Enforcement of Mandatory Cadastral Registration in Eritrea

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SUMMARY

Proper management of land and other immovable property requires accurate information for policy-makers. In Eritrea, voluntary registration of land and other immovable property existed for over a century. But, it persisted as a voluntary and hence sporadic enterprise. It is conceived that the absence of mandatory registration system precluded proper management of land and its resources. Thus, in 1997 the Eritrean Government proclaimed a mandatory Registration Law of land and other immovable property built on land. It was foreseen to become an essential legal instrument which heralded the protection of individual or legal person's rights over land and ownership of buildings, transfer of land rights and ownership of buildings, environmental protection, as well as providing a database for planning of developmental interventions.

Different experts have extensively written on the advantages and limitations associated with mandatory cadastral registration. But, it is argued that, despite its desirability, it should depend on the local objective conditions. A fully functional cadastral system is inconceivable without mandatory registration. When effectively implemented it becomes a basis of social stability, welfare of people and sustainable development.

Despite the legal proclamation of mandatory registration and attempts made at implementation, the enforcement of mandatory cadastral registration in Eritrea remains largely ineffective. This paper attempts to elucidate the crucial role mandatory registration plays in the management of land and immovable property. The main objective is to explore the challenges which have forestalled the enforcement of the proclaimed mandatory cadastral registration in Eritrea, with the intention of identifying and coming-up with recommendation of viable solutions and alternative course of action for consideration.

1. INTRODUCTORY BACKGROUND

The Eritrean Cadastre was established at the end of the 19th century during the Italian colonial administration. Its main function was guaranteeing security of property ownership of Italian settlers. It was a replica of the Italian Cadastral system. The Notary Public, with responsibilities of authentication of contract agreement and ensuring secure transfer of property, was also established at that period. The system remained voluntary and sporadic, unable to support proper land management. The cadastral system was administered by the High Courts for more than a century, until it was ceded to the Ministry of Land, Water and Environment (MLWE) in August 1999.

The Eritrean cadastral system is based on the division of land into parcels, having maps and records. The Cadastral Office registered buildings that have physical plan and building license for the main urban centres and surveyed land parcels allotted for commercial agriculture in rural areas. The registration system has been largely confined to urban areas and parcels of land allotted for commercial agriculture. Despite its limitations it maintained property records with utmost care. Its significance as the main source of evidence providing property security was vivid in post-independence period during the Housing Commission's verification of property ownership (Weldegiorgis, 2010, p. 2).

For a long time the Eritrean cadastral system remained in its rudimentary form. During the successive colonial administrations, the Cadastral Office and other complementary institutions lacked the required capacities to carry out their works properly. The 30 years War of Liberation (1961-1991) against the Ethiopian colonial rule caused Eritrea serious constraints to development: the physical, social, and institutional infrastructures of the country were severely dismantled by the war and negligent colonial policies. In addition, human capital development was curtailed and the foundation of a modernising economy devastated by war, drought and inappropriate economic policies (GoE, 1994, p. 2, in Weldegiorgis, 2010, p. 6) imposing immense challenges for development.

In mid-1997 the Eritrean Registration Law, Proclamation Number 95/1997, the Registration of Land and other Immovable Property was issued, declaring cadastral registration as mandatory. According to this Law, the Cadastral Office is mandated to register all land and other immovable property erected on land, transfer of use right over land, and ownership of buildings. This legislation of mandatory registration was intended to introduce comprehensive registration of land and buildings. This principle of registering land and other immovable property built on land, acquiring real property, transferring right or ownership and establishing real property related rights is termed as a "necessity principle" (Bakici, 2018, p. 14).

