Quick and Cheap Mass Land Registration and computerisation in Ethiopia

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Key words: Land Registration, Computerisation, Ethiopia

SUMMARY

Results
1. In less than four years all agricultural land (3.5 million holdings/20 million parcels) in Amhara region was registered and tenure security, as well as the system, is highly appreciated by the farmers
2. The objective – improved land management – is being achieved by increased investment in land such as manure fertilizing, terracing, bush, hedge and tree planting etc
3. A rental land market has emerged since “landowners” are no longer afraid of losing their land to the lessees. (Even the lessees are improving the land in order to satisfy the “landowners” and thus keeping the lease – a consequence of a tremendous land hunger)
4. A “simple” computerized registration system –ISLA- is developed and introduced in 40 districts covering 1/3 of all districts replacing the manual system

Conclusion
1. Mass registration can be done quickly at low cost without any mapping
2. Public awareness and strong local ownership is crucial for the acceptance
3. Computerisation made simple and secure can be used also in “primitive” conditions
4. Computerisation is superior to and cheaper than manual system and highly appreciated by the farmers “now we know we have the same information as the government”
5. Build capacity gradually and beware of “full-fledged land information systems”!
6. A strong, independent and decentralized land administration organization is instrumental.

Significance
The public awareness about the land registration combined with the non-political election of the local land administration committee based on specific land law requirements and with a clear mandate is the backbone of the Ethiopian system. If there is no public trust in the system it will be useless.
Development of simple computerized land registration system using free standard software together with the local/national experts can be made simple and thus create ownership as well as capacity to put requirements and ask for improvements. Sustainability is more likely if you develop and implement systems step by step and together with the national experts and combined with general and specific capacity building on local as well as district and regional
Quick and Cheap Mass Land Registration in Ethiopia

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1. INTRODUCTION
This paper describes the introduction and fulfillment of land registration and adjudication and its computerisation in the Amhara region in Ethiopia starting from 2002 up to 2009. The activities are financed by the Ethiopian Government together with Sida-Swedish International Cooperation Agency and carried out by the governmental institution BOEPLAU-Bureau of Environmental Protection, Land Administration and Use (previously EPLAUA) and the service provider Orgut Consulting AB.

1.1 Ethiopia
Ethiopia is a landlocked country situated at on the Horn of Africa. It is often associated with famine and as being one of the most populated countries in Africa, but also as one of the oldest nations in the world, its numerous UNESCO World Heritage Sites, long-distance runners, rock-hewn churches and as the origin of the coffee bean and the cradle of mankind.

The Oromo, Amhara, Tigray and Somali people make up three-quarters of the population, but there are more than eighty different ethnic groups within Ethiopia. Population pressure is an issue and Ethiopia’s population has grown from 34 million in 1983 to 90 million in 2009 and approximately 160 million is expected by 2040. Landlessness, especially among the young, is a serious and growing problem in the countryside and urbanisation is rapidly growing, although the job prospects for the young are limited.

Administration
Ethiopia is a federal state with nine regional administrative states and two chartered cities, Addis Ababa and Dire-Dawa. Each region has its own legislative body and constitution issued within the framework of the federal constitution. The regions are divided into zones and woredas (district with some 150,000 inhabitants), and kebeles (local village with some 5-10,000 inhabitants) as administrative levels of the government structure.

Amhara region
Amhara region is one of the major regions in Ethiopia located in the northwest of the country. The region is characterized by rugged mountains, extensive plateaus and scattered plains separated by deep gorges, steep slopes and cliffs. In this mainly highland region the altitude is ranging from 600 to 4600 meters.

The Amhara Region is densely populated, and the population growth in rural areas is especially rapid. It has an area of 170,000 km² and some 20 million inhabitants. The population, along with the rugged terrain, leaves little or no unused arable land left for cultivation. Only 55 % of the population in Amhara is considered to be part of the working force, while 40% are under 14 years of age. Some 90% of the population lives in rural areas
and thus the economy is dominated by agriculture. Water is a plentiful in the region. The rivers have high development potential for irrigation, hydro-power and commercial fisheries.

