

Improving Land Administration in Chad

Result
Final report of Kadaster Internationals' activities
in Chad

Improving Land Administration in Chad

Final Report

Land@Scale project number: LAS20CH30

KI project code: 9002240

Counterparts

Netherlands Enterprise Agency (RVO)

Representation of the Kingdom of the Netherlands to Chad

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Version

Version 1.0: N'Djamena, November 9th 2022

Version 2.0: Apeldoorn, November 23th 2022

Version 3.0: Apeldoorn, November 28th 2022

Version FIN: Apeldoorn, November 30th 2022

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List of Abbreviations

CORS	Continuously Operating Reference Stations
CSO	Civil Society Organisation
EKN	Embassy Kingdom of the Netherlands
FAO	Food and Agriculture Organization of the United Nations
FELA	Framework for Effective Land Administration
FFP LA	Fit for Purpose Land Administration
GNSS	Global Navigation Satellite System
HRSI	High-Resolution Satellite Imagery
IGIF	Integrated Geospatial Information Framework
ISO	International Standards Organisation
ITC	International Institute for Geo-Information Science and Earth Observation
KI	Kadaster International
LADM	Land Administration Model
MATDHU	Ministry of Spatial Planning, Housing Development and Urban Planning
MESRI	Minister of Higher Education, Research and Innovation
MoFA	Ministry of Foreign Affairs
NGO	Non-governmental Organisation
NL	The Netherlands
NSDI	National Spatial Data Infrastructure
OFT	Land Observatory of Chad
RVO	Netherlands Enterprise Agency
SLM	Smart Land Maps
SWOT	Strengths, weaknesses, opportunities and threats
UAV	Unmanned Aerial Vehicle
UN-GGIM	United Nations Committee of Experts on Global Geospatial Information Management

1 Introduction

This report outlines the findings and conclusions of the '**Improving Land Administration in Chad**' project, that a team of the international arm of Netherlands' Cadastre, Land Registry and Mapping Agency (i.e., Kadaster International or KI) conducted in N'Djamena, Chad and online, together with the Ministry of Spatial Planning, Housing Development and Urban Planning (MATDHU). The related activities were executed by KI and MATDHU between September 2021 and November 2022.

1.1 Background

The Republic of Chad's land administration faces many challenges related to the implementation and management of its conventional surveying, mapping, and recording approaches. Cadastral mapping and land registration activities are slow, expensive and depend on only a few qualified professionals (surveyors). Without proper land information, land management becomes difficult. This situation fosters land conflicts, the non-productivity of agricultural land, uncontrolled urban development and hinders Chad's development in general.

As in other French-speaking African countries, Chad's land legislation dating from 1967 (Law No. 23/PR/1967 of 22/07/1967 on the Status of State Property, Law No. 24/PR/1967 of 22/07/1967 on the Land Property and Customary Rights Regime, Law No. 25/PR/1967 of 22/07/1967 on limitations on land rights and their implementing decrees), was largely inspired by colonial land legislation (the decrees of 1899, 1920, 1900, 1906, 1932, 1955 and 1956) and is not adapted to local realities. Also, the body of law is poorly applied and is reflected in the resurgence of land conflicts in both urban and rural areas and is also reflected in the low number of existing land titles.

To address the problem related to land legislation, the Ministry of Spatial Planning, Housing Development and Urban Planning (MATDHU), set up in December 2018 a commission composed of representatives of several ministries and civil society organizations (CSO) to revise the draft code developed, which was not adopted since 2014, and adapt it to current realities. This process was facilitated by the Food and Agriculture Organization of the United Nations (FAO) and Oxfam Novib and was funded by the Embassy of the Kingdom of the Netherlands (EKN) in N'Djamena.

In 2019, the Dutch Ministry of Foreign Affairs launched the 'LAND-at-scale' program with the aim of contributing to the achievement of the United Nations Sustainable Development Goals (SDGs) by improving the institutionalisation of land tenure and rights in developing countries. A comprehensive project "Land reform based on rapid developments and the current crisis in Chad" as designed by EKN and Chadian stakeholders has been approved by the Dutch Ministry of Foreign Affairs as part of the "Land-at-Scale" program. This program has three components:

- **Finalization of the land code.** Currently the draft law is ready. The most important next steps are the revision of the law and a national debate on the law. Once these two steps have been completed, the law is available for approval by parliament. Then, the law can be signed by the Minister in charge of land affairs and by the President of the Republic of Chad;
- **Support land reform.** The land reform approach is already underway in some pilot areas. However, it is now important that, on the basis of the new land code and on the basis of several good practices, intensive intervention is developed to address the necessary socio-economic reform;
- **Improvement of the cadastre.** The cadastre must be improved and redesigned. It is important to prepare a strategy on how to improve the situation in terms of processes, systems and institutions.

1.2 Objective LAND-at-Scale program in Chad

The objective of the overall LAND-at-Scale project is to contribute to:

- create a strong, fair and inclusive legal framework that meets international standards;
- implement the legal framework, while recognising the rights of all stakeholders;
- improve land administration by reducing costs, registration time and complexity and paying particular attention to dispute resolution and conflict management, fair compensation for farmers who have to leave their land, women, widows and youth in their rights to own and access land.

On 12 May 2020, the Netherlands Enterprise Agency (RVO) asked Kadaster to submit a proposal for the third component: "Improving Land Registration" of the land program at the scale of "agrarian reform based on rapid developments and the current crisis in Chad". A proposal was made, which was approved by RVO. It is realised by the 201905014 Framework Agreement between RVO and Kadaster.

1.3 Project aim

At the start of the project, the aim was to improve land administration by setting up a blue print for a future system that leads to reducing cost and time for registration as well as to reduce the complexity.

Although the workshop and webinar about the Fit-for-Purpose Land Administration approach was received positively and with great interest by the participants, it was not yet tangible for them how to apply this in daily practice in Chad. This is not surprising, as for years people have been working and surveying in a more conventional way. The Fit-for-Purpose Land Administration method requires a different way of thinking. Change in general is not self-evident. Especially in the case of complex systems like land administration, where many different stakeholders with diverging interests are involved. For that reason, KI together with the participants of the workshop, concluded at the end of the inception phase to shift project activities from a strategic masterplan (blue print) for land administration towards more practical demonstrations of the Fit-for-Purpose Land Administration approach as next steps during this project. This decision was made in order to experience what FFPLA means in the Chadian context.

1.4 Structure of this report

This report reviews the results of the activities carried out by Kadaster International in Chad from September 2021 to November 2022. It is divided into four parts. First a short introduction on the context in Chad and the overall project purpose and objective. Second an outline of the activities that were completed within the project. Third, the findings of the activities are analysed and discussed to formulate forward strategies. The report then concludes with an overarching summary indicating the main findings and impact of the project.

2 Activities completed

Figure 1 is showing an overview of the project activities. The remainder of this report is structured around those milestones/activities.



Figure 1: Overview of the project activities

2.1 Memorandum of Understanding

After the recruitment of a national consultant, a team of Kadaster International led by its Director Mr. Kees de Zeeuw, stayed in N'Djamena from 06 to 10 September 2021. The mission was focusing on establishing contacts with key institutions involved in the land management process and the signing of memorandums of understanding. Under the leadership of the Diplomatic Representation of the Kingdom of the Netherlands, the Kadaster International team had meetings with several key stakeholder involved in land management. The objective of the project and the foreseen working methodology were discussed. The first meeting took place with the minister in charge of Land Affairs and her staff. The second visit took place with the scientific manager and researcher from the Land Observatory of Chad (OFT). Then, the Kadaster International team and the Political Affairs Officer of the Diplomatic Representation of the Kingdom of the Netherlands were received by the Secretary of State for Finance. In the same vein, a meeting was held with the Minister in charge of Higher Education, Research and Innovation (MESRI). At the end of the exchanges, the enthusiasm of working with Kadaster International to improve a land sector in crisis was expressed by the actors.





Figure 2: Various meetings during the inception mission in September 2021

After the contacts were established, the Kadaster International team and the technical staff of the various Ministries prepared a Memoranda of Understanding. The signing of the Memoranda between Kadaster International and the various institutions involved in land management was the second step for the Kadaster team. The first Memorandum was signed by the Minister of Planning and Cooperation, the Minister of Land Affairs and the Secretary of State for Finance and by Kadaster International. The second memorandum was signed between the Minister of Higher Education, Research (MESRI) and Innovation and Kadaster International. The objective of these agreements is to work together within the framework of cooperation on the improvement of land administration in Chad. Copies of the memoranda are attached to this report in the ANNEX 1.



Figure 3: Signing of MoUs with various Ministers

Following the memorandums of understanding, the local consultant was entrusted with the establishment of a local team consisting of representatives of the various entities involved in the land administration of Chad together with civil society organizations (CSO). Using an inclusive approach, Kadaster International made a first analysis of the land administration of Chad at strategic and operational level and presented basic guidelines for its realization. Written information was sent to the heads of the various institutions to designate personal to represent them in this local team. The identification of non-governmental organizations (NGO) was done through Oxfam. Written information has also been sent to the heads of these organizations to designate their representative. The response of these institutions and organizations allowed us to set up the local team (See the list of the local team in ANNEX 2). It is important to emphasize that the list of this local team has been dynamic throughout the process with additional members.

Once the local team was set up, interview guidelines with specific questions according to the different actors were developed. The interviews were conducted in a homogenous way. The representatives of each institution or organization were met separately. However, for institutions that had several representatives, focus group discussions were facilitated.

2.2 Workshop December 2021

Kadaster International organized a workshop together with the local team in N'Djamena from 7 to 9 December 2021 at CEFOD. The facilitators of this workshop were Christelle van den Berg, Steven Mekking (Kadaster) and Mahamat Abdoulaye Malloum (local consultant).