Since Eritrea's independence (1991) efforts have been underway to build institutional infrastructures. Nevertheless, this effort was curtailed by the outbreak of the 'Border War' with Ethiopia (1998-2000) and the state of 'no-peace and no-war', which lingered until July 2018 when the two governments eventually agreed to end hostilities and to normalize their relations, following Ethiopia's declaration of its acceptance of the final and binding ruling of the Eritrea-Ethiopia Boundary Commission of April 2002. In addition, the unjust sanction imposed on Eritrea by the UN Security Council in 2009 has been lifted. This and a new chapter of peace, friendship and cooperation has been heralded and this environment of peace and cooperation is believed to enhance the building of capacities of the various institutions, including the Cadastral Office. Currently, the Cadastral Office employs about 65 staff, out of which 20 are permanent employees and the rest temporarily assigned to fulfil their national service. The development of a modern cadastral institution also remains constrained by the absence of learning institution that provides relevant education.

2. STATUS OF THE ERITREAN CADASTRE SYSTEM

Land is defined as "the surface of the earth, the materials beneath, the air above, and all things fixed to the soil" (Williamson et al, 2010, p. 453). It means that it includes the environment-structures built on land. Eritrea has a Land Law; it was issued in 1994 under

Proclamation Number 58/1994 with the objective of reforming the land tenure system. The traditional systems of land tenure and laws were disparaged as outdated and incompatible with the development strategies and thus had to undergo change to enhance the overall socio-economic development of the country. The main tenets of the Land Law include:

> All land is owned by the state; the state determines the allocation and use of land; land is not transferable except when the holder dies leaving minor children; Eritrean citizens (≥18 years) have equal rights to *tiesha* land (residence plot in village); farm land is allotted on usufruct basis to those who earn their living by farming; leaseholds are provided for housing, commercial and other social services, and lease period varies from 10- 60 years, but contract can be renewed upon agreement of the two parties; women have equal rights to land as men; the state has the powers to take land deemed necessary for national development from its holders by paying fair and adequate compensation for property built on it.

Implementation of the Land Law necessitated the introduction of an efficient, simple and modern registration system, and thus the Registration Law was issued. Use right over land is acquired through legal allotment of land and ownership of building through purchase, inheritance, gift, will, partition, exchange or decree of court. But, final validation of ownership and rights need registration and certification by the Cadastral Office. The cadastral concept is manifested in the Cadastral Office's mission, stated as 'to protect and guarantee security of immovable property ownership and use-rights over land' and its vision 'to make registration of immovable property speedy and easier for all clients' (Weldegiorgis, 2018, p. 4). The Cadastral Office enunciates core values, such as objectivity, integrity, teamwork, creativity, fairness, openness, work discipline and professionalism as its guiding principles.

The main mission of the Department of Land is 'to ensure the implementation of sustainable land management and to guarantee optimum use and fair distribution of land' (Ibid, p. 4). Urban, semi-urban and rural lands for housing, farming (be it for peasant usufruct rights or commercial agriculture), social services and other purposes are currently surveyed on demand basis, and divided into plots and parcels for allotment and reserve purposes. Cadastral surveying, which is done by the Department of Land, defines land parcels by giving Id number and demarcates boundaries and sub-divisions. These identifiers are also applied by the Cadastral Office's registration.

The Eritrean Cadastre has a unique parcel identifier, referred as PID. It provides title registration of land use right and ownership of building. The cadastral system has an un-integrated textual and spatial data. Data in the cadastre include textual data such as property identifier, property address, location, land use, land and building area, building date and type, building purpose and license and boundaries; proprietorship data such as owners/right holders name, address, id number, spouse name, date of purchase, vendor's name and address; and encumbrances such as mortgage, pledge and release of mortgage or pledge.