1.2 Land in Ethiopia

History
Ethiopia is a country where the peasants in the past have been exploited for centuries by feudal landlords, followed in modern times by a period of suppression by the Mengistu-led Marxist military Derg regime. All along, the allocation of land to individuals has been used as a political instrument. In the past, the problem of landlessness was addressed through periodic land redistributions. In Amhara the last re-distribution was carried out in 1997. As a result, the ordinary peasant has never been free on her/his land. Types of crops to be cultivated by individuals were during a long period of time decided from above, and market prices were low and fixed by government. The result of this land insecurity and lack of incentives in a situation of high population growth has been induced widespread land degradation, erosion, deforestation as well as overgrazing. Those land management problems were not solved for ages, but rather worsened in spite of many different kinds of interventions. Lack of tenure security has thereafter been identified as a crucial component why farmers did not invest in land improvement. The assumption is that when the farmers feel tenure security and know that their efforts will bear fruit for themselves and their family, also in the future, then they are prepared to invest in land improvements.

Reform
In order to battle the alarming land degradation and the farmers complaints over the frequent land redistributions a new approach was taken towards land tenure in the late 90ies. At the federal level new constitution and conservation and environmental policies were adopted. This was followed by the Federal Rural Land Administration Proclamation 1997; revised in 2005.

Amhara National Regional State (ANRS) thereafter developed their policy and strategy to stop land degradation and adopted a Regional Conservation Strategy (RCS) in 1999 and a land administration and land use policy in 2000. Whoever possesses land in the region, government or private, it should be used in a way that contributes most to the development of the region and to the country in general. ANRS issued a proclamation (No. 46/2000, revised in 2006) to determine the administration and use of the rural land in the region. The objectives of the land administration and land use proclamation are directed towards enabling the rural people to work for sustainable development and tenure security. All farmers will by law have long term user rights to land. The land is still owned by the state but the farmers can now register for lifetime entitlement and children’s succession.

To implement the RCS and land administration and land use policy and in order to guide, adjust and follow up the implementation of related policies and proclamations, ANRS established the regional Environmental Protection, Land Administration & Use Authority (EPLAUA) by proclamation No 47/2000. The organization is established at regional, zonal and district level. The organisation has since then been upgraded several times and is now called BOEPLAUA - Bureau of Environmental Protection, Land Administration and Use.
Sida support
Thus modernized land administration was introduced in Ethiopia in the beginning of this millennium. The rational was that giving tenure security to land holders would lead to improved land management and thus increased agricultural production and food security. In Amhara region the Sida support to the bureau EPLAUA started in 2002. The intervention aimed at creating a modern land administration system. The strategy was to build long term capacity at the authority. This was done by learning through implementing projects as well as by introducing a master’s degree program.

2. LAND ADMINISTRATION SYSTEM IN AMHARA
The land administration system is based on some fundamental pillars and a unique combination of governmental and grass root influence; thus making the system managed and controlled by two independent bodies and entrusted by the farmers.
- Strong political commitment, strategies and subsequent supporting laws
- Specialised and decentralised governmental institution (BOEPLAU)
- Systematic and methodological registration covering the whole area-kebele by kebele
- Public awareness about the land registration - as strongest on the local kebele level
- Registration based on application from each farmer
- Adjudication made by local kebele land administration committee (LAC) with a clear mandate
- LAC elected by the farmers in a non-political process based on the land law
- Support to and training of committees by the BOEPLAU district staff
- Compilation of registration and issuing of books of holdings by the BOEPLAU district staff
- Certificate authorised jointly by the district Eplaua head and the local LAC chairperson
- Certification in two steps in order to reach quick result during the first step

2.1 Five steps to a primary land use certificate
To provide a farmer with land tenure security, the land administration system takes a series of steps:
1. Preparation and awareness
The Kebele adjudication and registration starts with discussions and provision of information with the woreda and kebele administration and awareness campaigns among the farmers. Land Administration and Use Committees are elected and established and training is provided.

2. Identification, application and demarcation
Kebele boundaries are demarcated and also communal lands and public areas, in the presence of representatives of elders and LACs from Kebeles, and the Wereda office of BOEPLAU. All farmers are encouraged to apply for registration of their land to the LAC on a format that later is used as basis for registration. The committee is able to approve the legal status of each holding even where there are no documents. They facilitate each holder to negotiate and come up with an agreement with their respective bordering users and to solve much of the conflicts. Demarcation of parcel boundaries and traditional
measurement of the area and entering of the information into field sheets are done by the committee together with the farmers.