Figure 4: The facilitators' team on the left and the local team on the right

Ms. Christelle van den Berg gave a brief presentation of the Kadaster organization and its work in the Netherlands. After the introductory phase, Mr. Malloum presented the results of the interviews conducted with the various members of the local team in Chad. To do this, the FELA (Framework for Effective Land Administration) was used. From his presentation, it became clear that land administration issues are vast and that Chad faces many challenges at the legal, technical and institutional levels. Mr. Malloum then presented the results of a SWOT (strengths, weaknesses, opportunities and threats) analysis also generated from the interviews (See ANNEX 3). This analysis showed that Chad's land administration faces many major difficulties both internal and external, which hinder the land administration's proper functioning. Participants also endorsed the results of the SWOT analysis. At the end of the first day, it was concluded that there is a clear willingness to cooperate amongst the local team. The discussions and analyses were of high level and the participants expressed themselves clearly in a relaxed atmosphere. This led to a conclusion on the problems of land administration that need to be addressed first. The second day was dedicated to Kadaster International's experiences to improve land administration using the Fit-For-Purpose Land Administration approach. Mr. Steven Mekking explained the most important elements of Fit-For-Purpose Land Administration based on concrete examples from Benin and Rwanda. In the various presentations, different types of changes were explained based on examples from other countries:

- Technical: the different ways of collecting administrative and spatial data;
- Legal: the different levels of legal certainty that land registration can provide and the extent to which different legal systems (colonial law, customary law, religious law) are taken into account;
- Institutional: adoption of a participatory approach aimed at transparency and the active involvement of the local population in the collection and formalization of land administration data.

The Fit-For-Purpose Land Administration approach is therefore not a ready-made method, but a "toolbox" with tools to achieve the desired goal. To successfully apply the approach, it is necessary to choose between the different objectives for which a land administration can serve and to determine what should be a priority in the achievement.

FFPLA approach offers the opportunity to set up land administration faster and at lower cost by changing the way land is surveyed, while compromising on the quality of the survey (only relevant parts of the country, less formality and less geometric accuracy). This need was highlighted by asking the participants of the workshop, under the leadership of Ms. Christelle van den Berg, to calculate the time it would take to set up a country-wide land administration in Chad using the current methodology (traditional total station survey). Based on the estimated number of plots (25,4 million for Chad, excluding the Sahel region) and the estimated annual production of current surveyors (6,000 plots), it is found that with this approach, it would take more than 4.100 years to achieve this. It also appeared that the costs would be enormous. Even at an already relatively low cost of 10,000 CFA per plot, it would take a budget of 2.5 trillion CFA (nearly 4 billion euros) to achieve this. Even if these calculations were wrong by a factor of 100, it would still be an impossible task in terms of time and money.

From the presentation and the exercise that followed, it became clear to all participants that a fundamentally different approach to the current land registration is needed. The content of the various strategic choices to be made was briefly discussed. The third day consisted of defining the main objective of improving Chad's land administration and determining the objective of implementation.

After some discussion, everyone agreed that the main objective should be to increase legal certainty. This will reduce the number of land conflicts and create a solid basis on which to build later to achieve other goals such as fair taxation, economic growth, higher food productivity and better land use.

Participants were divided into three groups to answer the following questions:

1. What are the priority areas to register: urban, peri-urban or rural?
2. Within what timeframe should these areas be registered?
3. What should be the approach: systematic or sporadic (on collective or individual request)?
4. With what geometric precision?



Figure 5: Group work during the workshop

The results were then presented by the representative of each group and discussed together. The results were as follows:

- The three areas (urban, peri-urban or rural) must be addressed in a future pilot. In addition, the participants requested that the country's three climatic zones (Saharan, Sahelian and Sudanian) must be taken into account in defining pilot areas. Although different in nature, there are many conflicts related to land in all these areas. Particular attention must be paid to the Sahelian and Sudanian areas because of the large number of land conflicts;

- Preference is given to a pilot project where all approaches will be tested for 1-2 years. It is stressed that the above-mentioned areas would require a different approaches depending on the context and that it is good to generate an overview through the pilot project;
- When asked whether there should be systematic or sporadic collection, the groups could not give a clear answer. For them it is clear that a systematic approach is needed if an entire area needs to be studied in order to bring legal certainty at the desired level. However, it is also conceivable that in some situations the sporadic approach may be used. A combination might be the best solution. This should also be tested as part of the pilot project.
- The groups mentioned the same required geometric precision:
 - Measurement of boundaries with an accuracy of 1 cm in urban and peri-urban areas. This concerns plots with an average size of 450 m² (based on the standard size of 15 x 30 for a plot);
 - Measurement of boundaries with an accuracy of 1 meter in rural areas. This concerns plots with an average size of 1 km².

For the closing speech of the workshop, the Deputy Director General of the Ministry of Land Affairs welcomed the debate and the relevance of the objective of the workshop. Chad's land tenure is in crisis and this situation is reflected in the recurrence of land conflicts in both urban and rural areas, resulting in loss of human life. For Mr Gore from the Netherlands Representation in Chad, the workshop was of high quality and he reiterates the commitment of the Netherlands to support Chad in improving its land administration.

2.2.1 Kadaster International's reflection on the answers given

Based on the analysis of the issues presented on the first day, it is understandable that due to the multitude of issues, it is necessary to test a combination of systematic and sporadic collection. The proposal to start with a pilot project and set aside one or two years for that purpose is very tangible, given that other countries have also started with a pilot. The period mentioned provides an opportunity to take the issue serious and collect enough test data to make a factual decision on a future scale-up.

Regarding the proposed precision, on the other hand, it is exceptionally high. Although all three groups gave the same answers, it was not clear why this high precision is necessary to achieve the objective of greater legal certainty. No country has chosen such a precision during the set-up phase of its land administration. For example: in the Netherlands, a rich and densely populated country (17.5 million inhabitants on an area equivalent to 3.2% of that of Chad), an accuracy of 3 cm in urban areas and 40 cm in rural areas is sufficient. As a follow-up to this workshop, the question of desirable precision therefore deserves further study and will also be addressed in the demonstration of different methodologies.

2.2.2 Proposal for next steps after this workshop

Workshop participants suggested that the development of the master plan at this time is not realistic. It is important to go through pilot projects where it will be a question of testing the different approaches in practice in the three climatic zones of the country. The pilot project will serve as a laboratory on which the Master Plan proposal for future scale-up can be based.

The next steps for follow-up are:

- Selection of areas where different methodologies can be demonstrated
- Development of a project plan for the demonstration of different methodologies.

These two activities still fall under KI's current mission, but the implementation of the pilot is a new mission for which a new budget will have to be found.

Although the "Fit-for-Purpose Land Administration" approach was welcomed and with great interest by the workshop participants, it was not yet tangible for the participants how to apply it in daily practice in Chad. This is not surprising, because for years people have been working in a different method. For this reason, we concluded, with the workshop participants, to move the project activities from a strategic master plan (master plan) for land administration to more practical demonstration as a next step after this workshop. To test the Fit-for-Purpose approach and to experience what it means in the Chadian context.

2.2.3 Small-scale testing of different methods: demonstration

It was planned, during the next mission to demonstrate different Fit-for-Purpose methodologies in the field (most likely a small district of N'Djamena) together with the members of the local team. The implementation of pilot projects, on the other hand, is a new mission for which a new budget should be found.

2.3 Webinar July 2022

The Kadaster International team hosted a webinar on 19 July 2022 for the local team ahead of the demonstration exercise. It is important to emphasize that June had been selected for the demonstration exercise (test) in N'Djamena however, the unforeseen circumstances did not allow to go ahead with a mission in June. But to keep the momentum of the team, Kadaster International in partnership with the Netherlands Representation in Chad jointly organized an exchange webinar built around the UN-GGIM Framework for Effective Land Administration (FELA) and its related Fit for Purpose Land Administration (FFPLA) approach.

For the Netherlands Representation in Chad, this working session provided a more practical overview of FFPLA in practice, by taking a look at previous Kadaster collaborations in Mozambique and Nepal. It was a transitional activity to keep the team momentum, get to know each other, build trust (local team and Kadaster experts) and provide a taste of technology on collecting spatial and administrative data.

The webinar ran over 2 hours and was facilitated by Rohan Bennett and Eva-Maria Unger, and app 10-15 Chad land-related experts were participating. The technology and web connection were found to be of high level, and this facilitated robust Q&A during the sessions. The participants were able to discuss legal aspects, professional requirements and capacity development.



Figure 6: Online webinar July 2022

2.4 Demonstration FFP LA

Initially scheduled for July, the demonstration exercise on the different methodologies for collecting spatial and administrative data took place in October 2022. Besides the methodologies the focus of this demonstration exercise was on **partnership and collaboration** amongst different institutions who are active in the land sector in Chad. Hence the following stakeholders were involved in this part of the project:



Figure 7: Partnership and Collaboration for the demonstration exercise

The purpose of the demonstration was:

- To advocate and raise awareness for FFPLA amongst Chad land administration stakeholders. A key aspect of land administration design is making choices i.e., finding the right balance between costs, quality and time – to deliver a set of land administration goals. Therefore, by giving the original workshop participants a brief set of hands-on experiences and exposure to technologies, they can get a sense of the strengths, weaknesses, and opportunities linked to different FFPLA approaches (awareness and buy-in).
- Collect inputs and design requirements for a proposal to finance 3 future pilots (with a period of 1-2 years).