In primary registration, a building is qualified for registration upon fulfillment of certificate of land lease contract, construction permit, approved plan and building or habitation license by the Departments of Infrastructure. A land parcel allotted for commercial agriculture is also registered upon fulfillment of certificate of lease contract and proper survey plan. In the

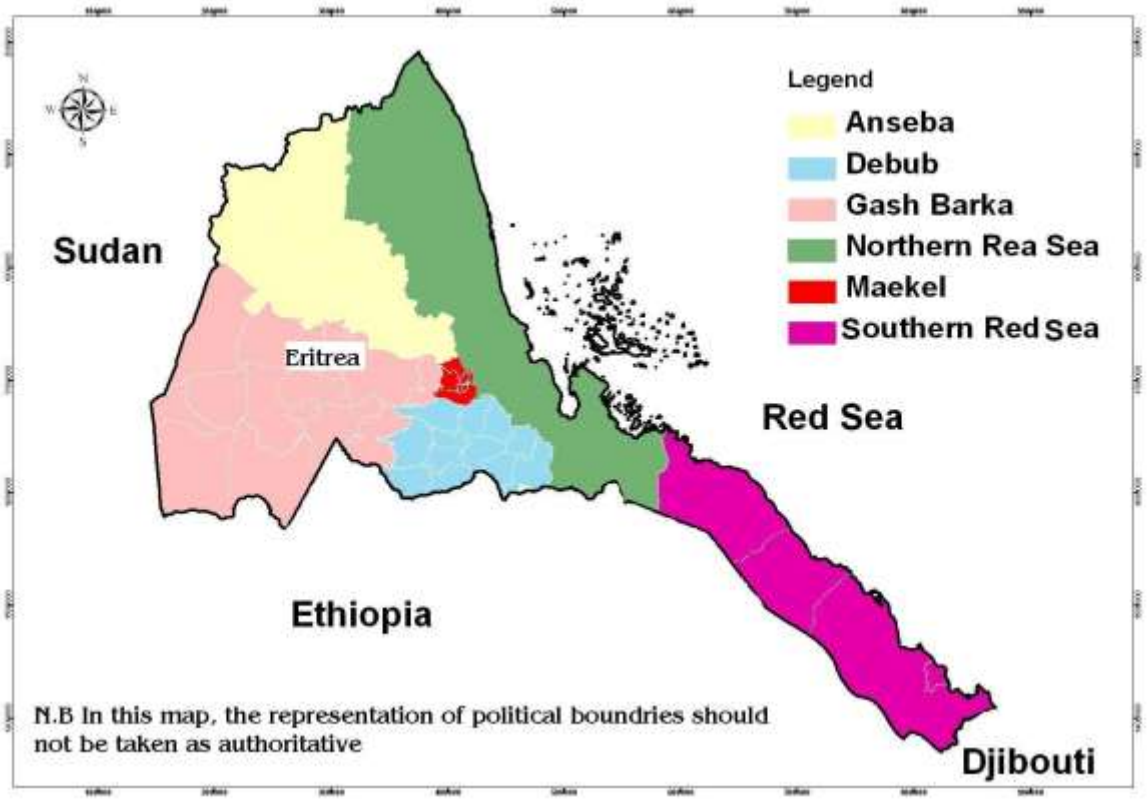
transfer of immovable property (other than land) through sale, inheritance, donation or other means, clearance from debt, pledge, availability of other relevant supporting documents and legal processing by the Notary Public Office are prerequisites for registration.

The presence of Notary Public, which is responsible for the authentication and secure transfer of contract agreement of immovable property, is limited to the Central Region (Maekel Region). It is not reinstated in the other five regional administrations. In addition, the existing Notary Office has limited functions; it doesn't embrace the many notarial services in use world-wide, such as providing legal security for businesses, financial and real estate deals.

An initiative to bolster the human and institutional capacities of the Cadastral Office is underway. Modern database has been designed and become operational (although spatial data is not integrated with textual data) and the traditional manual record keeping system has been transformed into modern record keeping system. In addition, the arbitrary uniform registration service charge fee has been transformed into value-based system. Moreover, a study is being undertaken to digitize old manual records, and cadastral service efficiency is modestly being improved to meet customer satisfaction**.** Furthermore, a pilot project of life-long usufruct land rights has been introduced by allotting land parcels to farmers in five villages in the Serejeqa Sub-Region of Central Region (See Map of Eritrea and its regions). However, replicating it in other areas has not been initiated. The approach is believed to significantly respond to the current challenges of development and investment.

