.1%	2154	21.8%	1602	19.3%	552	**A<B	
For those that made investments, % parcels by type of investment made :												
increasing the parcel size	1.0%	242	4.0%	272	1.6%	514	1.3%	400	2.3%	114	**A<B	
constructions of new buildings/houses	26.2%	242	32.7%	272	27.3%	514	30.8%	400	16.7%	114		***C>D
repairs, improvements, rehabilitation of buildings	15.3%	242	14.5%	272	15.1%	514	14.2%	400	18.1%	114		
repairs, improvement, rehabilitations of roofs	38.4%	242	41.1%	272	38.9%	514	38.2%	400	40.7%	114		
sewage, drainage, toilets	11.2%	242	17.9%	272	12.4%	514	11.7%	400	14.5%	114	*A<B	
facilities for water supply	13.9%	242	1.8%	272	11.8%	514	9.9%	400	17.4%	114	***A>B	**C<D
Electricity	17.3%	242	16.3%	272	17.1%	514	18.4%	400	13.2%	114		
landline service	0.0%	242	0.0%	272	0.0%	514	0.0%	400	0.0%	114		
irrigation	0.0%	242	0.0%	272	0.0%	514	0.0%	400	0.0%	114		
Average cost of investment per parcel by type (Mt):												
increasing the parcel size	n/a	0	n/a	0	n/a	0	n/a	0	n/a	0		
constructions of new buildings/houses	605,422.80	20	99,413.69	37	481,438.70	57	373,697.10	49	1,649,603.00	8		*C<D
repairs, improvements and rehabilitation of buildings	104,670.40	15	17,943.53	15	90,347.32	30	104,661.60	25	22,488.56	5		
repairs, improvement and rehabilitations of roofs on the buildings	3,630.97	52	24,442.18	56	6,836.99	108	7,988.32	78	3,362.96	30		
sewage, drainage, toilets	1,083.20	13	159.08	23	874.57	36	711.73	28	1,150.48	8	*A>B	
facilities for water supply	78,148.27	7	89.86	2	76,014.05	9	92,443.15	8	3,500.00	1		
Electricity	1,513.11	7	29,797.06	9	7,548.93	16	8,876.11	15	11.00	1		
Average total cost of investment per parcel (Mt)	68,733.38	242	21,419.43	272	60,370.58	514	59,797.05	400	62,117.30	114		
Total Average investment cost per parcel per m2 (Mt)	310.09	240	102.74	272	273.31	512	277.62	398	260.27	114		

Source: MCA/MINAG's Urban Land Survey, 2010
Weighted to reflect population
(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.
n/a – not applicable
(b) one large investment on control of 7,200,000Mt
(c) 2 parcels without area size

Table A3.34. Percentage households by their opinion on the effect of DUAT on the value of parcel

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)
	A		B				C		D		
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Increase	94.5%	827	92.0%	728	94.1%	1,690	93.9%	1,264	94.7%	426	***A>B
Decrease	2.0%	20	2.0%	17	2.0%	1,690	2.0%	1,264	2.2%	426	
Do not affect	2.2%	19	2.8%	28	2.3%	1,690	2.6%	1,264	1.5%	426	*A<B
Do not know	1.3%	15	3.2%	36	1.6%	1,690	1.5%	1,264	1.7%	426	***A<B
Total	100.0%	881	100.0%	809	100.0%	1,690	100.0%	1,264	100.0%	426	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

If not noted, no significant was found differences

Table A3.35. Percentage of households by their willingness to pay, willingness to sell and rent out in the case of DUAT

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
% hh willing to pay more, less or same for parcel with DUAT than that without DUAT:											
More	34.8	881	38.3	809	35.3	1,690	34.8	1,264	36.6	426	***A>B
Less	57.7	881	52.1	809	56.9	1,690	56.9	1,264	56.7	426	
Same	3.8	881	4.7	809	3.9	1,690	4.5	1,264	2.5	426	
DNK	3.8	881	4.9	809	3.9	1,690	3.8	1,264	4.2	426	
Total	100.0	881	100.0	809	100.0	1,690	100.0	1,264	100.0	426	
% hh more willing to sell property in the case of DUAT:											
Yes	32.7	881	44.2	809	34.3	1,690	34.0	1,264	35.4	426	***A<B
No	58.4	881	46.8	809	56.8	1,690	57.3	1,264	55.3	426	***A>B
DNK	8.9	881	9.0	809	8.9	1,690	8.7	1,264	9.3	426	
Total	100.0	881	100.0	809	100.0	1,690	100.0	1,264	100.0	426	
% hh more willing to rent out property in the case of DUAT:											
Yes	48.4	881	59.0	809	49.9	1,690	49.1	1,264	51.9	426	***A<B
No	43.0	881	34.4	809	41.8	1,690	42.0	1,264	41.4	426	***A>B
DNK	8.6	881	6.6	809	8.3	1,690	8.9	1,264	6.7	426	
Total	100.0	881	100.0	809	100.0	1,690	100.0	1,264	100.0	426	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

If not noted, no significant was found differences

Table A3.36. Households' opinion about the effect of DUAT on conflicts and expropriation

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% hh believing that demarcation/DUAT will make disputes more or less likely to occur												
More likely	19.1	880	32.0	808	20.9	1688	20.9	1262	21.1	426	***A<B	
Somewhat likely	15.5	880	17.9	808	15.9	1688	17.0	1262	12.9	426		
Somewhat unlikely	20.1	880	16.1	808	19.6	1688	18.6	1262	22.1	426		
More unlikely	40.2	880	29.9	808	38.8	1688	38.9	1262	38.4	426	***A>B	
DNK	5.0	880	4.1	808	4.8	1688	4.6	1262	5.5	426		*C<D
Total	100.0	880	100.0	808	100.0	1,688	100.0	1,262	100.0	426		
% hh believing that demarcation/DUAT will make disputes more or less likely to be resolved												
More likely	54.0	881	55.1	808	54.2	1689	53.6	1263	55.7	426		
Somewhat likely	25.8	881	21.6	808	25.2	1689	25.4	1263	24.5	426	**A>B	
Somewhat unlikely	7.9	881	7.7	808	7.8	1689	7.7	1263	8.1	426		
More unlikely	7.6	881	11.1	808	8.1	1689	8.2	1263	7.9	426	*A<B	
DNK	4.8	881	4.5	808	4.8	1689	5.1	1263	3.9	426		
Total	100.0	881	100.0	808	100.0	1,689	100.0	1,263	100.0	426		
HHs' opinion about DUAT reducing the risk of expropriation of land: % hhs												
Yes	93.6	881	93.9	808	93.6	1689	94.4	1263	91.6	426	**A>B	
No	1.9	881	2.1	808	1.9	1689	1.3	1263	3.7	426		
DNK	4.5	881	4.0	808	4.5	1689	4.3	1263	4.8	426		
Total	100.0	881	100.0	808	100.0	1,689	100.0	1,263	100.0	426		
HHs' opinion about DUAT making the expropriation of land more transparent: % hhs												
Yes	92.4	881	95.4	808	92.8	1689	93.0	1263	92.2	426		
No	3.0	881	1.5	808	2.8	1689	2.4	1263	3.8	426	**A<B	**C>D
DNK	4.6	881	3.1	808	4.4	1689	4.5	1263	4.0	426	***A<B	**C>D
Total	100.0	881	100.0	808	100.0	1,689	100.0	1,263	100.0	426		

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

If not noted, no significant was found differences

Table A3.37. Households' opinion about the effect of DUAT on investment and collaterization

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
hhs' opinion about making improvement or investments on their properties in the case of DUAT: % hhs												
More likely	64.7	881	68.2	808	65.2	1689	64.2	1263	68.0	426	*A<B	
Somewhat likely	21.3	881	20.5	808	21.2	1689	22.4	1263	17.9	426	*A>B	
Somewhat unlikely	4.5	881	3.2	808	4.3	1689	4.3	1263	4.5	426	**A>B	
More unlikely	2.5	881	1.3	808	2.4	1689	2.7	1263	1.6	426	*A>B	
DNK	7.0	881	6.8	808	6.9	1689	6.5	1263	8.1	426	**A<B	
Total	100.0	881	100.0	808	100.0	1,689	100.0	1,263	100.0	426		
hhs' opinion about using their parcels as collateral to obtain credit in the case of DUAT: % hhs												
More likely	26.9	877	39.4	808	28.6	1685	29.6	1260	26.3	425	***A<B	
Somewhat likely	18.7	877	21.9	808	19.2	1685	19.0	1260	19.6	425		
Somewhat unlikely	19.6	877	16.2	808	19.1	1685	20.5	1260	15.4	425	***A>B	
More unlikely	18.5	877	7.3	808	16.9	1685	15.1	1260	21.6	425	***A>B	***C<D
DNK	16.4	877	15.2	808	16.2	285	15.9	1260	17.2	425		
Total	100.0	877	100.0	808	100.0	1,685	100.0	1,260	100.0	425		
% hh by purposes to which they would use the credit for if the hh is able to use land as collateral												
Agriculture	25.2	404	47.7	483	29.3	887	30.2	679	26.7	208	***A<B	*C>D
Make improvements/expand property	20.4	404	13.1	483	19.1	887	19.8	679	17.2	208	*A>B	
Business	54.4	404	39.2	483	51.7	887	50.0	679	56.2	208		
Total	100.0	404	100.0	483	100.0	887	100.0	679	100.0	208		

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%..