Therefore for the demonstration the team organised through Kadaster International was set up in the following setting:

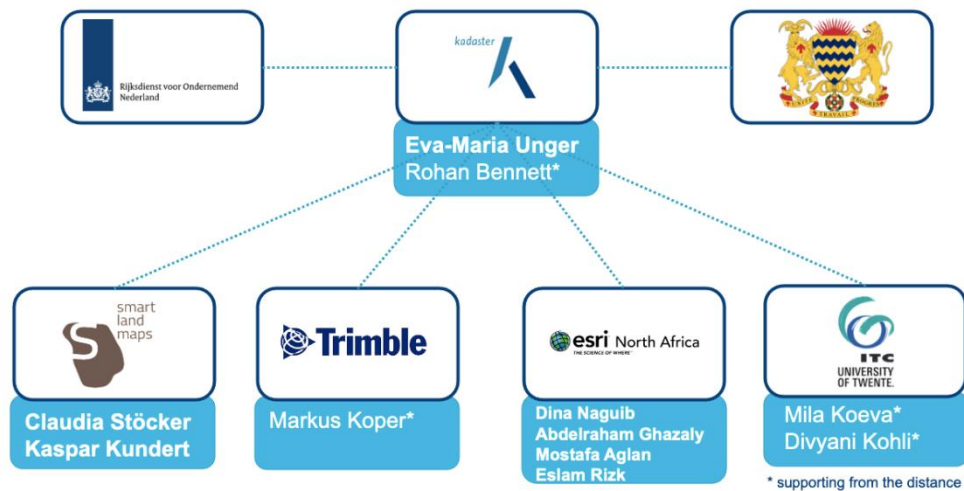


Figure 8: Team set up for the demonstration in October 2022

The facilitation was provided by Mahamat Abdoulaye Malloum (local consultant). Hardware and Software for the data collection was provided by SmartLandMaps, Trimble and Esri North Africa. ITC (University of Twente) provided an online demonstration. The demonstration took place in several stages. It is necessary to emphasize that the identification of the field site, sensitisation and demonstration 1 were carried out exclusively by the local team under guidance from the distance through Kadaster International. The other demonstrations were launched after the arrival of the international team. They took place from 10 to 14 October 2022 in the office and in the field. Participants were briefed on the use of the technologies, then head to the field for data collection demonstrations, before returning to the office for any post-processing work needed, and final wrap-ups. The first day of the mission was used primarily to ensure all location, participants, technology, and other logistical issues are sorted. The final day of the mission was used for wrapping-up the findings and lessons from the demonstration. A detailed schedule of the mission can be found in ANNEX 4. Throughout the week translation was provided between English/French. Prayer times were taken into consideration, but, did not substantially alter the planning.

The demonstration had a significant emphasis on appropriateness of technological options so that community participation can be ensured, and in this regard the following technology options were demonstrated:

- Conventional total station and trigonometric surveying techniques
- GNSS (handheld and high precision);
- Mobile data collection devices (smart phones) and appropriate apps for field data collection;
- High resolution satellite imagery (HRSI);
- UAV imagery (drone imagery, potentially supplied by SmartLandMaps)
- Conventional aerial imagery;
- Automatic Feature Extraction software/tools
- Heads-up digitisation and georeferencing of the above imagery sources;
- Pen-paper based procedures and manual recording;

2.4.1 Identification of the demonstration areas

Prior the mission the demonstration area was identified by the local team. It is important to note that the first site chosen in the 9th district (Kalewa) of N'Djamena, was inaccessible during the month of October because of the exceptional rainy season in 2022. Thus, with the agreement of the Ministry in charge of land, some members of the local team were appointed to propose another site. After two days of investigation, the sites of Lamadji and Sadjéri Koukaye were chosen. Geographical coordinates and aerial images were sent to the Kadaster experts for preparations on their side. After analysis and mutual agreement, it was agreed to work on both sites for the demonstration of different methodologies.

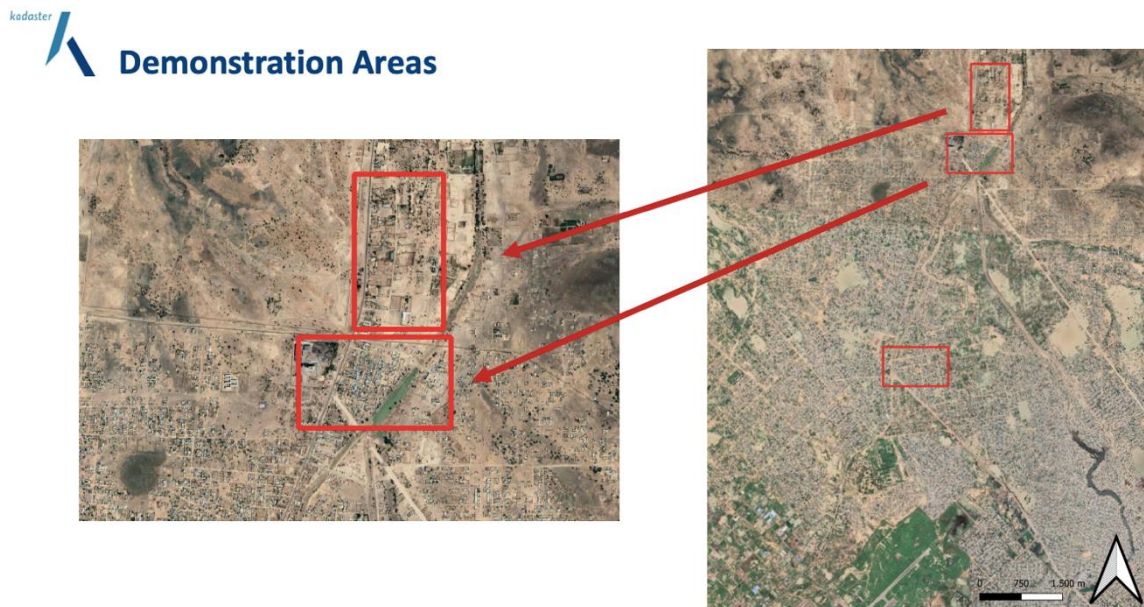


Figure 9: Overview of the demonstration areas

2.4.2 Sensitisation

Once the demonstration sites were selected, the local team and the consultant organized a two-day awareness-raising activity among the communities. This activity began first with the administrative officials (and then with the communities whose sites were chosen for the demonstration).



Figure 10: Awareness-raising exercise with administrative authorities and the communities

Awareness-raising included multiple steps: inform the local administrations and then inform the community so that they understand the objective, the need for their mobilization and their participation but also to manage expectation (no recordation solely demonstration purposes). The public was very receptive and understood the rationale for the demonstration of different methodologies.

2.5 Demonstration of Methodologies

The week of 10-14 October 2022 focused on the demonstration of methodologies around data collection. We were not aiming to train the local team, but merely demonstrate the approach and to show strengths/weaknesses of different approaches. For these demonstrations we were working with different stakeholders, but there are many other software and hardware providers. The demonstration did not recommend an approach/software or hardware but merely demonstrated different ways of data collection. Some demonstrations dealt only with spatial data collection, whereas some dealt with both spatial and social/administrative data collection.

This is an overview of the different methodologies that were demonstrated:

Overview – different Demonstrations/Methodologies

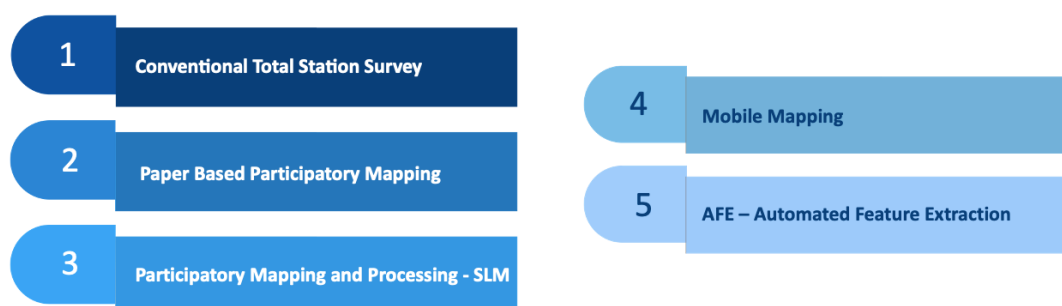


Figure 11: Overview of the demonstration methodologies

During the week we were briefly touching upon large scale adjudication issues, boundary demarcation, validation issues, data storage issues, and dissemination (e.g. of titles). In order to evaluate the methodologies a basic 3-step approach was used which will be explained in Section 2.5.6.

2.5.1 Preparations for the demonstration

Further to start the data collection first a discussion and agreement on what kind of data (spatial and administrative) data will be collected in the field. Therefore, the team followed the ISO endorsed standard: 19152:2012 the Land Administration Domain Model (LADM). Step by step, attribute by attribute, was discussed and after agreement amongst the team the attribute was included in the data model for the demonstration. It is important to note that the agreed attributes only serve demonstration purposes – this is not a proposal for a data model for Chad.

Party	Right	Spatial Unit
• Prenom [text] • Nom [text] • Numero d'identification [integer] • sexe [list: M/F] • Data of Birth [date: dd/mm/yyyy] • Nationality [text] • Representante [Y/N] • Type de personnage [list] • Etat civil [list]	• Type de droit foncier [list] • Source du droit foncier [list] • Pourcentage de propriete [%] • Statut [list] • ID d'unité spatiale	• ID d'unité spatiale • Coordonnees • Nom du collecteur [text] • Methodologie [list] • Utilisation des terres [list] • Conflit [Y/N]

Figure 12: Overview of the attributes for the demonstration

Besides deciding on the attributes also the various values of the attributes were discussed and the agreed codelist (with the values of the attributes) can be found in the ANNEX 5. The attribute table together with the codelist is an important basis for the next steps of a possible follow up project.

Further the exercise was very important as it showed the participants how essential a data model is and how hard it is to get to an agreement and a common understanding of the attributes. Additional and more fundamental the discussion reflected on the minimal viable attributes and what impact each additional attribute would have if rolled out for whole Chad. Further within the discussion also it was emphasised that a possible data model for Chad would evolve from a legal framework.

After the agreement around the attributes which are going to be collected in the field, the team prepared an introduction and discussion with the community. Following aspects were prepared:



Figure 13: Aspects for Community introduction/discussion

Those key items were then discussed with the two communities that were identified by the local team. First the team introduced themselves and explained once more the purpose of the demonstration and also managed expectations, clarifying that no titles will be handed out. Further the team and the communities discussed questions around: How is the land used within the communities? Which issues is the community facing around land? Are there known land conflicts within the community? Are women involved and participating in land allocations? And also explained the technology that is used for the demonstration.

