New Urban Land File Management System of Ethiopia

Abebe ZELUEL, Ethiopia, Solomon KEBEDE, Ethiopia, Baheru ZEYENU, Ethiopia and Tuomo HEINONEN, Finland

Key words: Land Administration, File Management, Land Record, Archive

SUMMARY

Today most of the Ethiopian urban centers lack a comprehensive and well organized archiving system for the land records. The files containing the documents of land parcels are poorly organized in the city archives. In some cases, even the basic documents as those showing the rights on the land are missing from the files. At the same time the Government of Ethiopia is preparing a Cadastre and Real Property Registration System (CRPRS) for its urban areas. Moving to this system requires not only systematic adjudication but also reorganizing and structuring the existing cadastral data. For this purpose, the Ministry of Urban Development and Housing (MUDH) conducted 2015 – 2016 a development project "Integrated Urban Land Holding File Management System" (IULHFMS) in three pilot cities of Bahir Dar, Mekelle and Dire Dawa. In the project a data management system was developed. The physical land files of the three cities were reorganized, digitized, encoded to the database and linked to a digital map. Various analyses were conducted by utilizing the metadata base. As result of the project the three cities not only got basic information for the coming systematic adjudication but also an efficient IT-system for their archive maintenance and customer service. The system is going to be rolled out in the other Ethiopian cities as part of the CRPRS process.

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1. INTRODUCTION

1.1 Background

Ethiopia is one of the most rapidly growing countries in Africa. This comes both to the population and economy. According to the latest estimates the total population in 2017 is about 103 million with 20.3% of it in urban areas (www.worldometers.info / UN estimates). The annual growth of GDP has been about 10% for the last 10 years (Landportal 2015).