Table A3.38. Knowledge about women's rights under the land law of 1997

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
% hhs reporting that women have the right to inherit land on equal basis as their brothers												
Yes	81.6	881	74.4	808	80.6	1689	79.8	1263	82.6	426	***A>B	*C<D
No	13.8	881	22.2	808	15.0	1689	15.6	1263	13.5	426	***A<B	*C>D
DNK	4.6	881	3.5	808	4.4	1689	4.6	1263	3.9	426	**A<B	
Total	100.0	881	100.0	808	100.0	1,689	100.0	1,263	100.0	426		
% hhs reporting that women have the right to maintain a piece of their ex-husband's land in case of divorce												
Yes	81.6	881	74.4	808	80.6	1689	79.8	1263	82.6	426	***A>B	
No	13.8	881	22.2	808	15.0	1689	15.6	1263	13.5	426	***A<B	
DNK	4.6	881	3.5	808	4.4	1689	4.6	1263	3.9	426		
Total	100.0	881	100.0	808	100.0	1,689	100.0	1,263	100.0	426		
% hhs reporting that women have the right to apply for a formal land title												
Yes	89.3	881	85.3	808	88.8	1689	87.7	1263	91.6	426	***A>B	
No	7.0	881	10.9	808	7.6	1689	8.4	1263	5.3	426	***A<B	
DNK	3.7	881	3.8	808	3.7	1689	3.9	1263	3.1	426	**A<B	
Total	100.0	881	100.0	808	100.0	1,689	100.0	1,263	100.0	426		

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%..

Table A3.39. Perceptions about the land law of 1997

Item	NAMPULA CITY (A) Mean	N	MONAPO VILA (B) Mean	N	Total Mean	N	Male-headed (C) N	Mean	Female-headed (D) N	Mean	Testing (a)	
% hh informed about the 1997's land law	**13%**	**881**	**14%**	**808**	**13%**	**1,689**	**13%**	**1,262**	**12%**	**426**		*C>D
If informed, how much the hh knows about the land law												
None	6.8	119	16.1	120	8.2	239	9.0	188	5.6	51	**A<B	
A little	78.5	119	60.8	120	75.9	239	76.9	188	72.8	51		
A fair amount	10.7	119	16.8	120	11.6	239	11.3	188	12.4	51		
A lot	4.0	119	6.4	120	4.4	239	2.7	188	9.3	51		
Total	100.0	119	100.0	120	100.0	239	100.0	188	100.0	51		
If informed, % hhs by the means that they received information of land law												
Local leaders	19.8	119	33.2	120	21.8	239	19.2	188	29.6	51		
Dissemination by authorities	35.2	119	36.1	120	35.3	239	36.6	188	31.5	51		
Others	45.1	119	30.6	120	42.9	239	44.3	188	38.9	51		
Total	100.0	119	100.0	120	100.0	239	100.0	188	100.0	51		
If informed, % hhs that received information about the land law of 1997	7.2%	119	14.1%	120	8.3%	239	8.8%	188	6.6%	51		**C>D
If informed, % hhs that knows specific rights of the land law of 1997	54.3%	119	47.3%	120	53.3%	239	46.9%	188	72.6%	51		
The opinions of informed HH's about how the land law strengthens land tenure: % hhs												
Very useful	71.2	119	68.8	120	70.8	239	69.6	188	74.5	38		
Somewhat useful	23.7	119	15.3	120	22.4	239	23.5	188	19.3	51	*A>B	
Useless	0.4	119	0.6	120	0.5	239	0.6	188	0.0	51		*C>D
Cannot say	4.8	119	15.3	120	6.3	239	6.4	188	6.2	51	**A>B	
Total	100.0	119	100.0	120	100.0	239	100.0	188	100.0	51		
% of the informed hhs that think that in accordance with the land law of 1997 have right to sell or buy land												
Yes	6.2	119	11.2	17	6.9	240	9.2	189	0.3	51	***A<B	***C>D
No	51.0	119	56.5	62	51.8	240	51.9	189	51.7	51		
DNK	42.8	119	32.4	42	41.2	240	39.0	189	48.0	51	**A>B	***C<D
Total	100.0	119	100.0	121	100.0	240	100.0	189	100.0	51		

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing (A), (B) and (C), (D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table A3.40. Value of household food consumption per month (Mt)

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)
	A		B				C		D		
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Basic food (cereals, roots and tubers)	1,358.68	881	732.26	809	1,270.69	1690	1,272.12	1263	1,266.00	427	***A>B
Legumes/vegetables	571.28	881	322.87	809	536.39	1690	533.16	1263	547.02	427	***A>B
Fruits and Nuts	197.65	881	136.25	809	189.03	1690	189.80	1263	186.47	427	***A>B
Meats and animal products (including fish)	1,233.17	881	748.91	809	1,165.15	1690	1,141.51	1263	1,242.78	427	***A>B
Other foods (sugar, condiments, beverages, vegetable oil)	787.02	881	432.75	809	737.26	1690	746.50	1263	706.91	427	***A>B
Meals and beverages in restaurants	48.75	881	9.93	809	43.30	1690	31.79	1263	81.09	427	**A>B
Value of total food consumption (Mt)	4,196.55	881	2,382.98	809	3,941.83	1690	3,914.89	1263	4,030.27	427	***A>B
Value of total food consumption (USD)	152.55	881	86.62	809	143.29	1690	142.31	1263	146.50	427	***A>B
Value of total food consumption per capita per day (Mt)	29.37	881	19.33	809	27.96	1690	27.89	1263	28.20	427	***A>B
Value of total food consumption per capita per day (USD)	1.07	881	0.70	809	1.02	1690	1.01	1263	1.02	427	***A>B

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

TableA3. 41. Household Dietary Diversity by location and gender of the household head

	NAMPULA CITY		MONAPO VILA		Total		Male-headed		Female-headed		Testing (a)	
	A		B				C		D			
Food group	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N		
Staple cereals	95.9%	881	91.5%	809	94.0%	1,690	94.0%	1,263	94.0%	427	**A>B	*C<D
Tubers	87.7%	881	78.1%	809	83.5%	1,690	83.0%	1,263	84.8%	427	***A>B	
Meat	31.1%	881	28.5%	809	30.0%	1,690	31.5%	1,263	26.0%	427	*A>B	
Eggs	22.2%	881	18.3%	809	20.5%	1,690	20.3%	1,263	21.1%	427	*A>B	**C<D
Fish and shellfish or other seed food	93.7%	881	93.9%	809	93.8%	1,690	94.1%	1,263	92.9%	427	**A<B	
Legumes	91.2%	881	83.9%	809	88.1%	1,690	90.1%	1,263	82.8%	427		*C>D
Vegetables	94.4%	881	95.4%	809	94.8%	1,690	95.2%	1,263	93.8%	427	***A>B	
Fruit	91.9%	881	82.4%	809	87.8%	1,690	88.0%	1,263	87.1%	427	***A>B	
Milk and milk products	18.4%	881	14.2%	809	16.6%	1,690	17.2%	1,263	15.0%	427	**A>B	
Oil and oil seeds	95.5%	881	92.1%	809	94.0%	1,690	94.5%	1,263	92.9%	427	**A>B	
Sugar	90.7%	881	83.9%	809	87.8%	1,690	88.1%	1,263	86.8%	427	**A>B	
Miscellaneous	98.8%	881	98.3%	809	98.6%	1,690	98.3%	1,263	99.4%	427		*C>D
Household Dietary Diversity (HDDS)	9.12	881	8.61	807	8.90	1688	8.95	1262	8.77	426	***A>B	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table A3.42. Value of monthly household consumption (Mt)