2.5.2 Demonstration 1: Conventional survey with a total station

A conventional survey with a total station was performed by the local team. This survey served as a baseline for comparison with other demonstration methods. The objective was to demonstrate the advanced skills and knowledge required to complete such a survey. It was carried out by local surveyors before the arrival of the international expert's mission. The community leaders as well as people from the communities voluntarily participated.



Figure 14: Demonstration 1 – Traditional Surveying in the field

2.5.3 Demonstration 2 and 3: Participatory mapping

This demonstration involved participatory mapping based on HRSI printed on a large scale. Georeferencing of the HRSI has taken place before in the office. SLM normally works with UAVs but no UAVs were used in Chad. Nevertheless, the UAV-based data acquisition workflow was demonstrated. It was shown what UAV data looks like compared to other images (satellite/air/UAV images). The demonstration aimed to show how UAVs can be used to capture up-to-date high-resolution images over an area of interest, but also the background of the methods. By explaining and showing the difference of imagery the participants were made aware of the importance of high-resolution imagery.

Further activities consisted of taking the printed image in the field, visualizing and annotating the boundaries, with all the required tools (e.g. pens) through the community. The attributes were collected separately by the team using tablets (for the SLM approach) and paper (for the paper-based approach). The aim was to show the advantages and disadvantages of using basic imagery and the two different approaches to collect the administrative data.

The digitization was done after the field work through hands on digitising (for the paper-based approach) and automatic scanning of annotated maps taking photos, georeferencing through SmartLandMaps.



Figure 15: Demonstration 2 and 3 – Participatory Mapping in the field

2.5.4 Demonstration 4: Mobile Mapping

This demonstration involved capturing multiple plots using preloaded images in a mobile mapping tool. First, we were setting up the field apps on the tablets and then going into the field to capture the polygons related to the parcels. For the mobile mapping tool, different options exist. In this demonstration, we used the following:

- Trimble Catalyst DA1 + FieldMap (esri)
- Trimble Catalyst DA2 + PenMap (Trimble)
- Mobile Phone + QField



Figure 16: Demonstration 4 - Mobile Mapping in the field

2.5.5 Demonstration 5: Automated feature extraction.

This demonstration was facilitated from the distance through University Twente ITC. The presentations and applications from Mila Koeva and Divyani Kohli covered automated feature extraction with different software/processing. The demonstration illustrated new tools that can be used to generate an approximate

cadastral map, without leaving the office. AFE has been under development in various domains across multiple domains. Most notable are infrastructure management in urban areas (e.g. transport, buildings), and agriculture (land use). The application to land administration is more recent and should be considered at R&D and pilot level. It is argued that some cadastral boundaries are visible and coincide with natural or human-made physical objects boundaries. Approaches which are imagery based have proofed the usability for land titling and recordation of all people-to-land relationships in e.g. Ethiopia and Rwanda. Titles are based on imagery. Some studies assert that visible boundaries, such as hedges, fences, roadways, and buildings etc., which might indicate cadastral boundaries, could be automatically extracted using methods such as algorithms that detect object boundaries in images. The percentage of visible boundaries can sit anyway from 70%+ down to 0% in other areas – always depending on the regional context.

Within the demonstration of different methodologies in Chad, and also in regard to foster the collaboration amongst different institutions, the demonstration of automated feature extraction seemed relevant. Therefore, we had two presentation with two different tools/software. The results of the adhoc simulation can be seen below.



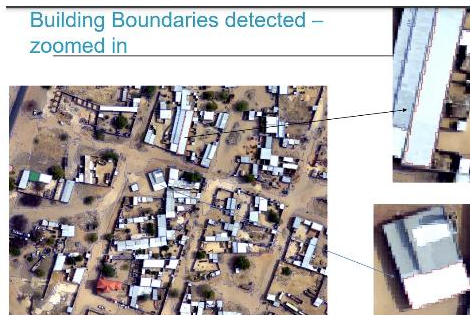
Demonstration 5: Automated Feature Extraction (just ad hoc simulation)



Special Thanks to Mila Koeva



Figure 17: Ad Hoc Simulation of Automated Feature Extraction in Chad – with Its4Land (source: Mila Koeva)



Building Boundaries detected – zoomed in

Special Thanks to Divyani Kohli

Figure 18: Ad Hoc Simulation of Automated Feature Extraction in Chad – with e-cognition (source: Divyani Kohli)

2.5.6 Evaluation of the demonstrations

At the end of the demonstrations, the team followed a 3-step evaluation:

1. Evaluation by the international experts
2. Evaluation by the local team
3. Evaluation through the community

Based on these 3 evaluations the following observations can be summarised:

- The combination of different methodologies is necessary to address the various land realities on the ground;
- Choices must and can be made based on limitations (battery, Wi-Fi/Cloud connection, hardware, capacity, etc.);
- Participation is essential - Awareness and community involvement are imperative;
- Political will and, therefore, timing are important;
- Creating opportunities by paying particular attention to vulnerable groups (women, landless, nomads...);
- Capacity and the institutional and legal framework need to be in place for a complete role out in Chad.

In addition, we noted the following:

- Enthusiasm of the local team;
- Local surveyors are convinced of the relevance of other, more practical and efficient methods;
- The need to involve the local team in the implementation of future initiatives;
- The relevance of the project to the local team and the communities.

And to conclude the demonstration of the different methodologies:

Aim of the week was **achieved** - everybody was using and witnessing different methodologies

- Each methodology Pros and cons
- Each methodology different time needed for preparation, data collection, processing, validation, re-processing
- Each methodology comes with a different price
- Each methodology needs different hard and software
- Each methodology different validation and participation of Community
- Each methodology has different levels of accuracy/spatial Resolution/reliability
- Each methodology needs different level of expertise
- Each methodology has different ways to collect the data - but also depends on the community
- Many more...

The local team handed over symbolic gifts (traditional clothing) to the international experts in appreciation of the project and their shared expertise. Properly dressed the whole team once more headed to the communities to gather some feedback about the different methodologies and to hand over the posters below.



Figure 19: Field Work in Lamadji



Figure 20: Field Work in Sadjeri Koukaye

In general, the communities appreciated their involvement throughout the whole process. According to the community, these participatory methodologies will avoid conflicts at all levels. We have also collected some quotes from the local team. The whole list of quotes is shared in the ANNEX 6 – but here some examples.

"I retain 2 points from this session: 1. The simplification of data collection procedures thanks to innovative high-performance equipment (significant time savings), without high acquisition costs, without requiring new skills, and adapted to new technologies. 2. The accessibility of this procedure to users. This brings cadastres closer to the populations. There you go. Adoum Soumaine representing civil society, member of the local team.

"I am delighted to have benefited from this beautiful and enriching experience, which will help to significantly reduce our land problems." Solange Fakadi, Member of the local team.

Figure 21: Quotes from the participants of the October 2022 mission

2.6 Workshop 'Poursuite l'amélioration d'administration foncière au Chad'

From 16 to 22 October 2022, a joint RVO (Ms Anouk Lodder and Ms Maaïke van den Berg) and Kadaster International (Ms Christelle van den Berg) mission was conducted in N'Djamena. The main objective of this mission was to investigate the willingness of other international development agencies in Chad working in the (related) field of land governance to join forces. Therefore a workshop was organised on October 19th 2022 under the leadership of the Representation of the Kingdom of the Netherlands in Chad. A report of the workshop is included in Annex 7. The main outcome of the workshop was that participants definitely saw added value to join forces in Chad. It is important to emphasize that meetings with Ministry officials in charge of the land issue were planned during this mission. However, due to violent protests that began on October 20st, these exchanges did not take place.



Figure 22: Workshop 'Poursuite l'amélioration d'administration foncière au Chad'

3 Forward Strategy

3.1 Pilot projects

As indicated by the local team in Chad during the FFP LA workshop in December 2021 and discussed during the above mentioned workshop in October 2022 it is recommended to start with the execution of three pilot projects in Chad as a next step to improve land administration. The objective of these pilot projects is to find the right balance between time, budget and quality to collect and store land related data in Chad. It is strongly recommended to execute these pilot projects in three different zones that differ considerably in terms of landscape and land use. Therefore the following zones are proposed: zone Saharan, zone Sahelian and zone Sudanian.

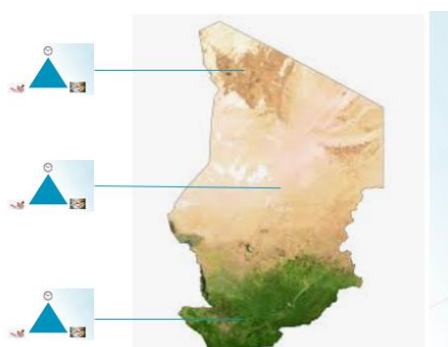


Figure 23: Pilot areas in order to find the right Fit-for-Purpose methodology in order to collect and store land related data in Chad

The pilot projects consists of three main phases:

1. Design pilot (feasibility study)
2. Implementation of the pilot projects
3. Impact analysis

During the design phase choices must be made about various topics, for example whether licensed surveyors or grassroots surveyors will be used, which data should be collected, where the data collection takes place (in the field or in the village), is the work done digitally or paper based and many more design choices (see figure 24 below. Note that the blue and orange lines presented are just examples). Further it needs to be discussed and decided which stakeholders should be involved in which stages of the pilots e.g. software and hardware providers, CSOs and NGOs etc. These design choices will be made during several workshops with the local team in N'Djamena, and will also be based on the existing and/or revised legal framework, and field visits to the different zones with a smaller team (app. 7 persons).