The urbanization in Ethiopia has followed the same pattern as in most of the African countries. The share of rural population has reduced 13% from 1960 to 2015 (Landportal 2015) – see Figure 1.
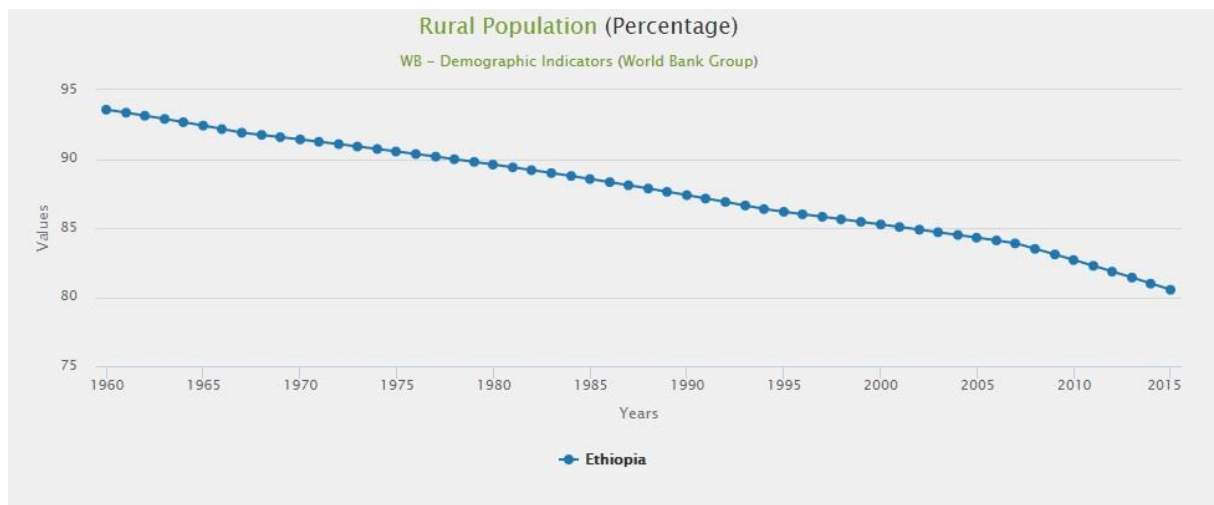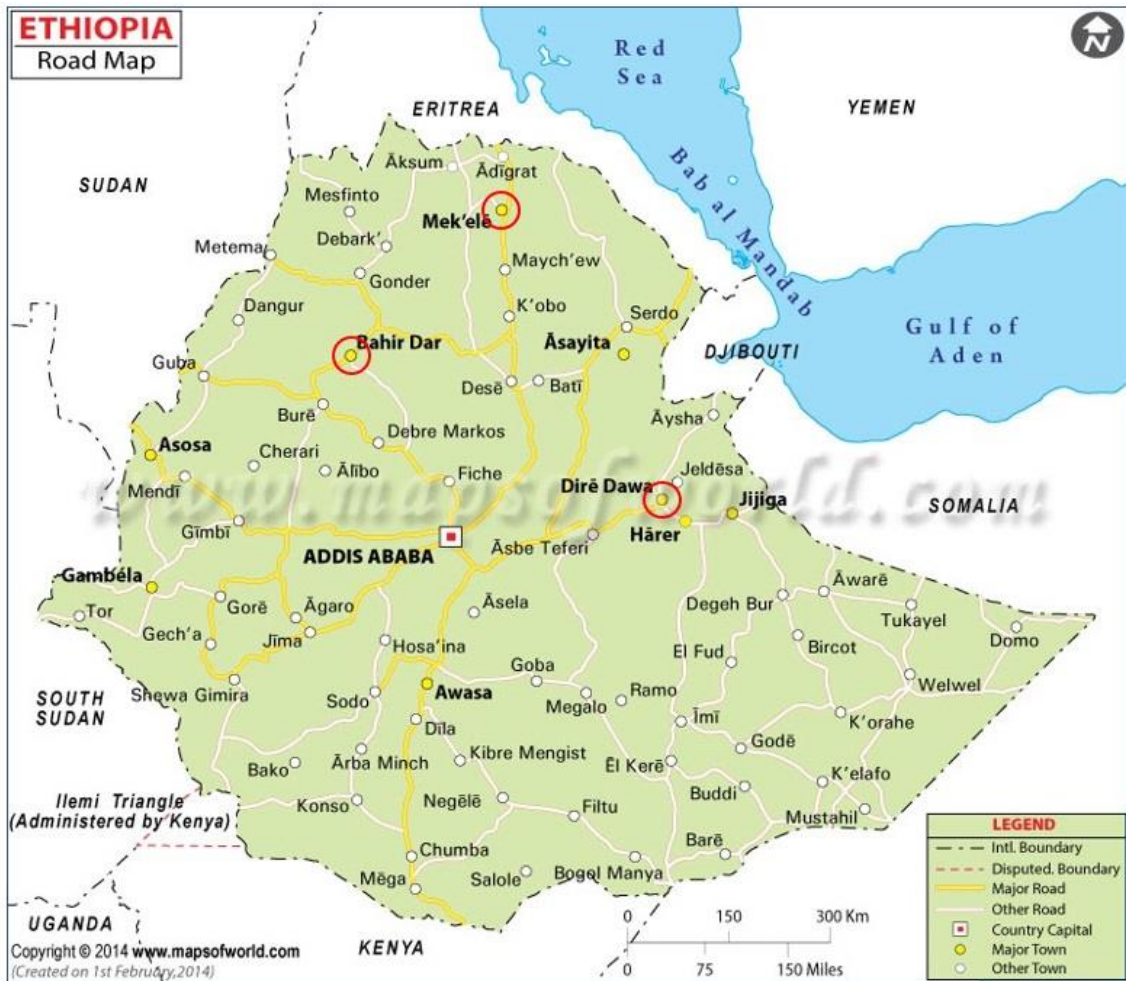

Figure 1. Rural population (percentage) in Ethiopia 1965 – 2015 (Landportal 2015).

The biggest city of Ethiopia is its capital Addis Ababa with population of 3 335 000. The next biggest cities are much smaller: Adama 342 940, Gondar 341 991, Mekele 340 858, Hawassa 318 618 and Bahir Dar 297 794 (Central Statistical Agency of Ethiopia 2015 / 2017) – see also Map 1.

The strongest pressure on the urban expansion has been in Addis Ababa. A construction boom of the last years in it is not only a result of huge growth of population but also of growing demand of hotel services in this home city of the African Union and many UN organizations. However, also the other cities have faced the same challenges as Addis Ababa, though in smaller scale. See Photo 1.

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Map 1. Cities and towns of Ethiopia (http://www.mapsofworld.com/ethiopia/road-map.html). The cities with red circles were the pilot cities of the IULHFMS Project 2015-2016.

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Photo 1.   Construction in Addis Ababa Bole Road 2017 (photo by TH)

The rapid increase of population in urban areas is causing also a need to improve the infrastructure and arrange services in the urban centers of Ethiopia. To cover these costs the Government of Ethiopia has decided to invest in developing a new urban property taxation system.[1]

The property taxation system needs a solid data on the properties and their holders. This fact has contributed to the growing efforts of the government to invest in developing the property registration and building a Cadastre and Real Property Registration System (CRPRS) in the urban areas.