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	
Basic food	1,358.68	881	732.26	809	1,270.69	1690	1,272.12	1263	1,266.00	427	***A>B
Legumes/vegetables	571.28	881	322.87	809	536.39	1690	533.16	1263	547.02	427	***A>B
Fruits and Nuts	197.65	881	136.25	809	189.03	1690	189.80	1263	186.47	427	***A>B
Meats and sub-products	1,233.17	881	748.91	809	1,165.15	1690	1,141.51	1263	1,242.78	427	***A>B
Others	787.02	881	432.75	809	737.26	1690	746.50	1263	706.91	427	***A>B
Meals and beverages in restaurants	48.75	881	9.93	809	43.30	1690	31.79	1263	81.09	427	**A>B
Total food consumption (Mt)	4,196.55	881	2,382.98	809	3,941.83	1690	3,914.89	1263	4,030.27	427	***A>B
Total food consumption (USD)	152.55	881	86.62	809	143.29	1690	142.31	1263	146.50	427	***A>B
Total food consumption per capita per day (Mt)	29.37	881	19.33	809	27.96	1690	27.89	1263	28.20	427	***A>B
Total food consumption per capita per day (USD)	1.07	881	0.70	809	1.02	1690	1.01	1263	1.02	427	***A>B
Household Dietary Diversity Score (HDDS)	9.12	881	8.61	807	8.90	1,688	8.95	1261	8.77	427	***A>B

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing (comparing A to B and C to D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

Table A3.43. Percent of individuals living on less than $1.25 per day (based on PPP exchange rate) and less than 16.7 Mt per day (based on the local poverty line)

	NAMPULA CITY A		MONAPO VILA B		Total		Male-headed C		Female-headed D		Testing (a)	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**		
Average per capita expenditures per day (USD PPP)	1.70	148,007	1.41	22,419	1.66	170,427	1.56	131,785	1.73	38,641		
% individuals in poverty based on global measure (i.e., <$1.25/day)	30.0%	148,007	47.1%	22,419	32.2%	170,427	32.5%	131,785	31.4%	38,641	***A<B	
Average per capita expenditures per day (Meticas)	46.86	148,007	38.81	22,419	45.73	170,427	42.95	131,785	47.56	38,641	**A>B	*C<D
% individuals in poverty based on national poverty line (i.e., <16.7 Mt/day) (b)	39.3%	148,007	53.4%	22,419	41.2%	170,427	41.4%	131,785	40.3%	38,641	***A<B	
Actual number of people per group	5,052		4,296		9,348		7,062		2,286			***C>D

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Significance testing comparing (A) and (B), (C) and (D): * indicates significant difference at 10% level, ** at 5%, and *** at 1%.

(b) Using the urban poverty line for Nampula (16.7 Mt/day/person) from MPD (2010)

Annex 4: Key results presented by treatment and control groups in each of the two urban areas

Note: Table numbers (after A4) correspond to the Tables presenting similar results by treatment and control areas in the main body of the report.

Table A4.9. Demographic characteristics

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
% hh headed by women	27.9%	596	28.7%	285	20.9%	438	24.0%	371
Age of the household head (years)	41.5	596	40.0	**284	40.2	438	41.8	371
Education of the head:								
Know to read and write	78.7%	596	79.6%	284	66.4%	438	59.8%	**371
Currently enrolled	12.6%	596	9.1%	285	9.0%	438	5.4%	371
Have ever been to school	71.9%	596	78.1%	285	71.6%	438	68.7%	371
Household size:								
Total number of members	5.8	596	5.6	*285	5.3	438	5.1	371
Total Adult Equivalent(a)	4.4	596	4.3	285	3.9	438	3.8	371
Women as percentage of all adults, 15 years of age or older	52.5%	594	48.5%	285	49.3%	438	54.6%	***371
Household composition: average number of members per age group								
Infant (<5 years)	1.0	596	1.0	285	1.0	438	1.0	371
Child (5-15 years)	1.7	596	1.7	285	1.7	438	1.6	*371
Adult (15-45 years)	2.5	596	2.5	285	2.1	438	2.0	371
Adult (45-60 years)	0.4	596	0.3	*285	0.4	438	0.4	**371
Older (> 60 years)	0.1	596	0.1	285	0.1	438	0.2	371

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

(a) Factors drawn from Deaton (1997), used by Boughton et al. (2006) and Mather and Donovan (2009) for Mozambique.
Note: Significance testing compares the means treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4.10. Percentage of households reporting income from different sources and type of economic activity

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Remittances and pensions:								
% hh received pension	6.8%	596	5.3%	285	4.1%	438	2.5%	*371
% hh received remittances	23.6%	596	18.6%	285	30.2%	438	22.0%	371
% of households engaged in agricultural activities:								
Crop	82.1%	596	71.1%	285	92.8%	438	94.5%	371
Livestock	25.4%	596	18.7%	***285	35.5%	438	34.4%	371
Salaried employment: % hh with members working as								
Agricultural laborer	15.2%	596	7.1%	285	3.3%	438	1.5%	***371
Migrant worker	0.0%	596	0.3%	***285	0.0%	438	1.1%	*371
Teacher, health service	9.0%	596	13.4%	285	10.5%	438	13.8%	371
Mechanic, construction, factory worker	8.9%	596	7.5%	285	9.7%	438	11.1%	371
Manager, accountant, secretary	1.8%	596	4.2%	285	3.2%	438	5.6%	371
Domestic worker	2.2%	596	4.2%	**285	3.3%	438	6.2%	**371
Sales person, service industry	0.3%	596	1.2%	285	0.3%	438	0.3%	371
Other salaried employee	27.5%	596	16.9%	**285	24.5%	438	29.2%	371
Self-employment: Forest and Fauna products								
Cut/collect firewood	18.2%	596	9.1%	***285	50.3%	438	56.1%	371
Charcoal production	1.2%	596	0.0%	***285	0.8%	438	1.8%	371
Cut grass, cane, palm tree leaves	4.2%	596	3.9%	285	24.0%	438	25.7%	371
Cut branches	1.2%	596	1.1%	285	9.1%	438	6.1%	**371
Collect honey, bush plants and fruits, eggs of wild animals	0.1%	596	0.0%	285	0.4%	438	0.1%	371
Hunting	0.0%	596	0.4%	**285	0.5%	438	0.5%	371
Fishing	0.2%	596	0.4%	285	3.3%	438	0.8%	***371
Wood production	0.6%	596	0.0%	***285	0.1%	438	0.5%	371
Catching birds and reptiles	0.0%	596	0.6%	***285	0.5%	438	0.6%	371
Unreported								
Other self-employment activities:								
Production of home-made beverages	4.3%	596	6.7%	285	4.3%	438	4.0%	371
Purchase and sale of beverages	3.2%	596	4.0%	285	2.5%	438	2.5%	371
Purchase and sale of food products	24.6%	596	21.5%	285	17.6%	438	9.9%	***371
Purchase and sale of all commercial goods	2.8%	596	2.9%	285	4.9%	438	2.4%	**371
Purchase and sale of fish	6.5%	596	4.7%	**285	8.1%	438	3.9%	*371
Purchase and sale of small size livestock and its by-product	1.0%	596	0.6%	285	1.3%	438	0.8%	371
Purchase and sale of medium size livestock and its by-product	5.1%	596	2.1%	285	2.8%	438	3.3%	371
Purchase and sale of large size livestock and its by-product	1.1%	596	0.0%	285	0.5%	438	0.3%	371
Handcrafts/masonry/carpentry	2.5%	596	1.9%	285	1.3%	438	2.7%	371
Tailoring/dressmaking	0.7%	596	2.2%	**285	1.9%	438	2.8%	**371
Radio/bike repair	0.8%	596	0.2%	285	1.5%	438	1.0%	371
Bricks production, smiting, bricklaying	1.5%	596	2.9%	285	1.3%	438	1.2%	371
Milling or agro-processing	0.5%	596	0.0%	*285	0.3%	438	0.2%	371
Other activity	7.0%	596	6.4%	285	6.0%	438	6.5%	371

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4.11.Percentage of households owing various assets, by district and gender of the head

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Car, purchased new	0.7%	596	0.3%	285	0.5%	438	0.0%	***371
Car, purchased second hand	5.2%	596	1.8%	**285	1.8%	438	0.5%	***371
Motorcycle	13.8%	596	13.1%	285	16.0%	438	14.3%	**371
Bicycle	15.9%	596	15.7%	285	31.0%	438	30.9%	371
Radio	47.3%	596	43.8%	285	47.7%	438	41.1%	**371
Sound system	26.2%	596	26.1%	285	11.7%	438	13.2%	*371
Television	51.2%	596	51.5%	285	21.6%	438	17.8%	**371
Washing machine	0.2%	596	0.0%	285	0.0%	438	0.9%	***371
Air conditioner	0.8%	596	0.0%	**285	0.4%	438	1.3%	371
Sewing machine	2.4%	596	5.4%	285	3.0%	438	3.3%	371
Fridge	8.3%	596	3.8%	***285	2.1%	438	2.0%	371
Freezer	29.6%	596	28.9%	285	13.2%	438	10.3%	*371
Electric iron	24.7%	596	20.6%	**285	8.4%	438	4.9%	***371
Coal iron	34.0%	596	40.1%	**285	35.0%	438	28.9%	**371
Fan	30.4%	596	24.5%	**285	17.0%	438	12.9%	**371
Beds (double, single, cot for children, and bunk beds)	84.4%	596	84.9%	285	66.9%	438	63.1%	*371
Landline telephone handset	0.8%	596	0.0%	285	1.2%	438	1.2%	371
Mobile phone	63.0%	596	55.0%	***285	38.1%	438	36.7%	*371
Computer	4.9%	596	3.2%	**285	0.9%	438	2.0%	**371
Printer	2.4%	596	1.4%	*285	0.7%	438	1.7%	371
Wall clocks, wrist or pocket	30.4%	596	29.1%	285	29.8%	438	26.0%	*371
Electric stove	2.7%	596	2.4%	285	0.3%	438	1.9%	**371
Gas stove	1.0%	596	0.0%	***285	0.3%	438	1.6%	**371
Mixed Stove	0.2%	596	0.0%	285	7.6%	438	2.9%	***371