3. **Public hearing**
When all land is adjudicated the result is displayed for public commenting and verification lasting a month. After corrections, based on justifiable complains the field sheets are approved by the LAUC chairperson and the wereda BOEPLA head. In cases of remaining conflict this is handed over to the courts.

4. **Registration**
All holdings and parcels are registered in the Land Registry Book at the wereda. In those cases where there are still conflicts pending this is clearly notified, thus conflicts do not stop the registration. The entries are approved by the wereda Eplaua head as well as the LAUC chairperson

5. **Book of Holding**
6. From the information entered into the registry book the Book of Holding is issued by the wereda. Before that the farmers have to provide photos of the possessors which sometimes have delayed the process. The books are distributed to the farmers by the LAUC

In many cases the wereda have issued temporary certificates, based on the approved field sheet information, prior to the entry in the registry book and the submission of photos. This has speeded up the process and the farmers have still felt tenure security. Also mistakes in the process have been rather easy to correct by this simplified certificate.

2.2 **The farmers’ participation in the land registration/adjudication**
1. Information meeting with wereda och kebele administrators on land rights and registration
2. Participating in electing the LAC
3. Filling in the application for land registration with the help of students supported by the wereda
4. Going to the parcels with the LAC and support demarcation and registration of parcel data
5. Signing and approving the field sheet used by the LAC and wereda when all parcels where registered
6. Participate in the public hearing when all adjudication was displayed and discussed
7. Go to the wereda or some closer place to take photographs and give to the LAC
8. Get the book or the temporary certificate from the LAC

2.3 **Secondary certificate**
The first step in the land registration ends with a primary certificate “Book of Holding” given to the farmer and the data entered into the registry book as described above. However, in the long term there is also a desire to map all land with modern mapping methods. Considering the resource need and shortage of skilled manpower this secondary certification has to been done over a long period. The information from the mapping will be entered into the same
“Book of Holding”, which will be complemented with more precise areas and central coordinates and maps over the parcels.

3. LAND REGISTRATION, ISLA AND COMPUTERISATION

Background
When the land administration system was developed during 2002-2004 there was a parallel development of a manual and a computerised system. The latter was called Isla – Information system for land administration and was introduced in the two pilot weredas of Dessiezuria and Gozamin in May 2004. However one year later it was noticed that Isla was not in use in any of the weredas. The major reasons were lack of commitment, follow up and support. Thus in 2006 a redesign of the software were done. Based on the experiences from the first Isla introduction the new development and introduction was done step by step. It was driven directly by Eplaua staff and their capacity was gradually improved through training and practice. Thus Isla was thoroughly reviewed in order to fully replace the manual system and comply with present registration regulations. The two pilot weredas participated in the review and development.

The Isla System
Isla is a simple decentralised land registration system designed for the weredas. It is based on standardised free software – SQL Server Express 2005 and designed by standardised development tools. To support the usage an Administrator manual and a User’s guide is included. The development is done by an international expert. Links between the cadastral surveying data using ArcView and the data from Isla was supported by the international surveying expert.

Requirements for support and changes are listed at Eplaua Support Unit. Inputs to the list originate from the support unit as well as from the users. The system is then developed and adjusted in Bahar Dar by the consultant and supported by two or three employees from the support unit and a testing team. Isla might eventually reach a stadium where you have to rethink the concept, e.g. when all weredas are connected to an Eplaua network, which will enable interactions with other systems like the population register or a merger with urban systems. But that lies many, many years ahead. The strength of the system is it simplicity that makes it possible to use in the weredas which are often remote and with very primitive infrastructure.

Upgrading of system
After the initial review in May 2006 the system has been revised and upgraded three times. This has been done by the international system developer in very close cooperation with Eplaua and wereda staff and based on experiences from the Isla weredas. The system has also been integrated with the data created in the surveying activities through cooperation with an international survey expert. Thus the edited surveyed data can be directly imported into Isla making updating smooth.
Virus and security
Although the Isla computers were not supposed to be used for other purposes virus related problem rapidly became a major threat during 2007 making the support team overstrained. Viruses were spread by unauthorized use of USB memory sticks and CDs. Due to lack of internet connections in the weredas virus protection update was rare and inefficient. After many discussions an innovative security system was developed with support of a local international software expert. The system makes it impossible to use any devices that can read data into the “server”. Only encrypted USB memory sticks are allowed by the system for back up purposes. After introduction of the system all virus related problems have disappeared apart from one or two cases were unauthorized persons have got hold of passwords and abused the system. However data have been safeguarded by backups.