1.2 IULHFMS Project

1.2.1   Outset for the Project

In Ethiopia, the Ministry of Urban Development and Housing (MUDHo, later "Ministry") has been given the duties and responsibilities to support land and land related sectors in regions and city administrations. Some of the duties given are to facilitate activities to ensure uniform protection of urban land holding rights[2], to enhance the efficient use and utilization of urban lands, and to further deepening the real property market by introducing secure, comprehensive and sustainable real property registration system.

However, nowadays most of the Ethiopian cities have very fragmented, outdated, and inconsistent documentation on the land. The city administrations cannot conduct the intended Cadastre and Real

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[1] The share of municipal revenues of all revenue collections in Ethiopia is still (2011) only 3% (Source: Ethiopia, Urbanization Review, Cities Alliance with support from the World Bank, Page 69).

[2] According to the Federal Democratic Republic of Ethiopia Constitution all urban and rural land is the property of the state and the Ethiopian people (Article 40(3) of the FDRE Constitution). Accordingly, sale, exchange and mortgage of land are prohibited (Ambaye 2012). However there is a concept of "land holding" in use, with practically gives the "owner" almost the same rights as full ownership. For example, in the urban areas the land is held under lease agreements.

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Property Registration System (CRPRS) without reliable and structured cadastral data. In this situation, the Ministry has seen a need to structure and formalize land and land related documents, and make them suitable for further systematic adjudication and data migration to the cadastre system.

1.2.2 Starting the Project

In the beginning of 2015 the Ministry decided to hire a consultant firm that can structure, formalize, organize, and integrate land holding files and make the files suitable for regularization, adjudication, and data migration for the CRPRS in Bahir Dar, Dire Dawa, Mekele municipals ("pilot cities"). A joint venture of FM-International FINNMAP Oy and local company AFRICOM Technologies Plc. (later "consultant") was selected and hired to conduct the project "Integrated Urban Land Holding File Management System" (IULHFMS, later "File Management System") in July 2015.

1.2.3 Project Administration and Conduction

The Ministry through its Federal Integrated Urban Land Information Project / Modernized Property Tax Administration System Project Office (MPTASP) was in a role of beneficiary and supervisor of the project. The consultants formed a project team of its experts with "local coordinator" for each pilot city Bahir Dar, Mekele and Dire Dawa. MPTASP representatives and the staffs of each pilot city supported the project. The project was conducted between August 2015 – October 2016.

1.3 Contents of the Paper

After the Introduction chapter 1 the chapter 2 describes the collection and processing of the land related data in the pilot cities. It also refers shortly to the database of the data management system developed in the project.[3] In chapter 3 the data analyses are presented. Chapter 4 presents conclusions on the project. It also discusses about further actions needed for improving the quality and coverage of the land related data in the pilot cities and the plans for rolling the IULHFMS out in the other Ethiopian cities as part of the CRPRS process.

2. PROCESSING THE LAND HOLDING FILE DATA

2.1 Collecting and Digitizing the Data

The land holding data collection and checking's took place in the city archives and in the field by the city staff trained by the project. In the archives, all the basic documents (Title Deed, Agreement, Injunction (suspension and cancellation), Mortgage, Means of Acquisition, Receipts, Building Permit and Compensation/Valuation) of the files were digitized by scanning or photographing. The same was done for the Registry Book if such existed.

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[3] The development and functions of the data management system part of IULHFMS is described in a paper of Pieper and Hakalin (FIG 2017): "Development of an open source land records system for urban centers in Ethiopia". It describes how a land holding file management system was developed using open source software tools, and how this system could be scaled up to other cities in Ethiopia to form a unified urban land holding records system.

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After field checks the files were given new UPIN's (Unique Parcel Identification Numbers) as indexation.[4]

Photo 2. Collection and Digitizing the Data (photo by TH)

2.2 Reorganizing the Files

One of the project tasks was reorganizing the land holding files in the archives. The following pair of photos illustrates well the starting point and the result (Photo 3).


Photo 2.   Archives before and after file reorganizing (photo by TH)

2.3 Encoding the Data into Database

The data management system of the IULHFMS was designed for processing all the data of the main documents (see 2.1).[1] The encoding of the three cities data from the digitized documents into the database was carried out by 60 trained encoders of AFRICOM in Addis Ababa ICT Village.[5] See an example of encoding screen of the system as picture 1 and a view from the "Encoding Factory" of AFRICOM as photo 3.