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population
Note: Significance testing compares the means treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 12. Average number and value of purchased assets per household

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Average total number of assets per household	6.9	596	6.2	**285	4.7	438	4.3	***371
Average number of assets recently purchased	0.7	596	0.5	**285	0.7	438	0.5	371
Total value of assets recently purchased per household (Mt)	211.44	596	69.71	***285	112.60	438	63.53	*371
Total value of assets recently purchased per household (Mt)	5,816.58	596	1,917.71	***285	3097.753	438	1747.62	*371

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population
Note: Significance testing compares the means treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 13. Production and sales of livestock and sub-products in the last 12 months

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
% hhs that raised animal in the last 12 months	25.4%	596	18.7%	***285	35.5%	438	34.4%	371
Among the households that raised animals:								
% hhs that sold animals alive in the last 12 months	8.8%	161	14.9%	55	22.3%	159	24.1%	136
% hhs that sold slaughtered animals in the last 12 months	61.3%	161	39.4%	***55	55.5%	159	54.0%	136
Average Tropical Livestock Units (a)	0.29	161	0.22	55	0.27	159	0.21	136

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) Livestock Unit (LU) conversion factors: Cattle (0.65), buffalo (0.70), sheep and goats (0.10), pigs (0.25) and poultry (0.01) (FAO, 2005), exclude rabbits.

Table A4. 14. Access to credit in the last 12 months

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
% of households that applied for credit in the last 12 months	6.9%	596	8.4%	***285	7.5%	438	5.9%	**371
Reasons for applying for credit (% of households):								
Food consumption	20.5%	44	20.1%	23	36.5%	40	37.2%	24
Agricultural investment	3.3%	44	6.7%	23	4.8%	40	4.0%	24
Ceremonies	13.0%	44	7.2%	23	10.9%	40	0.0%	24
Education	3.3%	44	0.0%	23	0.0%	40	33.0%	24
Health	2.1%	44	76.9%	23	3.4%	40	0.0%	24
Asset purchase	32.9%	44	30.2%	23	19.8%	40	24.2%	24
Travel	10.3%	44	4.0%	23	0.0%	40	0.0%	24
Other	36.8%	44	26.7%	23	35.3%	40	34.6%	24
For those who did not apply, reasons for not applying for credit (% households):								
No need	23.2%	552	15.0%	262	22.1%	398	19.7%	347
Was refused	3.0%	552	1.4%	262	1.6%	398	2.0%	347
Lack of access	19.8%	552	20.1%	262	21.1%	398	17.8%	347
Concerned about not being accepted	24.9%	552	34.3%	262	27.5%	398	28.0%	347
Lack of collateral	10.2%	552	14.5%	262	9.8%	398	16.0%	347
High transaction costs	3.3%	552	6.4%	262	2.7%	398	2.8%	347
Do not want to offer collateral	2.0%	552	2.1%	262	4.8%	398	1.9%	347
Do not want to have debts	9.6%	552	4.1%	262	6.2%	398	9.8%	347
Other	3.3%	552	2.0%	262	4.2%	398	2.0%	347

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 15. Percentage of households that applied for credit by source of credit

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Government	7.3%	44	5.0%	23	3.3%	40	26.4%	24
Bank	53.1%	44	25.4%	23	37.7%	40	41.5%	24
Associations	8.0%	44	27.0%	23	5.7%	40	17.9%	24
Companies	0.0%	44	0.7%	23	1.3%	40	0.0%	24
NGOs	0.0%	44	0.0%	23	5.3%	40	2.3%	24
Traders/Businessmen	0.5%	44	2.4%	23	0.0%	40	1.6%	24
Relatives	11.7%	44	14.9%	23	1.0%	40	9.5%	24
Friends	20.1%	44	25.3%	23	39.9%	40	9.0%	24
Other	1.5%	44	0.0%	23	6.5%	40	0.6%	24

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 16. Amount requested and accessed per household and reasons for not accessing credit

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
% of households that applied for credit in the last 12 months	6.9%	596	8.4%	***285	7.5%	438	5.9%	**371
Among those who applied (total N=131):								
Average total amount requested per household ($US)	1,022.40	44	1,218.25	23	1,499.43	40	845.77	24
Median total amount requested per household ($US)	436.21	44	145.40	23	141.77	40	181.75	24
% of households that had to present collateral	14.3%	44	11.9%	23	18.7%	40	19.6%	24
% of households by type of collateral presented:								
House	10.3%	44	0.6%	23	0.0%	40	0.0%	25
Other	7.6%	44	1.3%	23	8.5%	40	6.4%	25
Unreported			10.1%	23	10.3%	40	13.3%	25
% household that received credit	80.5%	44	92.8%	23	78.9%	40	73.3%	24
% households that were denied credit	19.5%	44	7.2%	23	21.1%	40	26.7%	24
Among those who received credit (total N=95):								
Average amount received per household ($US)	612.79	29	334.90	20	622.687	28	1,046.903	18
Median amount received per household ($US)	218.10	29	145.40	20	72.701	28	363.504	18
Average amount to repay per household ($US)	738.89	29	399.34	20	695.354	28	1,535.133	18
Median amount to repay per household ($US)	218.10	29	159.94	20	72.701	28	1,235.914	18
Average time to repay the credit (years)	0.76	35	1.46	*21	1.65	22	1.99	16
Among those who were denied credit (total N=36):								
% of household by reasons for not getting credit:								
Insufficient income	10.6%	15	0.0%	3	4.6%	12	75.4%	***6
Insufficient collateral	2.5%	15	55.8%	3	63.3%	12	9.9%	6
Other debts	3.0%	15	0.0%	3	0.0%	12	0.0%	6
Other reason	82.2%	15	34.8%	*3	28.8%	12	14.7%	6

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 19. Number of parcel by type of use by location and gender of the household head

Type of parcel	Nampula city Treatment N	Nampula city Control N	Monapo vila Treatment N	Monapo vila Control N
Belong to hh and currently in their possession				
Residential parcels:	727	147	408	319
Agriculture parcels:	129	11	94	65
Rented-out or lent to others				
Residential parcels:	38	4	26	17
Agriculture parcels:	1	0	3	5
Rented-in or borrowed from others				
Residential parcels:	8	1	14	16
Agriculture parcels:	64	4	35	18

Source: MCA/MINAG's Urban Land Survey, 2010

Table A4. 20. Number of land parcels and parcel characteristics

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
Average number of parcels per hh:								
Parcels belong to hh and currently in their possession	1.6	596	1.5	285	2.3	438	2.4	371
Parcels rented-out or lent to others	0.1	596	0.0	***285	0.2	438	0.2	371
Parcels rented-in or borrowed	0.3	596	0.1	***285	0.4	438	0.4	371
Average total no. of parcels per hh	2.0	596	1.6	***285	2.9	438	2.9	371
Average total area of parcels (m2) owned by a hh (b)	1,533.2	965	1,237.5	165	2,079.0	578	2,260.4	439
Average parcel area (m^2) by parcel type:								
Parcels that belong to hh and currently in their possession	1,304.3	854	1,192.1	156	1,962.2	500	2,150.2	383
Parcels rented-out or lent to others	415.9	39	296.1	4	791.3	29	1,639.0	22
Parcels rented-in or borrowed	4,427.3	72	3,723.7	5	4,497.0	49	3,548.7	34
Average parcel area (m^2) by parcel's main use:								
Residence	636.2	771	282.4	***150	599.1	446	625.9	351
Agriculture	5,638.3	194	9,481.8	***15	7,274.4	132	8,157.1	88

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 21. Types of agricultural uses of land parcels

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% parcels used for residential purposes	82.5%	965	89.3%	*167	77.2%	577	79.3%	440
% of all parcels used for the following agricultural purposes (b):								
Annual crops	95.7%	192	93.8%	15	93.9%	129	89.7%	88
Permanent crops	42.6%	192	47.4%	15	34.1%	129	36.2%	88
Fallow	11.9%	192	10.8%	15	2.4%	129	5.4%	88
Grazing	0.0%	192	0.0%	15	0.0%	129	0.0%	88