Studies and evaluation of Isla
Isla was presented at the national standardisation and experience sharing conference on land administration in Addis Ababa mid March 2006. A study was financed by USAID in 2007 on possibilities to transfer the system to other regions. Later, yet another study was done by an international consultant, who basically endorsed the system. Presently the federal government and other regions are considering making the system national.

Roll out
The reviewed system is now implemented in more than 40 weredas. One reason for the quick expansion is that the Isla data is needed for systematic cadastral survey for secondary certification. Thus it is introduced in all weredas with ongoing or planned irrigation schemes and in all weredas with other activities.
In total 250 wereda staff has received general computer training and 150 specific Isla training. In addition special training was conducted for zonal surveyors, zonal and Eplaua experts and a number of seminars have been held at Eplaua.

Support Unit
To manage the Isla system and assist the weredas a Support Unit is established and gradually expanded to also encompass experts from four of the zones. The personnel of the unit were given extensive on the job training and special training by the international system developer as well as security and encrypting training by an international expert together with a two weeks database management course in Addis Ababa. In this way the ownership and the management was gradually transferred to Eplaua. The zonal experts are now responsible for basic support and the introduction of Isla in new weredas including procurement, organising the training, etc.

Data entry through a taskforce
A typical wereda contains 25 kebeles with 1000 possessions in each. For two full time data clerks it would take one and a half year to finalise. However it has turned out that the wereda staff has limited time to manage the data entry. In order to speed up and finalise the data entry in the weredas and thus make it possible to totally replace the manual system with Isla, a taskforce of ten specially trained data clerks was established. This has been reinforced by another five clerks in irrigation project.
Establishment of Isla in a district
The typical introduction involved:
- selection of weredas based on their capacity to receive Isla
- procurement of the equipment: PC, printer, UPS, USB sticks, furniture etc
- two weeks of general computer training of the wereda staff
- one week of specific Isla training in mastering the software and registration
- arranging a specific Isla room
- reviewing and structuring the registration archive including field sheets, registry
- books and supporting documents
- setting up the equipment, installing the software and customizing the database
- starting data entry kebele by kebele by the wereda staff
- finalizing the data entry by a special taskforce team for 4-6 weeks wereda by
- wereda
- distribution of printouts of the information to the farmers for data quality check
- public hearing and display of the book of registry printout
- approval by the LAC and wereda
- decision to replace the manual system with Isla
- printout of book of registry to the LAC
- printout and distribution of primary certificate
- continuous updating of changes of registration data into Isla

Costs
The typical wereda set up consists of two computers, printer and power regulating equipment. The annual costs of Isla may be calculated to less than 20 000 Ethiopian Birr or 1700 USD (2009) (Costs include annual software upgrading, depreciation of hardware and furniture, consumables, etc). The costs correspond roughly to the cost of one staff member. The system reduces the need of personnel even more, even though staff reduction is not the primary objective of Isla. The manual system may need two or three additional employees due to handwriting of at least three copies and a more complicated updating procedure. While costs for staff increases, the cost of the computers will decrease.

4. WHY COMPUTERISE LAND RECORDS?
General arguments
- Encourages standardization
- A single registration at the source – no duplication of writing reduces errors
- Immediate and easy access & retrieval of land-related information for all users
- Basis for data sharing and multipurpose use / GIS etc
- Reduce time & costs in transferring property rights
- Provide built-in mechanisms for quality control
- Safeguard data from destruction by fire, rodents, water etc by backups
- Decrease the cost and space required for storing land records
- Facilitate the monitoring and analysis of market
Support informed decisions.

**Specifics at Wereda level**
- A tool for the wereda
- Ease the Weredas’ work load - entering the same information only once
- Speed up registration and certification processes
- Facilitate quick and easy updating
- Enhance cooperation between authorities
- Stimulate structured thinking
- Information becomes more secured
- Modernises the weredas and makes it more attractive to work there
- Staff likes computerisation and training
- Inevitable - everybody is computerizing

**Specifics at Kebele level**
- Enhances transparency
- Strengthens the LAC
- Encourages updating
- Farmers get easy access to the information
- Enhances democracy and gender and vulnerable groups equality

**Some arguments against and risks with computerisation**
- Initial high cost for investment in equipment
- Infrastructure (buildings, stable power supply, services, internet) not well developed
- Hi tech systems are sensitive to errors and need a conducive environment and is still not reliable
- Viruses and malware threats
- Maintenance and upgrading of hardware and software