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[5] Part of the data was encoded also in Bahir Dar by its own personnel trained by the project.
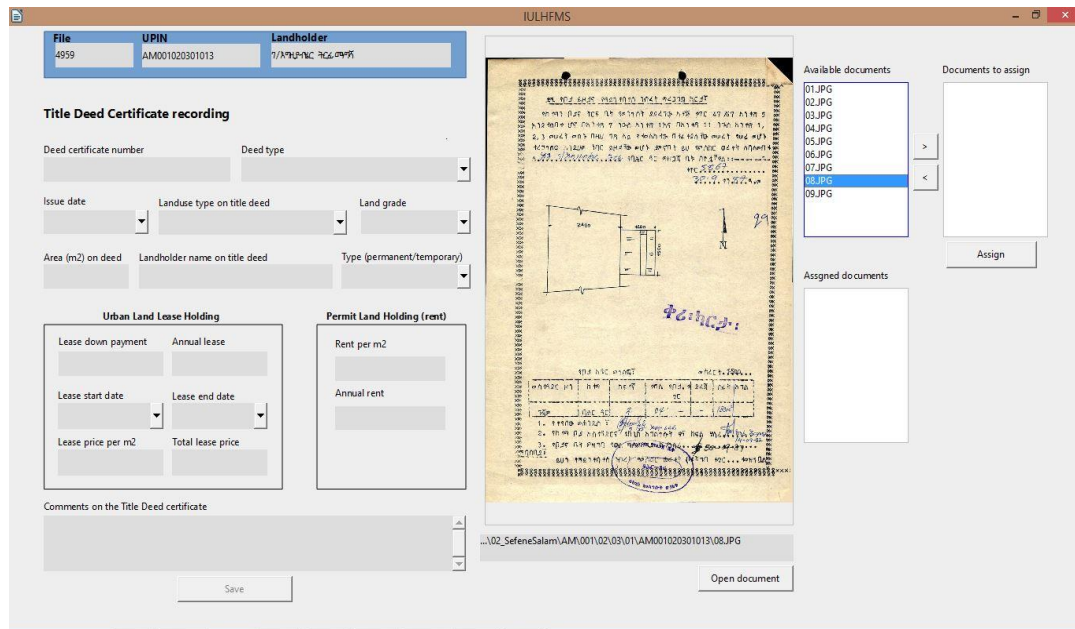
Picture 1. Example of encoding screen of the data management system of the IULHFMS.

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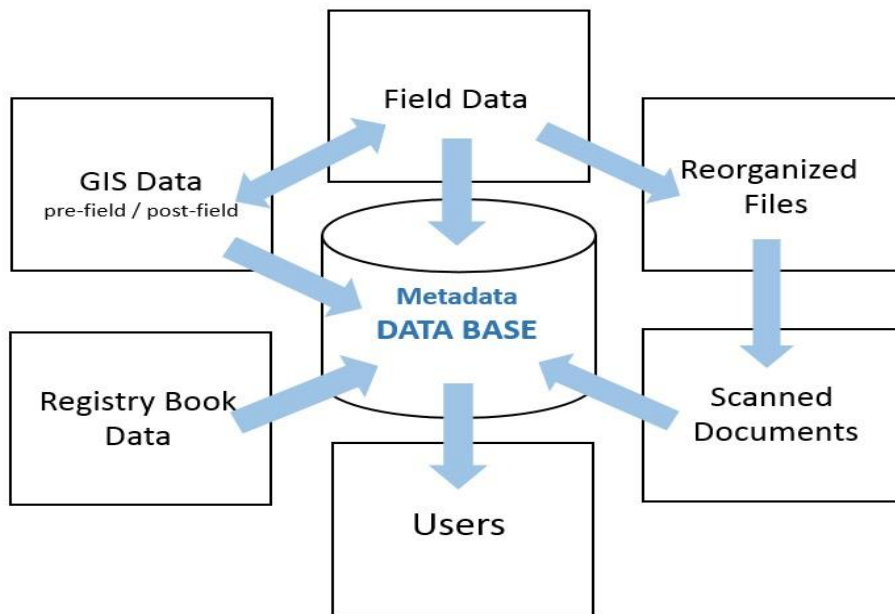Abebe Zeluel, Solomon Kebede, Baheru Zeyenu and Tuomo Heinonen (Ethiopia)

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Photo 3. AFRICOM's "Encoding Factory" in the Addis Ababa ICT Village.

The following figure 2 illustrates the collection of data and encoding it to the database.

Figure 2. The data structure of the data management system of IULHFMS.

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3. DATA ANALYSES

3.1 Purpose of the Analyses

In addition to create a system for managing the land related files and save the data into it, conducting a) file data and b) map overlapping analyses in the three pilot cities.