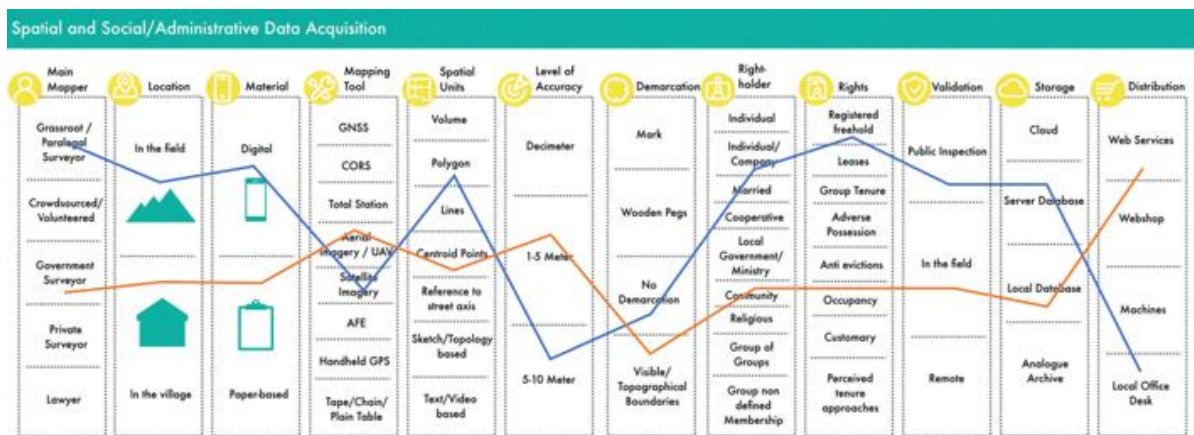


Figure 24: Spatial and administrative data acquisition

3.2 Approach

After the design phase, the costs of implementing can be more precisely estimated. This would then also be the moment when the various donors which were involved in the October workshop (see paragraph 2.6) are asked if they are willing to make a financial contribution. The involvement of various donors can be seen as a go/ no-go moment to the actual implementation of the pilot projects. In case implementation of the pilot projects take place, the results will then be subject to an impact analysis and presented to the Minister. The Chadian government's vision is indispensable information to set up a Masterplan to further improve land administration in Chad.



Figure 25: Process forward strategy

3.3 Key Partners

In terms for partners, it is outside the scope of this work to deliver a full stakeholder audit, classification and future collaborations plan for Chad, however, it is recommended to e.g., apply the Appendix 9.1 from the IGIF to define categories of stakeholders and so identify key stakeholders that are critical for land administration in Chad. Below we summarise a few that could be critical for a follow up project in Chad:

- Data Suppliers/Producers
 - o To be identified (e.g. satellite imagery, hardware, software etc.)
- Development partners
 - o World Bank
 - o ISO TC211
 - o International Federation of Surveyors (FIG)

- UN-GGIM
- UN-Habitat GLTN
- IGN France
- GIZ
- European Union
- USAID
- SDC
- FAO
- AFD
- Business Users
 - To be identified (e.g. other ministries, private businesses etc.)
- Political and Decision Makers
 - Parliament
 - Other ministries
- Interest Groups
 - Indigenous Groups (Nomadic etc.)
 - NGOs
 - Oxfam
 - CSOs
- Government Organizations
- Education Institutions
 - ITC Twente, Netherlands
 - Etc.

4 Impact of the project and final conclusion

The expected results at the start of this project were increased awareness of government officials with the possibilities of Fit-For-Purpose Land Administration approach and knowledge on tools to further develop land administration systems in urban and rural settings and start implementing these.

- Full insight in the specific shortcomings in the present land administration system;
- Agreed set of measures and approaches to improve the land administration situation.

The impact of the project is reflected by the 20 people from the local team and by approximately 50 members of the communities where the Fit-for-Purpose Land Administration demonstrations took place.

4.1 Impact for the local team

The impact of the workshop and webinar for the local team ('l'équipe locale') is that the participants are introduced with international standards and approaches like the Framework for Effective Land Administration (FELA) and the Fit-for-purpose land administration approach. The local team gained knowledge of the strengths, weaknesses, opportunities and threats of the Chadian Land Administration (SWOT). In addition, there is broad agreement on what the purpose of land administration in Chad should be: legal certainty in order to reduce conflicts.

Perhaps the most significant impact on the local team were the FFPLA demonstrations in the field. The local team:

- has acquainted and experimented with four methodologies for collecting spatial and administrative data;
- understands the relevance of awareness-raising in the context of cadastre work;
- underlines the relevance of involving the population in cadastre work;
- is aware of the fact that the surveyor approach is not the only data collection methodology;
- is familiar with the possibility to integrate para-surveyors;
- has experienced at first hand that cadastre work can be done in an atmosphere of harmony with the population while generally, it is done in a crisis situation;
- is aware of the fact that the inclusive approach limits conflict.

Annex 6 shows an overview of all the feedback from the local team members on the FFP LA demonstrations in the field.

4.2 Impact for the community

Local leaders of the two communities, Lamadji and Sadjeri Koukaye, also gave their feedback on the field demonstrations. These can be summarized as follows:

- They underline the relevance of inclusive approaches;
- The cadastre work can be done in an atmosphere of harmony with the technicians. Usually women are not being consulted or associated, which is different from the experiences that were gained during the demonstrations;
- There are participatory, inclusive approaches that minimize conflict;
- Data collection could be done by all and not necessarily only by a licenced surveyor;
- Awareness-raising is an imperative phase.

4.3 Monitoring and Evaluation

In tabel 1, the LAND-at-scale Indicators are provided. In figure 26 we give an overview of the number of administrative and spatial data collected during the mission in October 2022.

Tabel 1 LAND-at-scale indicators

Result area	Indicator	Level
Enablers for Food and Nutrition Security - Land Rights	# of (inter)national institutions that contributed to (sub)national land governance aspects: 12	Outcome
	# of local communities that contributed to land governance aspects: 2 (50 individuals)	
Rule of Law	# of inclusive law and policy reform initiatives advanced: 1	Output
Rule of Law	# of perception studies and justice needs surveys conducted with NL support: 1	Output
Strengthened capacity of women	# of organizations with strengthened capacity to advance women's rights and gender equality: 2	Output

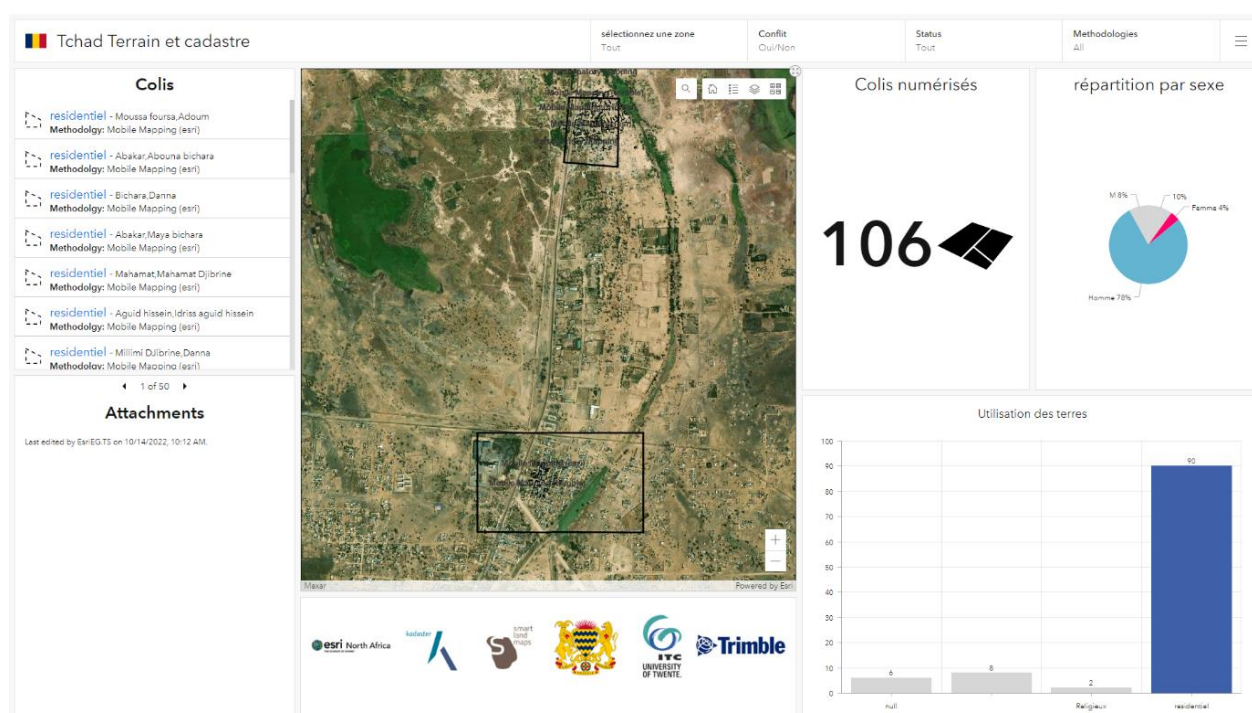


Figure 26: Overview number of administrative and spatial data collected during October mission

4.4 Final conclusion

Having spent a year working with the local team in Chad and our colleagues from the various ministries, our conclusion is twofold:

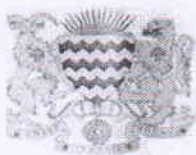
- the political stability needed for a thorough transformation towards a sustainable land administration system is not yet in place. The many changes in ministerial posts are a clear sign of this, as are the violent demonstrations against the current regime in October 2022; but
- in contrast, there is an enthusiastic team of professionals with the ambition to improve land administration in Chad. Over the past year, they have gained new insights, collaborated, held discussions and built a network among themselves. Moreover, the population in the local communities welcome very much the participatory approach and inclusive procedure of the intervention.

Kadaster International has faith this is the right momentum to proceed with implementing pilot projects. This bottom up approach brings the needed knowledge and evidence to show that land administration in Chad can actually be done differently. At a later stage, this can serve as input for the national government to put improvement of land administration (high) on its political agenda.