**Computerisation – key factors to consider**
- Participatory development
- Staff must see benefits
- Standard tools
- Technical solution
- Secure and virus free solution
- Support organization must involve many and decentralise
- Training and regular follow up / quality check
- Management commitment: Staff should always be assigned to man the system

**5. OUTCOME**
In less than four years, BOEPLAU has succeeded to register the rural land in the whole Amhara region. A status report prepared by EPLAUA in February 2009 stated that 3million possessors are registered with temporary certificates and 2million have received a primary certificate. This means that over 98% of the landholders in the region have been registered. This accomplishment would not have been possible without the combination of extensive Sida support, the strong commitment from the Amhara National Regional State as well as the Eplaua staff and the eager participation of the farmers.
Some of the effects of land certification in Amhara

Studies have shown that areas where landholdings have been registered and certified:
- There are increased investments in major farming assets and equipment
- Perceptions of land tenure security has increased
- Improved land management, tree planting and other land management activities have increased
- The incidence of land disputes has declined
- Farmers self esteem has been much strengthened. They dare to raise their issues to the authorities and politicians. Thus tenure security has contributed to democracy building.
- The awareness of gender aspects is much higher and/or Increased tenure security for women and vulnerable groups
- Increased rental land market activity
- Increased farming production and economic development
- Increased good governance and modernisation of rural land administration

Many assessments were made on the impact of land administration. They all pointed out that tenure security was achieved in an unprecedented short time and covering the whole region. The increased security has lead to improved land management such as tree planting, terraces, gully protection, fertilizer usage etc which has decreased land degradation on individual land holdings and increased agricultural production. The fear of losing your land has disappeared which has contributed to an increased land rental market making the use of land more efficient. This has especially favoured the vulnerable groups who rent out their land. Contrary to experiences from other places, the rented land is also well managed because the demand for land is high and the lessee wants to keep his rented land. Renting land helps those farmers to expand their business. Other impacts are reduced land disputes, no forceful eviction without compensation, effective use of labour due to reduced land disputes, women have been given equal access and land holding rights. Farmers self esteem has increased when they feel more secure with their right to use the land. They dare to raise their issues to the authorities and politicians. Thus tenure security has contributed to democracy building. The awareness of gender aspects has increased since women also are registered as owners.

The computerization of the land registry has also increased transparency and trust in the system since the data is made available for the LAC and the farmers. These outstanding results would not have been possible without a strong, mandated and decentralised organisation like Eplaua and the support by Sida in terms of capacity building by technical assistance, training, equipment, vehicles etc and the strong commitment from the Amhara National Regional State as well as the eager participation of the farmers.

Unforeseen impacts
- Other regions have largely incorporated the experiences from Amhara in their own activities.
The revised federal land proclamation is deeply influenced by experiences in Amhara region.

Extensive overall capacity building of Eplaua, zones, weredas and kebeles that effects development in the country in general terms

Improvement of wereda management through computerisation, working methods, archiving and access to office space.

Modernization of kebeles and farmers by participating in modern surveying, computerised registration and planning

The skill developed through the SARDP intervention at Eplaua assisted the institution to capture additional international support.

The present testing of satellite imagery use with the WB is based on the experiences derived through the SARDP intervention.

The development of the land administration system has attracted many other donors

Isla is introduced also in the weredas with other financers like USAID weredas, irrigation weredas, SLM weredas and Austrian supported weredas

6. TENURE SECURITY WITHOUT MAPS.
The experiences from Amhara show that you can achieve tenure security without the formal mapping of the land, a costly and time-consuming procedure. As soon as farmers have their certificates, even the temporary certificates, they begin with improvement on their land.

So if the aim is tenure security, why bother with maps? Since basic tenure security is already achieved through the first registration the discussion of parcel maps in the Amhara region has become more focused on what added value different surveying methods have to the first registration.