The 'file analyses' were based on the encoded file data and their purpose was to give a picture of the status and quality of the existing land holding documents. This information was supposed to be utilized in planning improvements in record keeping procedures and for planning of the coming systematic adjudication processes in each pilot city (File Analysis Report 2016).

The 'map overlapping analyses' were based on different thematic maps like: structural plan, local development plan, existing and proposed land use, land grade map, infrastructure map (road, water utility, drainage etc.), Social infrastructural map (education, hospital recreational etc.), height regulation map, spatial zoning map, land value map and water front development plan. The purpose of these analyses was to compare the quality of information of each source and for example how the existing situation in the field corresponds to the regulations and follows the detailed plans and the building permits (Map Overlapping Analysis Report 2016).
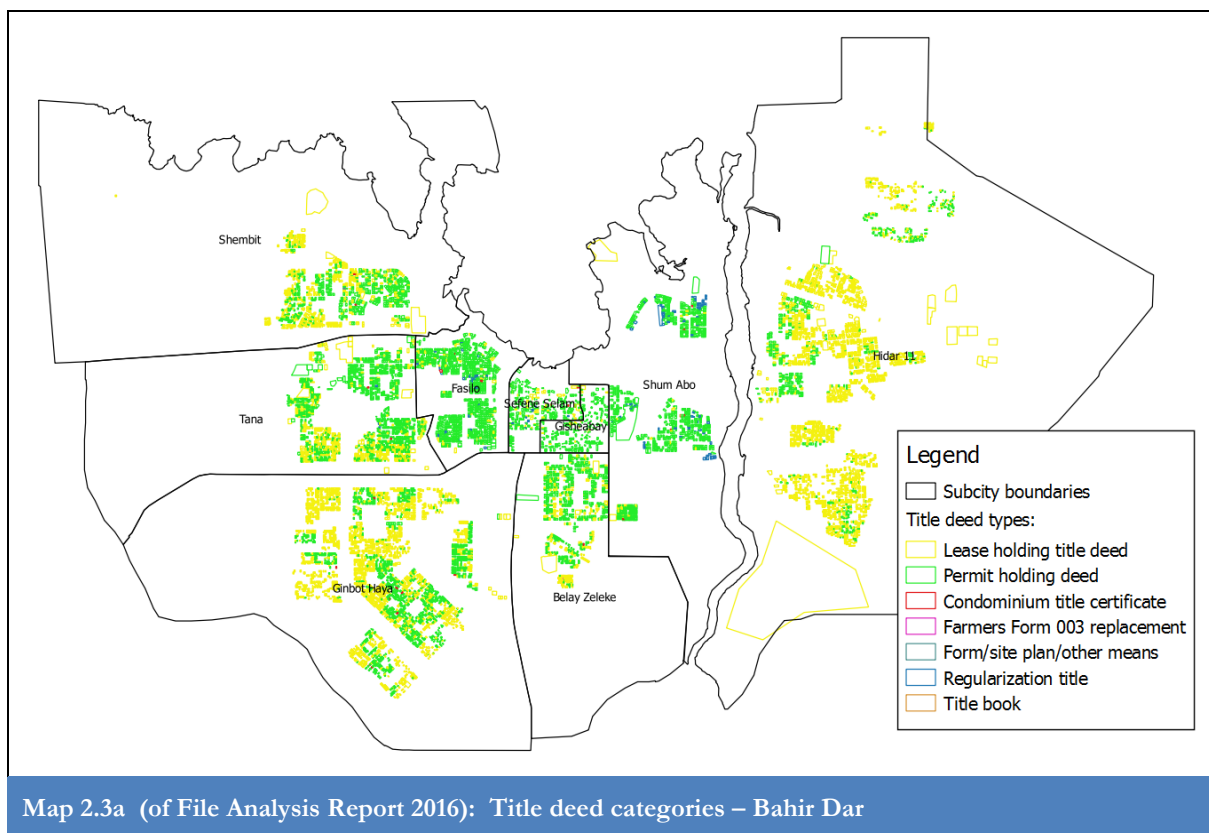
3.2 Results of File Analyses

Tens of different analyses were done with the digitized data of documents of each parcel "file". It was for example possible to check if there were parcels with building permit but not title deed and how the land holder information corresponded in different documents of the file (parcel). The following table ("2.1") is showing the occurrence of different document types in the encoded files is shown as an example of the analyses.