Annex 1

REPUBLIQUE DU TCHAD

UNITE * TRAVAIL * PROGRES



kadaster



Cadastre, Land Registry and Mapping Agency
The Netherlands

MEMORANDUM D'ENTENTE

ENTRE

LE MINISTÈRE DE L'ECONOMIE, DE LA PLANIFICATION
DU DÉVELOPPEMENT ET DE LA COOPÉRATION
INTERNATIONNALE

LE MINISTÈRE DES FINANCES ET DU BUDGET

LE MINISTÈRE DES AFFAIRES FONCIÈRES DU
DÉVELOPPEMENT DE L'HABITAT ET DE L'URBANISME
DE LA REPUBLIQUE DU TCHAD

ET

L'AGENCE NEERLANDAISE DU FONCIER
DU ROYAUME DES PAYS BAS

Le Présent Mémoire d'entente est convenu entre :

- **LE MINISTÈRE DE L'ECONOMIE, DE LA PLANIFICATION DU DÉVELOPPEMENT ET DE LA COOPÉRATION INTERNATIONNALE** ci après dénommé « **MEPDCI** », représenté par **Dr ISSA DOUBRAGNE** ;
- **Le MINISTÈRE DES FINANCES ET DU BUDGET** ci-après dénommé « **MFB** », ayant ses bureaux à N'Djaména/Tchad, représenté par la **Secrétaire d'Etat, Madame Mme NDOLÉNODJI ALIXE NAÏMBAYE**
- **Le MINISTÈRE DES AFFAIRES FONCIÈRES DU DÉVELOPPEMENT DE L'HABITAT ET DE L'URBANISME** ci-après dénommé « **MAFDHU** », ayant ses bureaux au quartier N'Djari à N'Djaména /Tchad, BP 436, représenté par la Ministre, Madame **AMMINA EHEMIR TORNA**.

Et

- **L'AGENCE NÉERLANDAISE DU FONCIER, ci-après dénommée « KADASTER »**, ayant ses bureaux à Hofstraat 110, 7311 KZ Apeldoorn, les Pays-Bas, représentée par **Mr KEES DE ZEEUW, Directeur Kadaster International**

Soucieux d'élargir et d'approfondir leurs relations d'amitié cordiale dans le domaine de l'administration foncière ;

Ayant en commun la responsabilité d'assurer le développement et l'entretien d'une administration foncière efficace pour un développement durable dans leurs pays respectifs.

Reconnaissant que l'engagement des Parties à coopérer dans le domaine de l'administration foncière sera d'un avantage mutuel et renforcera l'amitié et l'entente entre les deux pays;

Désireux de renforcer la coopération entre les trois parties par la conception et la mise en œuvre d'un programme de développement institutionnel de l'administration foncière au Tchad ;

Prenant acte de l'intention de KADASTER de mettre son expertise et ses expériences au service des pays qui en expriment le besoin ;

Concluant que la signature de ce protocole d'accord facilitera et renforcera la coopération entre les deux Parties en vue d'améliorer l'administration foncière

Les Parties conviennent de ce qui suit :

➤ **OBJECTIFS**

L'objectif général recherché est d'établir et de renforcer un partenariat et une coopération institutionnelle entre les parties dans le domaine de l'administration foncière.

L'objectif spécifique de ce protocole de coopération est d'améliorer l'administration foncière en mettant en place un schéma directeur afin de réduire le coût, le temps et assurer la délivrance des documents fonciers sécurisés.

➤ INTERPRETATION

Dans le cadre du présent Protocole de coopération et à moins d'indications ultérieures contraires, les termes utilisés ont la signification suivante :

1. "Parties" signifie les parties au présent Protocole de coopération qui sont :
 - ✓ LE MINISTRE DES AFFAIRES FONCIERES, DU DEVELOPPEMENT DE L'HABITAT ET DE L'URBANISME (MAFDHU) ;
 - ✓ LE MINISTRE DES FINANCES ET DU BUDGET (MFB) ;
 - ✓ L'AGENCE NEERLANDAISE DU FONCIER dénommée « KADASTER »
2. « Programme » signifie l'opération d'accompagnement de KADASTER à définir d'un commun accord par les parties au profit de l'administration foncière tchadienne.

➤ RESPONSABILITES DES PARTIES

Les responsabilités des parties dans le cadre du présent protocole de coopération sont définies comme ci-dessous.

Le MAFDHU et le MFB s'engagent à :

- Mettre à la disposition de KADASTER des informations concernant l'administration foncière tchadienne ;
- Faciliter les rencontres avec les agents et responsables techniques du MAFDHU et du MFB qui pourraient contribuer aux objectifs du protocole de coopération ;
- Faciliter les rencontres ad hoc avec les responsables des autres institutions et personnes ressources susceptibles de contribuer à la définition du programme.

Le KADASTER s'engage à :

- Préparer et tenir informer la partie tchadienne du niveau de progrès dans la préparation du programme d'accompagnement à l'amélioration de l'administration foncière ;
- Soumettre à l'appréciation de la partie tchadienne, le projet de programme ;
- Mobiliser les ressources financières et techniques nécessaires à la mise en œuvre du programme qui sera défini d'un commun accord.

➤ **VALIDITE DU PROTOCOLE**

Le présent Protocole de coopération restera en vigueur jusqu'à la fin de la mise en œuvre du programme d'accompagnement à définir d'un commun accord.

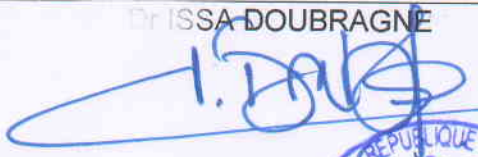
Toutefois, à l'initiative d'une des parties, le protocole de coopération pourra être amendé avec le consentement des Parties.

➤ **ENTREE EN VIGUEUR**

Il rentrera en vigueur dès sa signature par les Parties.

Le protocole de coopération est établi en quatre (4) originaux uniquement en français avec un exemplaire pour chaque Partie.

Fait à N'Djamena, le 09 Septembre 2021,

Mr ISSA DOUBRAGNE  Ministre de l'Economie, de la Planification du Développement et de la Coopération Internationale 	Mme NDOLENODJI ALIXE NAÏMBAYE  Sécrétaire d'Etat au Ministère des Finances et du Budget 
Mr KEES DE ZEEUW  Director KPMG International	Mme AMMINA EHEMIR TORNA  Ministre des Affaires Foncières, du Développement de l'Habitat et de l'Urbanisme 

Annex 2

EQUIPE TCHAD POUR TRAVAILLER AVEC KADASTER INTERNATIONAL					
	Organisation ou institution	Nombre	Personnes désignées	Fonction	Contact
1	Ministère des Affaires foncières du Développement de l'Urbanisme et de l'Habitat (MAFDHU) :	6	Mr Kouladje Mbainarem	Directeur Général Adjoint du Ministère	+235 66281250, Email :samuel_mbai@yahoo.fr
			Mr Ali Abdoulaye Ibrahim	Inspecteur Général du Ministère	Tel : +235 66268358, Email :aliabdoulaye4@yahoo.fr
			Mr Youssouf Faradj Mabrouk	Conseiller de la Ministre	+235 66284461, Email : ufaradj@hotmail.com
			Mr Daniki Gabi	Sous-directeur Habitat et Urbanisme	Tel : +235 66405630, Email :daninkigabibourma@gmail.com
			Mr Ahmat Makaila	Chef de division à la sous-direction du cadastre	Tel : +235 66347564, ahtmakaila@gmail.com
			Mme Solange Fakadi	Chef de division	Tel :+235 66234339, solangefakadi@gmail.com
2	Ministère des Finances et du Budget (MFB)	2	Mr Djimasrangar Ngarimaden	Agent	Tel :+235 60 50 51 10, Email :djimasrangarjules@gmail.com
			Mr Chaïbo Adoum Abia	Agent	Tel :+235 66 26 59 08, Email :abiachaiboadoum@yahoo.com
3	Ministère de l'Enseignement Supérieur, de la Recherche et de l'Innovation (MESRI)	5	Pr. Djikouloum Bendjamine	Vice-Président Université	Tel : +235 66 06 92 65, Email :djiko.benjamin@yahoo.fr
			Pr. Réounoudji Frédéric	Directeur Général Adjoint du Ministère	Email :reounodji2@gmail.com
			Pr. Bahoutou Lahoté	Directeur scientifique Observatoire du Foncier	Tel :+235 66 29 64 07, Email : baohoutou@yahoo.fr
			Dr. Diégo Boleingar Nodjiri	Conseiller de la Ministre	Tel : +235 68 84 474, Email : diegoboileingar@yahoo.fr
			Dr. Gotoum Nanadjingar	Chef de département physique Université de N'Djamena	Tel :66 37 47 60; gotoum78@gmail.com
4	Ministère de la Justice	1	Mr Abdoulaye Ndoukoulbe Maye	Conseiller du Ministre	Tel : +235 63202637
5	Mairie de la Ville de N'Djamena	1	Mr Tchindibé Ignabé	Chef de service SIG	Email :desiretchindebe76@gmail.com

6	Conseil National de Concertation des Producteurs Ruraux du Tchad (CNCPR)	1	Mr Kolwang Kowe	Membre de l'association	+235 68178646, kolwangkove@gmail.com
7	Plateforme Pastorale	1	Mme Maipa Dahaisala	Membre de l'association	+235 65742030, Email :plateformepastorale2013@gmail.com
8	Haut conseil des collectivités autonomes et des chefferies traditionnelles	1	Sultan Mahamat Moussa Bézo	Chargé de la question foncière	+235 66278704 / +235 92025959 Email :mhtmb73@yahoo.fr
9	Association des Femmes Juristes du Tchad (AFJT)	1	Mme Zara Miamardé	Membre de l'association	Tel : 66291665 Email :zara_miamarde@hotmail.com
10	Wenak-Labs (jeunes)	1	Mr Saïba Ngoumsoum	Membre de l'association	+235 65854727, Email, saiba@wenaklabs.org
11	Personne ressource	1	Mr soumaine	Personne ressource	+235 66283946, Email :Djillit58gmail.com
12	Voix de la femme	1	Mme Amina Tidjani Yaya	Coordinatrice de l'ONG	amina@voixdelafemme.org, tidjaniyaya.amina7@gmail.com
		22			