Unplanned houses constructed in urban and semi-urban areas pose formidable challenges for formal registration. So far, the planned allocation of land lease and building permit for housing did not match with the pace of people's demand. As a result, the construction of unplanned houses proliferated illegally. These unplanned buildings and other informal settlements are ineligible for formal registration. Registration of land purchased illegally from right holders (sale of land is illegal) where dwelling houses are built without proper plan and permit was introduced at the beginning of 2016 after the payment of cash penalties decided by a task force commissioned to its oversight. The Cadastral Office is providing them with "provisional registration certificate" with the intention of providing permanent certificate when it is upgraded and given building license at later stages (Weldegiorgis, 2016, pp. 11-12).

Knowing the number of houses built nation-wide is essential for policy-makers. The data helps to get the whole picture of houses built in the country for planning and addressing the housing problem. The data of houses built in cities and towns, prior to independence of Eritrea is available with the Housing Commission. But the data of buildings constructed since independence needs to be known to provide the whole picture of the number of houses. Towards this, a study is being undertaken and it is expected to be completed in mid-2019. This will also be a resource in discovering the data of registered and unregistered houses. The completion of the study will contribute to the understanding of the magnitude of housing problems and the task awaiting the Cadastral Office.



3. REQUIREMENTS OF A MODERN CADASTRAL SYSTEM

Cadastre systems deal with land parcel rights, ownership, lease, surveying or mapping, valuation, taxation or rent, structures and use. Like any other system, cadastral systems require rules and other guiding principles. The main requirements of a functional modern cadastral system can be summarized as below:

3.1 Laws or Legal Framework

Law is "all the rules established by authority or custom for regulating the behavior of members of a community or country" (Crowther, 1995, p. 667) or institution. It is a "set of enforced rules under which a society is governed" (World Book, 1994, p. 130, in Weldegiorgis, 2016, p. 12). It is one of the most basic and essential social institutions, a prerequisite for society, governments, institutions and persons to create harmony and sustainable development. A modern cadastral system needs rules and regulations that guide its work, which ensure the rule of law. The supremacy of law should be guaranteed, and everyone must be accountable for his actions and all forms and procedures are transparent and clients empowered with appropriate information (Hull and Whittal, 2013, p. 347).

Moreover, it is stressed that the system must be equitable and fair, manifested in terms of cost-effectiveness, clarity, simplicity and accessibility and empowerment of citizens. The issue of data security and integrity from corrupt practices is recognized. The desirability of computer technology for the provision of security and information systems and to make them 'tamper-proof' is highlighted. A modern cadastre has to be effective and efficient system that should be accessible, of low cost, free of complex forms, procedures and regulations that

slow its development and sustainability and has the necessary skills and know-how (Ibid, pp. 346-48).

Larson (1996, p. 80) advocates that registration of immovable property should be mandatory and systematic to provide the necessary benefits. But, there are also other proponents who argue that the system does not necessarily have to focus on mandatory approach. The sporadic registration approach, despite its weaknesses in proper management of immovable property has its merits. Zevenbergegen et al (2013, p. 9) notes that it is used when resources are limited; the individual uses it when need is felt, for example, in case of transfer of property. Empowering through knowledge and awareness-raising is imperative to understand what the system offers. In contrast, depending on local objective conditions, the systematic approach deems necessary, in case community is more organized and awareness and participation is high (Ibid, pp. 9-10). This approach promotes comprehensive registration and supports proper management of land and its resources.

3.2 Integrated Textual and Spatial Data

According to the International Federation of Surveyors - FIG (1995, in Williamson et al, 2010, p. 54) cadastre is defined as 'a parcel-based and up-to-date land information system containing a record of interest in land (e.g. rights, restrictions and responsibilities)'. Kaufmann (FIG, 2011, pp. 56-57) argues that the definition of cadastre should not remain static; it needs to adapt and include new technology and social media in order to solve the challenges of unregistered land parcels.