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 22. Access to utility and infrastructure in parcels used for residence purpose (a)

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% parcels by source of water most used in the parcels:								
Tap	59.9%	964	78.0%	***167	43.2%	577	42.0%	436
Borehole	1.9%	964	1.3%	167	4.3%	577	7.0%	*436
Well private	22.9%	964	8.7%	***167	27.8%	577	26.6%	436
Public fountain	7.2%	964	9.1%	167	8.6%	577	7.0%	436
River/lake	6.5%	964	2.9%	167	11.5%	577	14.4%	436
Other	1.6%	964	0.0%	167	4.4%	577	3.0%	436
% parcels by route of access most used in the parcels:								
Primary road	2.9%	964	0.9%	167	7.7%	577	15.3%	***436
Secondary road	15.0%	964	12.8%	167	19.5%	577	17.2%	436
Tertiary road	43.7%	964	33.9%	**167	36.1%	577	37.4%	436
Unpaved road	21.5%	964	37.9%	***167	23.7%	577	19.7%	436
Other	16.9%	964	14.5%	167	13.0%	577	10.4%	436
% of parcels with other amenities on the parcels (b):								
% parcels that have electricity in their parcels	47.2%	964	56.8%	**167	25.6%	577	21.2%	436
% parcels that have landline in their parcels	1.1%	964	1.3%	167	1.8%	577	0.4%	**436
% parcels that have access to mobile network in their parcels	91.5%	964	87.9%	167	80.6%	577	83.0%	436
% parcels with fruit trees (c)	67.4%	965	57.8%	**167	58.1%	570	54.7%	438
Average total number of fruit trees per parcel	8.4	639	3.4	98	5.9	329	4.7	*236
Average number of buildings per parcel	1.2	965	1.3	*167	1.0	580	1.1	440

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) 10 parcels with no information on the access to services

(b) 14 parcels in did not report whether there was fruit trees on the parcels.

(c) 2 parcels did not report the number of buildings

Table A4. 23. Parcel distribution by mode of acquisition (a)

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
Ceded by traditional authorities	4.1%	890	6.5%	159	3.6%	526	6.7%	**404
Ceded by formal authorities	2.7%	890	1.6%	159	3.3%	526	4.1%	404
Ceded by relatives	13.1%	890	13.4%	159	15.3%	526	15.5%	404
Occupied	11.2%	890	11.0%	159	7.2%	526	6.4%	404
Purchased	51.1%	890	51.2%	159	53.2%	526	50.4%	404
Inherited	17.1%	890	16.0%	159	17.5%	526	16.1%	404
Other	0.7%	890	0.4%	159	0.1%	526	0.6%	404

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) 15 parcels did not report the form of acquisition

Table A4. 24. Agencies involved in and the cost of land acquisition (for parcels in the possession of the households and those rented-out)

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% parcels by people involved in the acquisition of parcel (a):								
Community leaders	87.3%	526	88.2%	92	86.8%	325	88.9%	241
Local court	2.6%	526	1.9%	92	2.4%	325	2.5%	241
District authorities	0.4%	526	0.0%	92	0.0%	325	0.0%	241
Lawyer	2.7%	526	3.2%	92	3.0%	325	0.9%	*241
Other	20.1%	526	20.9%	92	22.2%	325	18.5%	241
Average No. of agencies involved	1.13	526	1.14	92	1.14	325	1.11	241
Average total cost of acquiring the parcel with involvement of (Mt):								
Community leaders	17.03	447	6.31	83	51.12	276	22.60	206
Local court	43.88	13	1,945.18	***2	206.12	7	1,400.86	6
District authorities	1.00	1	n/a	0	n/a	0	n/a	0
Lawyer	35.93	16	0.00	3	1,328.79	11	0.00	4
Other	0.25	106	0.00	17	0.00	62	150.61	**52
Value paid to acquire the parcel aside from the above fees (Mt)	6,830.80	526	8,814.39	92	7,400.21	325	6,131.82	241
Total value paid for acquisition of the parcel (Mt)	6,847.42	526	8,856.58	92	7,487.40	325	6,213.67	241
Total value paid for acquisition of the parcel(Mt/m2) (b)	18.26	524	45.07	**92	30.47	323	33.48	239

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) Multiple agents/authorities are allowed. Ten parcels had missing data on the agents involved in land acquisition

(b) There are 138 missing values generated in the estimation of acquisition cost per area due to the fact that the area was not reported

Table A4. 25.Types of Land Documents Currently in Possession by Parcel Holder

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% parcels by type of documents currently existent that give them property rights to the parcel:								
DUAT	0.6%	892	0.0%	162	0.4%	528	0.0%	405
Provisional title	2.3%	892	3.4%	162	1.5%	528	2.8%	405
Certificate of cadastral services	2.1%	892	2.2%	162	1.6%	528	2.8%	405
Affidavit of purchase/sales	28.3%	892	28.1%	162	32.4%	528	30.9%	405
Other	1.1%	892	0.7%	162	1.6%	528	0.9%	405
None	65.6%	892	65.6%	162	62.5%	528	62.6%	405

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 26. Interest and willingness to pay for DUAT

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% parcels that have no DUAT and have initiated the process of obtaining DUAT (a)	2.3%	885	2.2%	161	2.0%	521	3.9%	*401
Among the parcel with no DUAT and have not initiated the process of obtaining it:								
% parcels in which there is an interest in obtaining DUAT	87.6%	862	84.4%	157	85.8%	507	86.0%	386
Average amount per parcel that the hh is willing to pay to obtain DUAT (MT) (b)	308.90	771	399.25	134	280.36	442	355.06	**346
Average amount per parcel that the hh is willing to pay to obtain DUAT per square meter (MT/m2) (c)	1.27	769	2.10	***132	1.10	440	1.29	344
Average amount per parcel that the hh is willing to pay to obtain DUAT per square meter per main use of the parcel (MT/m2):								
Residence	1.42	655	2.32	**122	1.28	362	1.52	282
Agriculture	0.17	114	0.05	10	0.20	78	0.28	62

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) 6 parcels did not report whether they have initiated the process of obtaining DUAT and thus not included in this analysis.

(b) 301 parcels did not report the value they are willing to pay for obtaining DUAT

(c) 645 parcels generated missing values in the estimation of willingness to pay for DUAT per area

Table A4. 27. Hypothetical sale and rental prices of parcels belonging to the household surveyed

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
Average total value the parcel could be sold for (MT) (a)	65,715.01	555	57,568.66	98	81,991.22	311	73,946.53	263
Average total value per main plot use:								
Residence	64,726.59	462	55,403.63	92	87,812.25	258	72,426.33	218
Agriculture	72,097.20	93	89,371.24	6	53,020.00	53	80,897.20	45
Average total value the parcel could be sold for (MT/m2) (b)	252.39	554	292.00	97	305.71	310	344.43	261
Value per main use:								
Residence	285.50	461	310.64	91	335.68	257	411.68	216
Agriculture	39.47	93	19.99	6	156.86	53	40.63	45
Average value a room for housing in the parcel could be rented out for (MT/month) (c)	574.52	350	347.81	57	437.87	206	343.50	170
Average value a room for commercial purposes in the parcel could be rented out for (MT/month) (d)	544.77	301	701.51	45	587.63	175	594.82	144
Average value the whole parcel could be rented out for (MT/month) (e)	5,945.73	477	2,126.87	83	5,182.59	269	1,999.18	**239
Average monthly value the whole parcel could be rented out for (MT/m^2) (f)	29.27	476	8.62	82	23.16	269	6.95	*238

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) 770 parcels with no hypothetical value

(b) For this calculation, 772 missing values were generated on the parcels without land size value

(c) 1,211 parcels with no information on the rental value

(d) 1,329 parcels with no information on the rental value

(e) 926 parcels with no information on the rental value

(f) 3 missing data due to missing information on land size

Table A4. 28. Land conflicts experienced in the past and/or perceived in the future