Table 2.1 of File Analysis Report : Occurrence of document types in the files			
CITY	**Bahir Dar**	**Mekele**	**Dire Dawa**
Files with title deed	14,840	36,361	18,493
Files with no title deed	744	569	439
Files with agreement	7,501	10,405	8,408
Files with no agreement	8,083	26,525	10,524
Files with injunction	435	2,797	490
Files with no injunction	15,149	34,133	18,442
Files with mortgage	4,162	6,834	1,612
Files with no mortgage	11,422	30,096	17,320
Files with Means of Acq. document	6,009	18,571	4,433
Files with no Means of Acq. document	9,575	18,359	14,499
Files with receipts	9,968	28,612	8,646
Files with no receipts	5,616	8,318	10,286
Files with building permit	7,804	13,237	3,406

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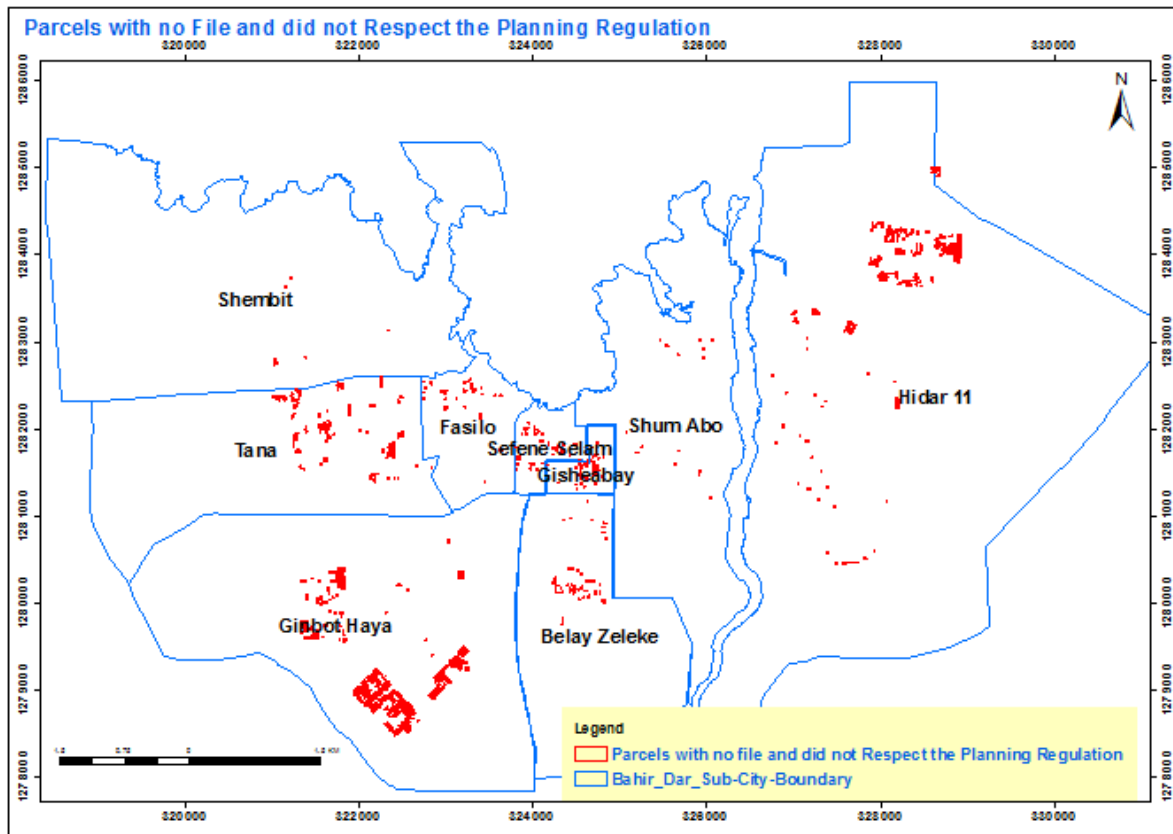Helsinki, Finland, May 29–June 2, 2017

Files with no building permit	7,780	23,693	15,526
Files with compensation document	36	143	15
Files with no compensation document	15,548	36,787	18,917
Total number of encoded files	15,584	36,930	18,932

The following example map ("2.3a") presents title deed categories in Bahir Dar pilot city.

Map 2.3a (of File Analysis Report 2016): Title deed categories – Bahir Dar

3.3 Results of Map Overlapping Analyses

Table following table 1 shows the main results of the map overlapping analyses. It shows for example relatively low percentage of parcels having any file (with documents ref. 2.1). This shows the urgent and big need for conducting a systematic registration in the pilot cities! See also Map 2.