Annex 3

ANALYSE SWOT DE L'ADMINISTRATION FONCIÈRE DU TCHAD				
	S	W	O	T
	Forces	Faiblesse	Opportunités	Menaces
	Guichet unique	Personnel qualifié limité en quantité et en qualité	Expertises nationale et internationales disponibles	Les démarcheurs
	Volonté politique d'améliorer l'administration foncière	Moyen financier limité	Partenaires de développement	Les « <i>blamas</i> »
		Manque d'une politique foncière	Ordre des architectes	La corruption
	Existence d'une direction chargée spécialement des litiges fonciers	Technologie limité	Ordre des ingénieurs	Les conflits armés répétés
	Services déconcentrés	Pas de vision globale	Ordre des notaires	Accaparement des grands espaces par l'élite
	Existence d'une Société de Promotion Foncière et Immobilière (SOPROFIM) : institution paraétatique	Instabilité institutionnelle	Mobilisation des organisations non gouvernementales et de la société civile	Le changement climatique
	Prise de conscience que le foncier est en crise	Mauvaise gestion des ressources disponibles	Vaste territoire inexploité	L'exode rural
	Implication des chefs traditionnels dans la gestion foncière	Dualité de la législation (droit écrit et coutumier qui inclut l'islamique)	École Nationale Supérieure des Travaux Publics	L'agrobusiness
		Législation non adapté aux réalités	Formation en gestion foncière disponible	La subvention des tracteurs
		Le cout pour accéder aux titres n'est pas accessible pour tous	Existence d' un Observatoire du Foncier du Tchad (OFT)	La croissance démographique
		Procédure longue	Les Organisations Non Gouvernementales (ONG) et la société civile sont actifs	La croissance du cheptel
		Manque de communication et de sensibilisation	Mise en place d'une commission interministérielle de réflexion pour atténuer les conflits fonciers	La création des nouveaux cantons

		Conflits entre les différents services	La primauté de l'état sur le domaine national	L'ingérence de la justice
		Manque d'une base de données fiable et dynamique		Conflits fonciers exacerbés tant en milieu urbain que rural
		Centralisation de la production des titres		La non-participation du secteur privé
		Retard dans l'exécution des travaux		Prolifération des prometteurs fonciers informels
		Manque de formation continue		La population est majoritairement analphabète
		La qualité du service aux citoyens est médiocre		Méconnaissance des textes par la population
		La titrisation comme seul gage de sécurité foncière		Non-respect des textes en vigueur
		Manque de synergie d'action		La spéculation foncière
		La non valorisation des compétences		Faible capacité de formation en nombre et en qualité dans le domaine foncier
		Le dysfonctionnement de l'administration		Manque de moyen financier pour les institutions de formation dans le domaine foncier
		Le manque de la déontologie des agents		Le népotisme (nomination recrutement, formation)
		Le manque d'archives		Ingérence extérieur (politique, clanique) dans le recrutement et responsabilisation
		Le non-respect de la réglementation en vigueur		Changement répété des Ministres

		Les conflit de compétence		
		Le non-respect des orientation des outils de planification		
		Falsification des documents fonciers		
		Mauvaise exécution des plans élaborés		
		Décentralisation inachevée		
		Modalités de gouvernance et mandats peu clairs		
		L'accès à la terre pour tous est difficile et réservée à certaines catégories de la population		
		Absence d'une cartographie nationale		
		Manque de données numériques		
		L'absence de manuels de procédure		
		Mécanisme d'appropriation et des partages de données dysfonctionnel		
		Dysfonctionnement du guichet unique		
		Utilisation des technologies d'information et de communication (TIC) limitée		
		La non reconnaissance de manière explicite de certains droits tels que les nomades (la question de la propriété), les femmes et les jeunes (marginalisation par les coutumes)		
		Dépendance accrue des subventions gouvernementales		
		Pas de business plan		
		Manque d'une vision		
		Discontinuité des activités		

		Manque de leadership		
		Le manque de synergie		

Annex 4

Sunday 09.10.2022

Evening: After arrival and after short refreshment test of Antennas and check on equipment

Monday 10.10.2022 (@Meeting room and @Demonstration area)

08.00 – 10.00 Opening (@Meeting room)

- 08.00 - 08.10 Welcome SG(A)
- 08.10 – 08.20 Welcome to the Group by KI
- 08.20 – 08.45 Introduction of participants facilitated by KI and Malloum
- 08.45 – 09.15 Overview of the week by KI
(Aims, Methods, Approach, Form/Attribute discussion)

09.15 - 13.00 Introduction and Basics on Demonstration 2 and 3 (@Meeting room)

- 09.15 - 09.45 Introduction to the Snake Diagram with int. examples of different approaches and reflection on last Workshop(s) by KI
- 09.45 – 11.00 Introduction to Participatory Mapping Approach by SLM and KI
- 11.00 – 12.30 Explanation on difference of imagery by SLM incl. examples
- 12.30 – 13.00 Preparation of Community Introduction by participants facilitated by Malloum and KI

13.00 – 13.30 Transportation to the community

13.30 – 17.00 Meeting with local community (@Demonstration area)

- 13.30 – 13.40 Welcome SG(A)
- 13.40 – 13.50 Welcome and short Introduction to the community done by KI
- 13.50 – 14.00 Introduction to the community done by one of the participants
- 14.00 – 16.00 Discussion of land uses, tenures and challenges lead by the participants, agreeing with community on attributes to be collected, Manage expectations (no certification) facilitated by Malloum supported by all
- 16.00 – 17.00 Walk around the community

Evening: Form preparation – if changes are made to the attributes

Tuesday 11.10.2022 (@Demonstration area and @Ministry)

08.00 – 13.00 Demonstration 2 and 3 – Participatory Mapping(@Demonstration area)

- 08.00 – 09.00 Preparation for the Participatory Mapping
- 09.00 – 13.00 Demonstration Participatory Mapping with the Community

13.30 – 17.00 Demonstration 2 and 3 – Participatory Mapping (@Ministry)

- 13.30 – 14.30 Feedback of Participatory Mapping Approach by participants
- 14.30 – 15.30 Presentation on Sensitization Process by Malloum with Discussion
- 15.30 – 16.30 Presentation on results on Demonstration 1 by local technicians
- 16.30 – 17.00 Recap of the day

Evening: Mobile Apps and Equipment Test and Data transfer Test

Wednesday 12.10.2022 (@Demonstration area and @Ministry)

08.00 – 13.00 Demonstration 4 - Mobile Mapping (@Demonstration area)

08.00 – 09.00 Introduction to GNSS and mobile mapping approach by KI

09.00 – 10.00 Installation and Overview of potential Apps – and walk through the apps by KI, SLM and esri

10.00 – 13.00 Demonstration Mobile Mapping Approach – north demonstration area

13.30 – 17.00 Demonstration 3 - Mobile Mapping (@Demonstration area)

13.30 – 15.30 Demonstration Mobile Mapping Approach – south demonstration area

15.30 – 16.00 Transportation to the office

16.00 - 17.30 Data Management (@Ministry)

16.00 – 17.00 Data transfer by KI, SLM and esri together with participants

17.00 – 17.30 Recap of the day by KI

Evening: Any missing data processing

Thursday 13.10.2022 (@Ministry)

08.00 – 11.00 Demonstration 3 and 5

08.00 – 09.00 Reflection of the field days and overview of the day by KI

09.00 – 10.30 Demonstration 5- AFE: Potential of end-to-end automation
Presentation from ITC

10.30 – 11.30 Demonstration 3 - Taking pictures of the map, feed into cloud and theory of SLM automatic processing

11.30 – 12.30 Demonstration 3 - Automatic processing results, combination of spatial and descriptive data discussion

13.00 – 18.00 Demonstration 2 – Participatory Mapping and esri demonstration

13.00 – 17.00 ArcGIS introduction and demonstration by esri

17.00 – 18.00 Every participant to digitize a collected plot from the HRSI facilitated by esri

Evening: Final Map preparation – Overlay of different methodologies – Identify interesting cases, Feedback and Discussion preparation, Preparation of overview table

Friday 14.10.2022 (@Meeting Room and @Demonstration area)

08.00 – 12.00 Creating one Map - Discussion (@Meeting Room)

08.00 – 10.00 Bringing all methodologies (demonstration 1-5) in one map and discussion on data management

10.00 – 10.30 Analysis of Snake Diagram by KI

10.30 – 12.00 Feedback and Discussion around methodologies by all facilitated by Malloum and KI

12.00 – 14.00 Prayers

14.00 – 17.00 Feedback in the Community (@Demonstration Area)

14.00 – 15.00 Presentation of results by participants supported by KI, SLM, and esri

15.00 – 16.30 Feedback and Discussion around methodologies facilitated by Malloum

16.30 – 17.00 Handover of maps and goodbyes

Annex 5

Annex 5 Attributes

Party	Right	Spatial Unit
• Prenom [text] • Nom [text] • Numero d'identification [integer] • sexe [list: M/F] • Data of Birth [date: dd/mm/yyyy] • Nationality [text] • Representante [Y/N] • Type de personnage [list] • Etat civil [list]	• Type de droit foncier [list] • Source du droit foncier [list] • Pourcentage de propriete [%] • Statut [list] • ID d'unité spatiale	• ID d'unité spatiale • Coordonnees • Nom du collecteur [text] • Methodologie [list] • Utilisation des terres [list] • Conflit [Y/N]

This attributes have been discussed and agreed with the group on Monday 10/10/2022