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% parcels that experienced land conflicts (a)	3.7%	28	0.0%	6	0.0%	16	3.1%	17
% parcels concerned of having conflict in future (b)	18.0%	891	18.8%	162	16.1%	529	16.0%	405
Among hh concerned, % parcels s citing the following people as the potential cause of conflict:								
Traditional leaders	3.6%	169	0.0%	28	6.5%	80	9.4%	75
Formal authorities	43.3%	169	34.0%	28	51.3%	80	40.1%	75
Family	12.0%	169	7.3%	28	10.9%	80	9.5%	75
Neighbors	30.0%	169	58.7%	***28	18.9%	80	25.2%	75
Firms	6.0%	169	0.0%	28	8.0%	80	8.3%	75
Immigrants	3.9%	169	0.0%	28	2.5%	80	2.6%	75
Other	1.2%	169	0.0%	28	2.0%	80	5.0%	75
Among hh concerned, % parcels citing the following types of issues as potential cause of conflict								
Boundary errors	26.1%	167	52.5%	***28	18.6%	80	21.9%	75
Weak cadastral services	1.7%	167	0.0%	28	3.1%	80	6.0%	75
Disagreement between heirs	7.2%	167	2.4%	28	17.5%	80	14.6%	75
Incomplete demarcation	1.9%	167	0.0%	28	2.0%	80	3.2%	75
Sales to more than one person	0.0%	167	0.0%	28	0.0%	80	1.0%	75
Poor consultation with community leader	2.5%	167	4.1%	28	0.0%	80	0.8%	75
Lost parcel due to lack of DUAT	34.4%	167	22.5%	28	41.5%	80	32.2%	75
Parcel recovered by the authorities	20.2%	167	14.7%	28	16.2%	80	17.7%	75
Other	5.7%	167	3.8%	28	1.2%	80	2.6%	75
Among hh concerned, % parcels reporting the following as the level of probability of losing the parcel due to conflict:								
Highly probable	24.8%	167	34.8%	28	24.1%	80	25.0%	75
Moderately probable	11.4%	167	12.5%	28	13.0%	80	11.2%	75
Somewhat probable	53.0%	167	47.0%	28	48.5%	80	47.6%	75
Not probable	6.4%	167	2.5%	**28	2.8%	80	11.3%	75
Does not know	4.1%	167	3.2%	28	11.0%	80	4.8%	75

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) 1,927 parcels did not respond to the question and are thus treated as missing observations

(b) 7 parcels did not respond to the question about the concern of having land conflict in future and are thus considered missing observations.

Table A4. 29. Information on renting -out parcels

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% hh that have parcels rented out or lent to other	7.6%	652	4.3%	**285	10.7%	382	8.6%	371
% parcels rented-out	3.6%	967	2.9%	***167	5.9%	580	3.7%	440
For those that have rented out/lent to others (a):								
% parcels by the relationship of the tenant to the owner of the parcel in the HH:								
Head	1.4%	39	0.0%	3	7.5%	27	0.0%	18
Spouse	1.5%	39	0.0%	3	0.0%	27	0.0%	18
Child	0.0%	39	0.0%	3	4.2%	27	13.5%	18
Sibling	3.7%	39	35.0%	**3	16.9%	27	46.4%	**18
Parent	0.0%	39	0.0%	3	0.0%	27	0.0%	18
Niece/nephew	2.1%	39	0.0%	3	9.4%	27	14.4%	18
Other relative	13.3%	39	32.5%	3	27.0%	27	17.1%	18
Nonrelatives	77.6%	39	32.5%	*3	35.1%	27	8.6%	**18
Monthly rental rate (MT/month)	1,187.55	39	11,703.96	***3	0.00	25	0.00	18
Average total size of land currently rented out (m2)	415.89	39	223.72	3	825.84	25	1,742.14	18
Average total value received for rent per parcel per month(Mt/m2)	5.08	39	39.01	***3	0.00	25	0.00	18
Average number of years since the tenant acquired the use right over this parcel up to now	3.71	38	2	***3	5.89	25	5.96	16
% parcels in which the payment is in cash	97.8%	39	22.1%	4	4.8%	29	0.0%	22
% parcels with rental contract with the tenants	31.0%	39	32.5%	3	4.1%	26	29.1%	17
Average total number of buildings in the parcels rented out	1.00	39	1.00	3	0.67	27	0.65	18
% parcels renting out those buildings	100.0%	30	32.5%	3	40.4%	17	38.1%	12

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) 7 parcels did not provide information on the relationship of the tenant with the owner

Table A4. 30. Information on renting- in parcels

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% hhs that have parcels rented-in or borrowed from other	22.8%	596	7.1%	***285	28.4%	438	24.4%	370
% parcels rented-in or borrowed from other	8.3%	967	2.8%	**167	7.3%	580	9.2%	440
For those that have rented out/lent to others:								
% parcels by the relationship of the owner of the parcel with the HH renting-in the parcel (a):								
Head	0.0%	71	0.0%	5	0.0%	35	0.0%	33
Spouse	0.0%	71	0.0%	5	0.0%	35	7.8%	33
Child	0.0%	71	0.0%	5	0.0%	35	0.0%	33
Sibling	4.0%	71	0.0%	5	1.6%	35	3.9%	33
Parent	0.3%	71	0.0%	5	0.0%	35	2.9%	33
Niece/nephew	3.6%	71	0.0%	5	0.0%	35	0.0%	33
Grandchild	0.0%	71	0.0%	5	0.0%	35	0.0%	33
Other relative	24.7%	71	15.7%	5	29.9%	35	11.5%	*33
Nonrelatives	67.4%	71	84.3%	5	68.6%	35	73.9%	33
% parcels reporting having rental contract (b)	7.4%	71	0.0%	5	4.1%	34	7.5%	34
% parcels by people involved in the rental process								
Community leasers	9.4%	71	0.0%	5	3.7%	34	1.2%	34
Local court	0.0%	71	0.0%	5	0.0%	34	0.0%	34
District authority	0.0%	71	0.0%	5	0.0%	34	1.1%	34
Lawyer	0.0%	71	0.0%	5	0.0%	34	0.0%	34
Other	17.1%	71	22.9%	5	4.1%	34	2.4%	34
% parcels with no involvement of an agent/institution in the renting process	74.0%	71	77.1%	5	92.3%	34	95.3%	34
For the parcels with at least one agent involved, average No. of people involved in the rental of a parcel (b)	1.02	19	1.00	1	1.00	3	1.00	4
Average total cost paid for the renting process per parcel (Mt) (c)	1.18	19	0.00	1	0.00	3	0.00	4
Average monthly rent paid per parcels rented-in (Mt/month)	855.37	22	25.00	1	876.69	5	82.00	5
Average area of land currently rented-in per parcel (m2)	4,316.26	22	2,500.00	1	3,834.08	5	3,382.49	5
Average monthly rent paid per parcels rented-in (Mt/month/m2)	0.13	22	0.01	1	1.09	5	0.09	5
% parcels reporting payment in cash	0.17	72	0.23	5	0.16	35	0.15	34
Average number of years since the tenant acquired the use right over this parcel up to now	6.12	71	4.55	5	3.52	35	6.43	34
Average total number of buildings in the parcels rented-in	0.30	71	0.16	5	0.18	35	0.41	34
% parcels renting in those buildings	0.32	17	0.00	1	0.58	4	0.12	6

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) 16 parcels did not reported their rental information

(b) 133 parcels with no information on agents involved in land acquisition

(c) 127 parcels with no information on rental rate

Table A4. 31. Information on rental values (rented-in and out)

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Average monthly rent paid per parcels rented (Mt/month)	1,057.35	61	8,838.58	***4	127.33	30	25.42	23
Average area of land currently rented per parcel (m2)	1,944.69	61	782.20	4	1,262.77	30	2,250.74	23
Average monthly rent paid per parcels rented-in (Mt/m2)	3.14	61	29.44	***4	0.16	30	0.03	23
Residence								
Average monthly rent paid per parcels rented (Mt/month)	1,119.24	40	11,703.96	***3	24.29	24	0.99	15
Average area of land currently rented per parcel (m2)	346.80	40	223.72	3	696.19	24	970.22	15
Average monthly rent paid per parcels rented-in (Mt/m2)	4.79	40	39.01	***3	0.18	24	0.00	15
Agriculture								
Average monthly rent paid per parcels rented (Mt/month)	944.74	21	25.00	1	531.99	6	67.72	8
Average area of land currently rented per parcel (m2)	4,851.89	21	2,500.00	1	3,487.73	6	4,467.81	8
Average monthly rent paid per parcels rented-in (Mt/m2)	0.13	21	0.01	1	0.05	6	0.07	8

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) A total of 254 parcels are rented (in/out) of which 124 are used for residence and 130 for agriculture. Out of 254 parcels, 36 parcels do not have information on rental values.