Table 1. Main results of the Map Overlapping Analyze

Topic analyzed	Bahir Dar %	Mekele %	Dire Dawa %
Parcels having files	43.3	60.22	40.68
Parcels not having files	56.7	39.78	59.32

Parcels below the minimum allowable size set by each city administration	15.5	12.71	39.06
Parcels having files / below the minimum allowable size	11.37	8.44	37.38
Parcels below the minimum allowable size / no files	18.3	13.6	41.51
Parcels with no files / do not respect the planning regulations / acceptable size / do not have file numbers / do not respect the regulations	81.7	78.88	58.49
Parcels below the minimum allowable size / do not have file number / do not respect the planning regulations	18.3	7.43	41.51
Parcels having the same size in recent map and permit area / acceptable size / do not respect the planning regulations,	96.6	6.04	N/A
Parcels having same size in recent map and the permit area / below the minimum allowable size / do not respect the planning regulations respectively.	3.4	93.6	N/A
Parcels' existing land use respect the proposed land use	72.4	75.99	29.25
Parcels' existing land use not respecting the proposed land use	27.6	24.01	70.7
Permitted land use respecting the proposed land use	41.3	89.98	N/A
Permitted land use do not comply with the proposed land use	58.7	10.02	N/A
Parcels respecting the Local Development Plan (out of parcels having LDP)	69.1	1/3	1/3
Permit use respecting the proposed LDP	27.3	36.47	N/A
Permit use not respecting the proposed LDP	72.3	63.53	N/A
Total	**100**	**100**	**100**

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Helsinki, Finland, May 29–June 2, 2017

Map 2. An example map on the number of parcels without files. Each parcel has given an UPIN according to the ELADM (Ethiopian Land Administration Domain Model) (Map Overlapping Analysis Report 2016).

As the file analyses, also the map overlapping analyses produced interesting comparison results like differences in accuracy and in areas (m^2) of different maps. It also showed the most flagrant cases of informal and unauthorized land use. See an example from Bahir Dar city (Map 3).

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Map 3. Parcels with no file and not respecting the building regulations (Map Overlapping Analysis Report 2016)

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Usability of the System

The ToR for the IULHFMS project set the targets for the system – or better to say process - to be developed: With it should be possible to "structure, formalize, organize, and integrate land holding files and make the files suitable for regularization, adjudication, and data migration for the CRPRS in Bahir Dar, Dire Dawa, Mekele cities".

All above was achieved. The cities staff was trained, processes were described and the whole IULHFS was covered by manuals (Database "System" Manual 2016, Operational Manual 2016). With the system and the data analyses, also the upcoming adjudication and data migration for the CRPRS can be conducted fluently.

As kind of by-product the data management system can also be used as a customer service application in the city archives. The experiments for example in Bahir Dar showed that after reorganizing the files and taking the data management application into use, the time to find the file of parcel for the customer was possible to shorten to few minutes instead of former days or even weeks!

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One direct and immediate benefit of the developed system was the utilization of the city databases for the Market (field) Study for the coming new urban property taxation system, one of the "catalysts" for this project (ref.1.1)!