7. LESSONS LEARNT
Isla is basically a tool for the weredas and will ease their workload since they will only need to enter and check the information once; compared to the manual system where you have to do it at least three times. This will speed up the issuing of books of possession in the first registration as well as facilitate the continuous updating. The records will be more correct since you only have one source while in the manual system it is entered into three different sources with high risks of creating incompatible data. The computerisation has made data quality checking must easier and it has revealed serious problems in many weredas. The printouts of the information are powerful tools to help correcting these mistakes since they can be easily given to the LAC and farmers respectively for checking. This quality checking process also helps to make the farmers aware of the need of updating. You can easily disseminate the information to other users and thus achieve multipurpose use of the information. This can stimulate cooperation between authorities. In some wereda where Isla is introduced the tax revenue increased with 50% because new landholders were detected through the registration. For those who already paid tax this was good news. In the manual system the information on paper might be destroyed by rodents, fire, moist and mildew while in the digital system you have backups that can easily restore the information even if the computers are destroyed or stolen. A digital system also decreases the cost and space required for storing land records. Finally the computerisation contributes to structured thinking and modernising the weredas and their administration and makes it more attractive to work at the
wereda. At the kebele level there is supposed to be a copy of the book of registry. However, that will take a long time to implement in the manual system. The book shall also be kept updated with all changes which are currently done by the weredas and it will be difficult to transfer the information from the wereda without errors. The digital system makes a printout to the kebele as soon as the information has been confirmed. Thus the LAC can give correct and updated info to the farmers and this has strengthened the LAC. The farmers can control the information themselves at the LAC office through a check in the registry. This enhances transparency, democracy and gender equality and it has turned out to encourage updating. In the end, it will also strengthen the legitimacy of the land administration system.

**Sustainability**

Sustainability of the computerisation in the weredas has been questioned. This is an important discussion. However, Isla has now been in use for three years and the most advanced weredas cannot imagine reversing. The advantage of the system and the pressure from the users has great impact on sustainability. With fees from the land holders gradually being introduced in combination with the commitment from the Ethiopian government and the great interest that has been expressed by many donors in Ethiopia make it seem likely that the whole exercise can and will sustain itself. Computerisation is in many cases inevitable. It must then be realized that the support has to be long term. Capacity building is needed to train staff, but also keeping a readiness to train new staff when the first trained staff leaves due to the seemingly inevitable governmental staff turnover. This needs to be done parallel to developing work routines and creating a process driven by the staff to renew and manage the computerization.

A system like Isla will never be finalised but will require continuous development due to demands from users and technological changes. Eventually it will have to be replaced or developed into more sophisticated systems. By then the BOEPLAU staff should have gained experience needed to specify necessary and required performance. All system introduction experiences show that you have to test, gain experience and build capacity before scaling up or before going into more sophisticated systems. Neither the infrastructure nor the amount of digital data available in Ethiopia can in any aspect motivate the introduction of more sophisticated land information systems. Development of apparently simple IT solutions, like the virus protection system developed through encrypting etc, is time consuming and complicated even when simplified. Introduction of IT in the weredas, albeit done simple, is marred by all sorts of unforeseen problems and therefore takes much more time than expected. Sustainability is of course a major problem but computerisation today is much more conducive than five or ten years ago.

**Beware of a full-fledged LIS**

A common questioning of the Isla system is that it is not a full-fledged land administration system. However, our experience shows that a more complicated system would not be feasible to introduce in the weredas today. Such a complete and advanced system could not be used to its potential since most of the data needed for that is not in place and will not be for a long time. Furthermore there are no capable users of such a system. Isla is designed to meet the immediate needs for land registration and updating. By building capacity at BOEPLAU...
and the weredas you can gradually develop it when the needs occur. You cannot buy a ready-made land information system (LIS) - to create LIS is a process with strong involvement of staff and goes hand in hand with data capture, entry and usage. A LIS may be a vision but you must start with building capacity which is achieved by training and subsequent experience gaining.

**Procurement**
The experience from the procurement of equipment, services and ICT training for the districts shows that you must be very flexible in the procurement process if you want results. The mixture of starting with Consultancy service provided procurement and from that building capacity and gradually hand over responsibility was more fruitful than stubbornly sticking to the governmental system.

Procurement is lined up with all kinds of obstacles typical for a developing country. Most businessmen are not mature/professional. However, they can quickly develop their skills if challenged. If they cannot keep promises like delivery time, product quality and performance they should be challenged to reduce prices or risk cancellation of the order. This must be stated in the contract or better already in the specification given out for proforma collection.

**Support organisation**
Without a stable and developing support unit any computerization will fail. It is of fundamental importance that the management fully understands and supports this. To maintain and develop the system there is need for well trained and capable ICT staff as well as land administration and registration experts.
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