Table A4. 32. Rental participation in the past 5 years

Item	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
	Mean	N	Mean	N	Mean	N	Mean	N
% hhs that rented-in parcels in the last 5 years	1.4%	596	1.4%	285	1.8%	438	2.9%	371
Average area of land rented-in in the last 5 years per household (m2)	460.69	2	581.68	5	50.00	1	889.56	3
% hh with rental agreement	59.7%	3	25.9%	5	0.0%	1	0.0%	4
% parcels rented-in by uses of parcels:								
Residence	100.0%	3	100.0%	5	100.0%	1	41.5%	4
Agriculture	0.0%	3	0.0%	5	0.0%	1	58.5%	4
Commerce	0.0%	3	0.0%	5	0.0%	1	0.0%	4
Average time past since stopped renting (years)	0.35	3	0.32	5	0.00	1	0.18	4
% parcels by reasons why stopped renting parcels:								
Owner needed the parcels	19.8%	3	3.8%	5	100.0%	1	58.5%	4
Household did not need parcel	59.7%	3	96.2%	5	0.0%	1	41.5%	4
Other reason	20.5%	3	0.0%	5	0.0%	1	0.0%	4
Average rental rate at the time the households stopped renting (Mt)	212.68	2	321.56	5	200.00	1	100.00	1
Rental rate per use:								
Residence	212.68	2	321.56	5	200.00	1	100.00	1
Agriculture	n/a	0	n/a	0	n/a	0	n/a	0
Commerce	n/a	0	n/a	0	n/a	0	n/a	0
Average rental rate at the time the households stopped renting (Mt/m^2)	0.93	2	0.93	5	4.00	1	0.67	1
Rental rate per use:								
Residence	0.93	2	0.93	5	4.00	1	0.67	1
Agriculture	n/a	0	n/a	0	n/a	0	n/a	0
Commerce	n/a	0	n/a	0	n/a	0	n/a	0

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

n/a - not applicable

Table A4. 33. Types of land investment made in the past 12 months

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% hh that made at least one type of investment	26.8%	596	22.8%	285	34.2%	438	30.9%	371
% parcels that have at least one investment	18.8%	967	31.3%	***167	26.7%	580	25.3%	***440
For those that made investments, % parcels by type of investment made:								
increasing the parcel size	1.2%	192	0.0%	50	5.6%	149	2.6%	123
constructions of new buildings/houses	26.7%	192	23.8%	50	36.4%	149	29.2%	123
repairs, improvements, rehabilitation of buildings	16.2%	192	10.9%	50	15.8%	149	13.2%	123
repairs, improvement, rehabilitations of roofs	37.4%	192	42.6%	50	37.8%	149	44.2%	123
sewage, drainage, toilets	10.9%	192	12.5%	50	20.3%	149	15.6%	123
facilities for water supply	12.3%	192	21.3%	50	1.6%	149	2.0%	123
Electricity	17.3%	192	17.3%	50	12.7%	149	19.6%	123
landline service	0.0%	192	0.0%	50	0.0%	149	0.0%	123
irrigation	0.0%	192	0.0%	50	0.0%	149	0.0%	123
Average cost of investment per parcel by type (Mt):								
increasing the parcel size	n/a	0	n/a	0	n/a	0	n/a	0
constructions of new buildings/houses	319,670.50	15	2,284,070.00	*5	48,010.25	25	191,766.90	**12
repairs, improvements and rehabilitation of buildings	132,101.80	12	14,283.46	3	22,186.26	6	14,307.01	9
repairs, improvement and rehabilitations of roofs on the buildings	3,810.40	41	2,773.07	11	47,299.64	30	6,577.98	26
sewage, drainage, toilets	1,150.45	8	894.97	5	132.44	16	219.07	7
facilities for water supply	34,055.57	6	220,200.00	**1	0.00	1	200.00	1
Electricity	1,335.21	5	1,996.93	2	94,621.27	3	3,380.67	**6
Average total cost of investment per parcel (Mt)	***41,151.43***	***192***	***194,582.00***	***50***	***20,847.66***	***149***	***21,952.50***	***123***
Total Average investment cost per parcel per m2 (Mt)	***141.71***	***192***	***1,096.85***	***48***	***48.35***	***149***	***153.45***	***123***

Source: MCA/MINAG's Urban Land Survey, 2010

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

n/a - not applicable

Table A4. 34. Percentage households by their opinion on the effect of DUAT on the value of parcel

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
Increase	94.2%	564	94.9%	317	91.7%	470	92.5%	339
Decrease	2.2%	564	1.7%	317	1.6%	470	2.6%	339
Do not affect	2.2%	564	2.3%	317	2.7%	470	3.0%	339
Do not know	1.4%	564	1.1%	317	4.0%	470	1.9%	**339
Total	100.0%	564	100.0%	317	100.0%	470	100.0%	339

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 35. Percentage of households by their willingness to pay, willingness to sell and rent out in the case of DUAT

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
% hh willing to pay more, less or same for parcel with DUAT than that without DUAT:								
More	35.2%	564	34.0%	317	42.2%	470	32.2%	***339
Less	56.8%	564	59.3%	317	48.7%	470	57.3%	339
Same	3.5%	564	4.2%	317	3.6%	470	6.5%	339
DNK	4.4%	564	2.6%	317	5.5%	470	4.0%	339
Total	100.0%	564	100.0%	317	100.0%	470	100.0%	339
% hh more willing to sell property in the case of DUAT:								
Yes	34.9%	564	28.7%	*317	43.3%	470	45.6%	339
No	55.4%	564	64.0%	**317	46.3%	470	47.6%	339
DNK	9.7%	564	7.3%	*317	10.4%	470	6.7%	**339
Total	100.0%	564	100.0%	317	100.0%	470	100.0%	339
% hh more willing to rent out property in the case of DUAT:								
Yes	51.3%	564	43.1%	***317	59.7%	470	57.9%	339
No	40.1%	564	48.2%	***317	33.6%	470	35.7%	339
DNK	8.6%	564	8.6%	317	6.7%	470	6.4%	339
Total	100.0%	564	100.0%	317	100.0%	470	100.0%	339

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 36. Households' opinion about the effect of DUAT on conflicts and expropriation

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
% hh believing that demarcation/DUAT will make disputes more or less likely to occur								
More likely	21.0%	564	15.6%	**317	32.5%	470	31.3%	339
Somewhat likely	15.1%	564	16.4%	317	17.4%	470	18.7%	339
Somewhat unlikely	21.0%	564	18.5%	317	15.0%	470	17.8%	*339
More unlikely	38.1%	564	44.1%	317	30.2%	470	29.4%	339
DNK	4.7%	564	5.4%	317	4.9%	470	2.9%	339
Total	100.0%	564	100.0%	317	100.0%	470	100.0%	339
% hh believing that demarcation/DUAT will make disputes more or less likely to be resolved								
More likely	55.3%	564	51.6%	317	54.1%	470	56.3%	339
Somewhat likely	25.6%	564	26.0%	317	21.5%	470	21.6%	339
Somewhat unlikely	7.6%	564	8.3%	*317	9.1%	470	5.7%	**339
More unlikely	7.7%	564	7.4%	317	10.7%	470	11.8%	339
DNK	3.8%	564	6.6%	317	4.5%	470	4.6%	339
Total	100.0%	564	100.0%	317	100.0%	470	100.0%	339
HHs' opinion about DUAT reducing the risk of expropriation of land: % hhs								
Yes	93.7%	564	93.4%	317	93.7%	470	93.8%	339
No	1.8%	564	2.1%	317	2.2%	470	1.9%	339
DNK	4.5%	564	4.5%	317	3.9%	470	4.2%	339
Total	100.0%	564	100.0%	317	99.8%	470	100.0%	339
HHs' opinion about DUAT making the expropriation of land more transparent: % hhs								
Yes	91.8%	564	93.5%	317	94.9%	470	95.9%	339
No	3.6%	564	1.8%	**317	1.3%	470	1.8%	***339
DNK	4.5%	564	4.7%	317	3.6%	470	2.3%	339
Total	100.0%	564	100.0%	317	99.8%	470	100.0%	339

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 37. Households' opinion about the effect of DUAT on investment and collaterization

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
hhs' opinion about making improvement or investments on their properties in the case of DUAT: % hhs								
More likely	63.6%	564	66.6%	**317	69.0%	470	66.7%	339
Somewhat likely	22.3%	564	19.6%	***317	18.5%	470	23.3%	339
Somewhat unlikely	4.7%	564	4.2%	317	3.8%	470	2.4%	339
More unlikely	2.8%	564	2.0%	317	1.3%	470	1.3%	339
DNK	6.6%	564	7.7%	317	7.2%	470	6.2%	339
Total	100.0%	564	100.0%	317	99.8%	470	100.0%	339
hhs' opinion about using their parcels as collateral to obtain credit in the case of DUAT: % hhs								
More likely	28.9%	564	22.5%	317	39.5%	470	39.2%	339
Somewhat likely	17.0%	564	21.6%	317	20.6%	470	23.8%	339
Somewhat unlikely	18.5%	564	21.5%	317	15.4%	470	17.8%	*339
More unlikely	19.0%	564	17.8%	317	8.8%	470	4.9%	**339
DNK	16.6%	564	16.6%	317	15.7%	470	14.4%	339
Total	100.0%	564	100.0%	317	100.0%	470	100.0%	339
% hh by purposes to which they would use the credit for if the hh is able to use land as collateral								
Agriculture	34.0%	564	30.4%	317	48.2%	470	60.5%	339
Make improvements/expand property	16.0%	564	26.2%	317	17.9%	470	18.2%	339
Business	50.0%	564	43.5%	317	33.9%	470	21.2%	339
Total	100.0%	564	100.0%	317	100.0%	470	100.0%	339