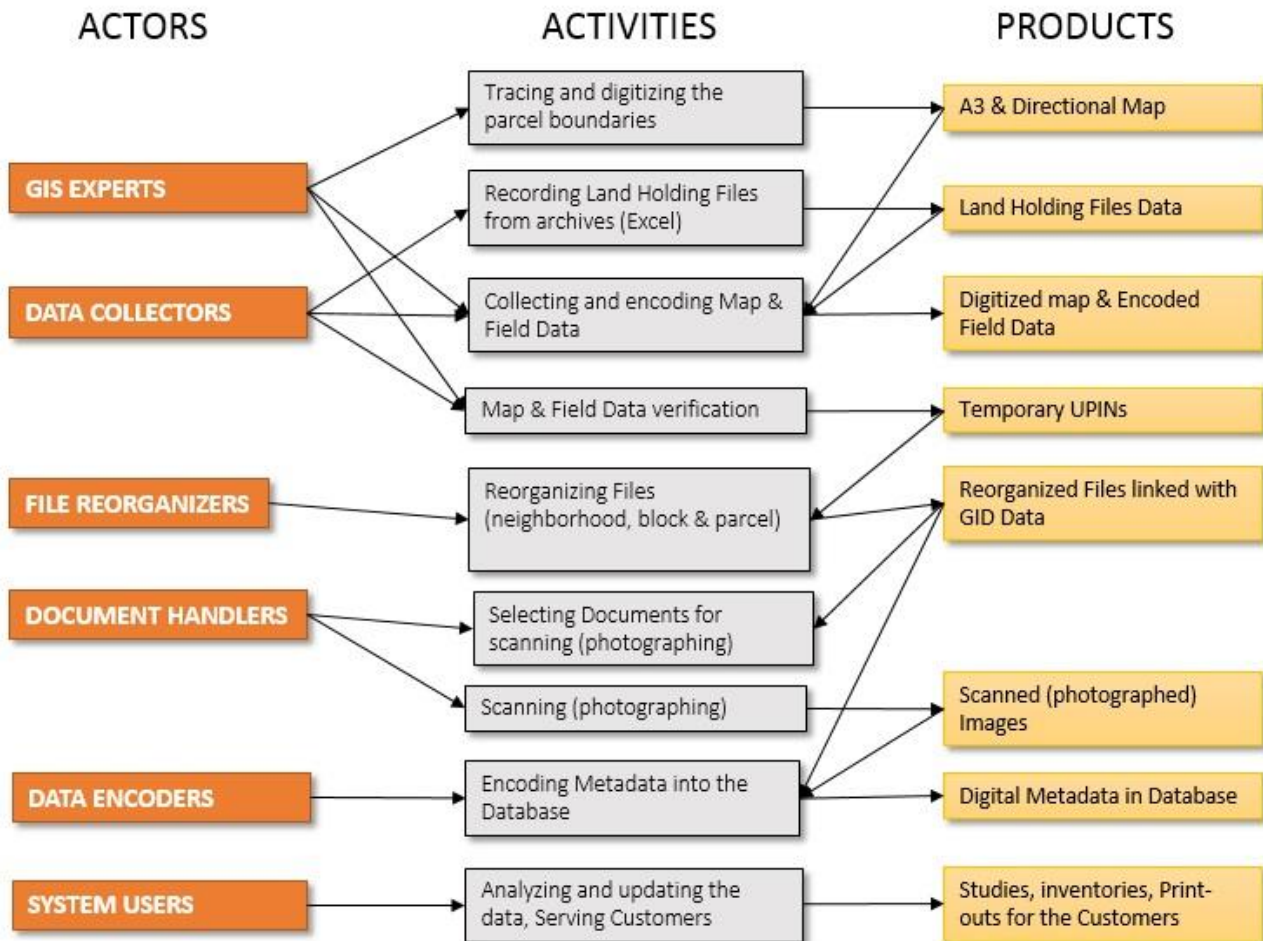The figure 3 shows the whole IULHFMS process with actors, activities and products.

Figure 3.   IULHFMS process.

4.2 Further Actions

The Final Report 2016 gave some recommendations for the use of the IULHFMS in the future:

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To ensure the sustainability and continuity the city authorities of Bahir Dar, Mekele and Dire Dawa were encouraged to continue maintaining the system and databases independently.[6]

The scaling up of the system was encouraged.7 This could be started with an assessment of the readiness and the existing situation of the other potential IULHFMS cities (cities that are seriously ready to invest in resourcing the IULHFMS, capacity building, in setting infrastructure, and experience sharing with the pilot cities). This should be done as soon as possible.

Especially the IULHFMS Map Overlapping Analysis results showed that there are parcels which are not in harmony with the proposed land use. The government and other stakeholders should work actively improve the situation. Some ways to improve the situation were given: detailed review on the structural plans, re-development program for implementing the proposed local development plans, the federal proclamation on urban lands registration and implementing regulations should be utilized and developed, compensation procedures to be developed etc.

Finally, the meaning of the IULHFMS process and its "products" was recommended to be made known to various inter-departmental agencies and directorates of land administration. Factual data and information provided by the process would have a great value for the decision makers, GIS experts, surveyors, and planners in Ethiopia

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Map Overlapping Analysis Report 2016

IULHFMS Map Overlapping Analysis Report. FM-International FINNMAP Oy & AFRICOM Technologies Plc.

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[6] The File Analysis Report 2016 included also a detailed road map for the three cities for improving their land holding data and maps in the near future.

[7] One of the main targets of the IULHFMS Project was to provide information and tools for launching and implementing systematic registration - for the Cadastre and Real Property Registration System (CRPRS) - of urban land in Ethiopia. With IULHFMS (in a city) it is possible to:
- Find out the number of parcels without legal documents justifying the registration
- Assess the coverage and quality of the parcel maps
- Assess the quality of the existing documents in the land holding files
- Know the occupation history of the parcel for the adjudication
- From the data above estimate the amount of work in demarcation and adjudication
- Improve the quality of the existing data to be utilized by the registration system
- Support in prioritizing the systematic registration areas in a city
- Support in choosing the piloting areas of the systematic registration in the cities

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