Party

- First Name [text] - **Prenom**
- Last Name [text] - **Nom** (de Famille)
- ID Number [integer] - **Numero d'identification**
- Gender [list: M/F] - **sexe**
- Date of Birth [date: dd/ mm/yyyy] - **Date de naissance**
 - some people in chad do not have an official birth date then the 01.01. of the year of birth will be entered
- Representative [Y/N] - **Representant**
- Party_type [list] - **type juridique de personne** (du proprietaire)
 - List: personne physique; personne morale
- Civil status [list] - **Etat civil**
 - List: célibataire, marié, divorcé, veuve/veuf

Right

- Right type [list] - **Type de droit foncier**
 - List: Propriete totale; propriete provisoire; droit d'usage; droit d'occupation; droit de location; droits collectifs; servitude
- Right source [text or list] - **Source du droit foncier**
 - List: Titre; Contrat d'achat; contrat de location; contrat d'emprunt; héritage; attribution; donation;
- Share fraction [%] - **Pourcentage de propriete**
- Status [list] – **Statut**

- List: existant dans la base de données ; n'existe pas dans la base de données ; inconnue
- Spatial Unit ID – connection [integer]
 - Comment: for SLM manually [integer]

Spatial Unit

- Spatial Unit ID (automatically generated) - **ID d'unité spatiale**
- Coordinates (automatically generated) - **Coordonnees**
- Data collector name [text] - **Nom du recenseur**
- Methodology [list] - **Methodologie**
 - List: Participatory Mapping; Mobile Mapping (esri); Mobile Mapping (trimble); Mobile Mapping (QField)
- LandUse [list] - **Utilisation des terres**
 - List: residentiel; commercial; industriel; administratif; agriculture; religieux; miniere
- Conflict [Y/N] – **Conflit** (est-ce qu'il y a des litiges)

Annex 6

Annex 6 Les impressions de l'équipe locale après les démonstrations

« Je retiens 2 points de cette session : 1. La simplification des procédures de levée de données grâce à un matériel innovant performant (important gain de temps), sans coûts élevés à l'acquisition, sans exigence de nouvelles compétences, et adapté aux nouvelles technologies. 2. L'accessibilité de cette procédure aux usagers. Ce qui rapproche les cadastres des populations. Voilà. » *Adoum Soumaine représentant la société civile, membre de l'équipe locale.*

« L'expérience avec l'équipe mixte conduite par kadaster doit être poursuivie pour accroître l'enregistrement de toutes les terres avec leurs occupants respectifs. Je profite pour réitérer encore mes encouragements à tous » *Kouladjé Mbaïnarem, Coordonnateur du groupe du MATUH de l'équipe locale*

« Nous ne pouvons que remercier les experts venus au nom de kadaster international pour sa politique de modernisation de nos services, techniques et instruments de levé. A nous de l'expérimenter sans susciter des soucis » *Daniki Gabi, Directeur adjoint de l'urbanisme (MATUH)*

« Mes impressions sur l'atelier est qu'avec les nouvelles méthodes qui seront mise en place, nous allons améliorer l'administration foncière au Tchad. En tant que communicatrice, c'est un plus pour moi. Merci à l'équipe » *Carine, Directrice de la communication MATUH*

« je suis ravie d'avoir bénéficié de cette belle et enrichissante expérience, qui contribuera à limiter considérablement nos problèmes fonciers. » *Solange Fakadi, Membre de l'équipe locale*

« le peu temps qu'on a passé avec l'équipe technique de Kadaster international, j'ai appris des choses qui vont beaucoup m'aider dans mes parcours professionnel. Merci pour l'équipe technique locale Kadaster pour un peu de temps d'échange. » *Daoud, Géomètre de l'équipe locale*

“we are really impressed by your contribution to us Chadians. we await the completion of the project. and capacity building will be better”. « Je suis très reconnaissant aux acteurs de cette formation. J'ai eu un de plus pendant ce moment » *Warmou, Directeur de la Topographie (MATUH)*

« Je voudrais par ce biais profiter pour féliciter d'abord en primo monsieur Malloum pour ses sacrifices permettant la réussite de cette formation. Secundo, à l'interprète qui a aussi été impeccable nous permettant d'être à l'écoute, et enfin bravo  aux formateurs. Maintenant, je voudrais être reconnaissante à tous ce dont j'ai eu comme formation et échange malgré que le temps fût court. Pour ce faire, s'il devrait avoir une plaidoirie, c'est le renouvellement de cette formation tant au niveau national et international pour l'acquisition d'autres expériences. » ; *Félicité, Directrice adjointe de la législation (MATUH)*

« Cette formation nous a permis de découvrir des nouvelles expériences entre autres la manière la plus rapide et efficace d'avoir tes documents administratifs fonciers (à l'aide des logiciels), et j'ai aussi trouvé que le moment de partage fut très court, car j'ai pleinement apprécié cette formation qui en fait pourra réduire nos problèmes fonciers. Et je lance un plaidoyer à l'équipe de Kadaster (les formateurs) pour d'autres formations qui nous permettront d'avoir plus d'échanges et d'expériences. Merci » *Zara, directrice de l'hydraulique urbaine (MATUH)*

« Je trouve qu'on a eu une formation très intéressante, que celle-ci serve à améliorer notre système de gestion foncière. Merci à tous. » *Zahra, membre de l'équipe locale*

« Merci également infiniment à celle de Kadaster International pour leurs enseignements et échanges d'expériences très bénéfiques à notre endroit. Nous leur sommes très reconnaissants et leur souhaitons bon retour chez eux. See you then. » « Personnellement, mes impressions sont celles d'apprentissage et d'échanges d'expériences. Cette session de formation m'a permis de découvrir de nouveaux procédés et méthodes dans l'administration foncière cadastrale en confrontant les deux (le classique au moderne). Bref, la précision + le complément d'information rapportée par à l'usager. Donc, je souhaite son expérimentation qui pourrait nous apporter quelques solutions à nos multiples contentieux fonciers. Merci. ». Félicitations à Mht Malloum et à toute l'équipe du Tchad. *Mani, Membre de l'équipe locale.*

Annex 7

Annex 7 Report of the workshop 'Poursuite l'amélioration d'administration foncière au Chad'

Date: 19 October 2022

Location: N'Djamena

Participants :

- Representation Ministry of Land Chad
- Representation Kingdom of the Netherlands in Chad
- Representation European Union
- Representation GIZ
- Representation FAO
- Representation Oxfam
- Representation Land at scale / RVO
- Representation Kadaster international

After some welcome words by Mark Rutgers (Chargé d'Affaires of the Diplomatic Mission of the Netherlands in N'Djamena), Ms Maaïke van den Berg (RVO, Netherlands), introduced the LAND-at-scale programme. Mr Mahamat Abdoulaye Malloum (Land expert, member of the local team) presented the results of the project so far and Ms Christelle van den Berg (Kadaster International, Netherlands) presented ideas for follow-up activities. The discussion on the possibilities to join forces was moderated by Gore Mbaitoloum (Diplomatic Mission of the Netherlands in N'Djamena).

Presentation Ms Maaïke van den Berg

Maaïke van den Berg first presented the Land at Scale programme. This is a support to land governance funded by the Ministry of Foreign Affairs of the Netherlands and managed by RVO, the Dutch business agency. Launched in 2019 for a period of 6 years, with some delays due to COVID-19, it has an initial budget of 32 million euros. Particular emphasis is placed on developing countries. This programme operates at the request of the Dutch embassies with a country-specific programmatic approach. The aim is to directly strengthen the essential components of land governance for men, women and youth who have the potential to contribute to structural, just, sustainable and inclusive change at scale. She pointed out that it operates around the world. As far as Chad is concerned, it has three components: the finalization of the land code, access to secure land for women and their support for development, which are implemented by Oxfam and the improvement of land administration, which is entrusted to Kadaster International.

Presentation Mr Mahamat Abdoulaye Malloum

Mahamat Abdoulaye Malloum, in his presentation, recalled the activities carried out by Kadaster International from September 2021 to 2022. It is clear that Chad's land administration faces several challenges and there is an urgent need to improve it. The Fit-for-purpose approach, promoted by Kadaster International, offers several notable possibilities in terms of cost, time and quality. The demonstration exercise was convincing for the local team, specifically the surveyors (who were initially reluctant) and for the population. Its communication shows that pilot projects could offer more options to test, model and build an approach adapted to Chadian realities. And that's when a relevant blueprint could be made for scaling. Malloum also stressed that it is obvious that the next steps of the project would require the mobilization of financial resources.

Presentation Ms Christelle van den Berg

Christelle van den Berg's presentation focused on the next steps of the project. She returned to the definition of land administration, which she said provided tenure security (e.g., conflict management), land enhancement, land-use planning and land development. These land administration processes support and drive the sustainable economic, social and environmental development of a country based on valid land information: cadastral, topographic and legal data. However, such a database does not yet exist in Chad. At least, there is no central database covering the majority of the country. Then, she stressed that Fit-for purpose approach aims to find the right balance between cost, time and quality in order to obtain such a database with reliable information. Regarding the next steps of the project, Christelle van den Berg stressed that these are the pilot projects.

The programme is as follows:

- ☞ Feasibility study and baseline state;
- ☞ Implemented pilot projects;
- ☞ Impact assessment;
- ☞ Drafting of master plans by region;
- ☞ Consolidation for a national master plan.

It is after the feasibility study that we will have an accurate idea of the costs of the pilot projects. It is important to stress that funding for these next steps is to be sought.

Discussion about joining forces

After the various communications, Mr. Gore led the exchanges on the possibility of cooperation of the various actors involved in the land sector of Chad. First, it emerged that the current political context does not make things easy. It can be an opportunity as well as a problem. However, all participants agreed that it is the land policy being developed with the support of FAO that could define the Government's vision and guide land legislation and land administration. However, it is stressed that pilot projects on land administration could feed into land policy and vice versa. It also needs to be remembered that exchanges and a common communication plan are important. This process is under consideration under the leadership of Mr Goré.