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4. 38. Knowledge about women's rights under the land law of 1997

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% hhs reporting that women have the right to inherit land on equal basis as their brothers								
Yes	91.9%	564	72.7%	317	58.0%	470	59.0%	339
No	1.4%	564	19.6%	**317	32.4%	470	31.4%	339
DNK	7.1%	564	7.4%	317	10.0%	470	10.0%	339
Total	100%	564	100%	317	100%	470	100%	339
% hhs reporting that women have the right to maintain a piece of their ex-husband's land in case of divorce								
Yes	82.4%	564	80.2%	317	74.8%	470	73.4%	339
No	12.7%	564	16.0%	317	21.8%	470	22.7%	339
DNK	5.0%	564	3.8%	317	3.2%	470	3.9%	339
Total	100%	564	100%	317	100%	470	100%	339
% hhs reporting that women have the right to apply for a formal land title								
Yes	90.0%	564	88.1%	317	85.9%	470	84.2%	339
No	6.9%	564	7.3%	317	9.8%	470	12.4%	339
DNK	3.1%	564	4.6%	317	4.1%	470	3.5%	339
Total	100%	564	100%	317	100%	470	100%	339

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4.39. Perceptions about the land law of 1997

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
% hh informed about the 1997's land law	12.2%	564	14.1%	317	12.7%	469	15.0%	339
If informed, how much the hh knows about the land law:								
None	3.2%	72	12.5%	47	19.6%	65	11.5%	55
A little	79.9%	72	76.2%	47	55.6%	65	67.5%	55
A fair amount	12.0%	72	8.7%	47	18.2%	65	14.8%	55
A lot	4.9%	72	2.6%	47	6.5%	65	6.2%	55
Total	100.0%	72	100.0%	47	100.0%	65	100.0%	55
If informed, % hhs by the means that they received information of land law								
Local leaders	26.0%	72	9.9%	47	38.6%	65	26.3%	55
Dissemination by authorities	36.1%	72	33.6%	47	29.1%	65	45.2%	55
Others	37.9%	72	56.5%	47	32.3%	65	28.5%	55
Total	100.0%	72	100.0%	47	100.0%	65	100.0%	55
If informed, % hhs that received information about the land law of 1997	5.3%	72	10.4%	*47	7.7%	65	22.4%	***55
If informed, % hhs that knows specific rights of the land law of 1997	63.9%	72	39.0%	***47	36.3%	65	61.6%	***55
The opinions of informed HH's about how the land law strenghtens land tenure: % hhs								
Very useful	73.6%	72	67.3%	**47	72.8%	65	63.6%	55
Somewhat useful	24.5%	72	22.3%	47	7.3%	65	25.7%	**55
Useless	0.0%	72	1.1%	47	1.0%	65	0.0%	55
Cannot say	1.9%	72	9.3%	*47	18.8%	65	10.7%	55
Total	100.0%	72	100.0%	47	100.0%	65	100.0%	55
% of the informed hhs that think that in accordance with the land law of 1997 have right to sell or buy land								
Yes	7.4%	72	4.3%	47	9.1%	65	14.1%	55
No	51.4%	72	50.4%	47	51.1%	65	64.3%	55
DNK	41.2%	72	45.2%	47	39.8%	65	21.6%	55
Total	100.0%	72	100.0%	47	100.0%	65	100.0%	55

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4.40. Value of household food consumption per month (Mt)

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Basic food (cereals, roots and tubers)	1,366.25	596	1,342.23	285	733.47	438	770.77	371
Legumes/vegeTable A4.s	577.20	596	559.59	285	294.73	438	365.72	371
Fruits and Nuts	226.91	596	151.94	***285	165.97	438	123.22	371
Meats and animal products (including fish)	1,325.85	596	1,097.08	**285	790.52	438	720.02	371
Other foods (sugar, condiments, beverages, vegetable oil)	704.79	596	910.46	285	398.18	438	465.74	371
Meals and beverages in restaurants	58.40	596	34.66	285	8.91	438	10.60	371
Value of total food consumption (Mt)	4,259.39	596	4,095.96	285	2,391.77	438	2,456.07	371
Value of total food consumption (USD)	154.83	596	148.89	285	86.94	438	89.28	371
Value of total food consumption per capita per day (Mt)	30.37	596	27.67	285	17.40	438	22.25	**371
Value of total food consumption per capita per day (USD)	1.10	596	1.01	285	0.63	438	0.81	**371

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4.41. Household Dietary Diversity by location and gender of the household head

	Nampula city Treatment		Nampula city Control		Monapo vila Treatment		Monapo vila Control	
Item	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Staple cereals	94.6%	596	98.8%	***285	94.0%	438	89.0%	**371
Tubers	86.5%	596	90.3%	285	81.5%	438	74.8%	**371
Meat	32.1%	596	29.0%	285	32.0%	438	25.0%	**371
Eggs	23.3%	596	19.6%	285	20.5%	438	16.1%	371
Fish and shellfish or other seed food	93.9%	596	93.2%	285	96.8%	438	91.0%	**371
Legumes	91.8%	596	90.0%	285	84.2%	438	83.7%	371
Vegetables	92.7%	596	98.1%	***285	97.5%	438	93.5%	***371
Fruit	91.1%	596	93.8%	285	82.7%	438	82.1%	371
Milk and milk products	19.5%	596	15.9%	285	17.9%	438	10.6%	***371
Oil and oil seeds	95.3%	596	95.8%	285	92.7%	438	91.6%	371
Sugar	91.1%	596	89.8%	285	86.4%	438	81.5%	*371
Miscellaneous	98.9%	596	98.7%	285	97.6%	438	99.1%	371
Household Dietary Diversity (HDDS)	9.11	596	9.13	285	8.84	438	8.38	***371

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4.42. Average monthly non-food expenditures per household (Mt)

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
Clothing (Mt/month)	480.00	596	540.24	285	526.82	438	682.51	371
Rent, utilities and household security (Mt/month)	92.86	596	171.77	***285	178.65	438	413.18	***371
Household appliances, accessories (Mt/month)	35.15	596	51.65	285	15.80	438	39.51	*371
Household durable goods, electricity, domestic services (Mt/month)	125.11	596	121.23	285	82.04	438	236.24	***371
Health (Mt/month)	164.02	596	199.06	285	99.42	438	190.78	**371
Transportation (Mt/month)	632.72	596	393.31	***285	360.11	437	215.46	***370
Communication (Mt/month)	149.80	596	134.05	285	193.96	438	299.53	**371
Culture and recreation (Mt/month)	42.81	596	30.74	285	11.03	438	57.28	**371
Fuel (Mt/month)	311.18	596	267.62	285	179.54	437	165.37	370
Education (Mt/month)	73.59	596	71.73	285	99.00	438	77.06	371
Miscellaneous assets and services (Mt/month)	123.99	596	180.27	*285	110.33	438	220.20	***371
Average total monthly household expenditures on non-food items (Mt)	2,231.24	596	2,161.66	285	1,849.40	438	2,592.77	***371
Average total monthly household expenditures on food (Mt)	4,273.03	596	4,092.92	285	2,361.72	438	2,354.74	371
Total household monthly expenditures (Mt)	6,504.27	596	6,254.58	285	4,211.11	438	4,947.51	**371
Total household monthly expenditures (US)	236.43	596	227.36	285	153.08	438	179.84	**371

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

Table A4.43. Percent of individuals living on less than $1.25 per day (based on PPP exchange rate) and less than 16.7 Mt per day (based on the local poverty line)

Item	Nampula city Treatment Mean	N	Nampula city Control Mean	N	Monapo vila Treatment Mean	N	Monapo vila Control Mean	N
Average per capita expenditures per day (USD PPP)	1.67	50,718	1.72	97,289	1.25	16,080	1.80	***6340
% individuals in poverty based on global measure (i.e., <$1.25/day)	33.2%	50,718	28.3%	97,289	48.8%	16,080	42.8%	6,340
Average per capita expenditures per day (Meticais)	45.82	50,718	47.42	97,289	34.26	16,080	49.43	***6340
% individuals in poverty based on national poverty line (i.e., <16.7 Mt/day) (a)	40.9%	50,718	38.5%	97,289	55.8%	16,080	47.4%	6,340
Actual number of people per group	2,484		2,568		3,181		1,115	

Source: MCA/MINAG's Urban Land Survey, 2010

Weighted to reflect population

Note: Significance testing compares the means of treatment and control groups within a given municipality. * indicates significant difference at 10% level, ** at 5%, and *** at 1%. If not noted no significant differences were found

(a) Using the poverty line for Urban Nampula (16.70 Mt/day/person) from MPD (2010)