Broadening the definition of cadastre, Hull and Whittal (2013, p. 344) further argue that the focus of cadastre is spatial, not legal or fiscal; the parcel is referred to as a spatial unit of area of land or water, and stress that cadastre also refers to formal land ownership and through the "interests" and "attributes" linking to informal and customary land arrangements. World-wide, various cadastres are at work. But to be relevant, they need to re-orientate their changing roles with time in order to reflect the needs of millions without secure land rights (GIM International, 2013, pp. 16-27; Enemark et al, 2014, p. 6). However, it has to provide land information consisting of textual and spatial data giving land administration spatial integrity and unique parcel identification.

3.3 Mapping and Surveying Tools

Cadastral surveying is the "process of creating, measuring and marking boundaries on the ground" (Williamson et al, 2010, p.366) and defines and demarcates land parcels' physical boundaries. Mapping and surveying are tools for planning and managing land and its resources. Without these institutions, land use planning and developing modern cadastre is not possible. Legal cadastral surveying provides authentic and certified data that guarantees geometric and attributive accuracy. Man's relationship to land and role of cadastral systems change over time, to cope with the societal needs. In this constantly changing environment new technologies, such as mobile phones and drones are also in use in the pro-poor land tool approach.

In Eritrea, institutions that are responsible for cadastral surveying include the Mapping and Information Centre, Department of Urban Planning and Department of Land working

independently. The Regional Departments of Infrastructures are responsible for planning and providing certificate of buildings constructed according to plan.

3.4 Coherence with Land Administration System

Land administration is a driver through whose approach sustainable socio-economic and environmental development is attained. Sustainable land administration promotes "efficiency and economic development, equity and social justice, environmental preservation, and good governance" (Williamson et al, 2010, pp. 84, 116-117). Cadastre is a tool for sustainable land development and most developed countries have developed sustainable economies assisted by the development of their cadastre systems. The global land administration system should be integrated with its core cadastral component (Enemark, 2003, p. 6). Countries reform and modernize their cadastral systems to ensure improved management of land and its resources, to promote political stability and social justice (Osterberg, 1998, p. 3).

Modern cadastre and land administration system are integrated; modern land administration system (LAS) encourages the integration of land tenure, land value, land use and land development to deliver overall policy objectives (Enemark, 2013, p. 26). In the developed world, the majority of cadastral systems are complete with digital cadastral maps (Williamson, 2015, p.5) that provide up-to-date land information, which is essential for policy-makers and implementers.

3.5 Flexible and Future-oriented

To stay relevant modern cadastre should be future oriented. Spatial information technologies and sustainability issues demand the creation of new visions and roles for cadastre. Innovative concepts, such as the multi-purpose cadastre were evolved at the end of the 20th century to meet the challenges of poverty, environmental protection, good land governance, and economic stability. Modern cadastral systems use digital technology for registration, spatial information and communications; this provides opportunities for automation, facilitation and integration of data through spatial data infrastructure (Masser, 2010, p.17).

Future cadastres should meet survey accuracy, object oriented design, 3D/4D arrangements, real-time information, global linkages and organic characteristics (Bennet et al, 2011, pp. 1-10). Cadastre 2014 (Steudler and Kaufmann, 2014, pp. 10-15) for example, focuses on high accuracy and is appropriate for the developed world. They predicted that Cadastre 2014 would show by 2014 'complete legal situation of land', abolition of separation between 'maps and 'registers', 'end of cadastral mapping', 'end of paper and pencil cadastre', 'cadastre would be highly privatized' (Steudler and Kaufmann, 2014, pp. 10-15).This is modeled for the developed world, but experiences of the poor developing world, including Eritrea show that it largely remains irrelevant at this stage.

The conventional approach of the developed Western Europe, which champion high tech surveying tools doesn't support the poor of the developing world whose property is over 75% unregistered. Thus, the need for less costly field survey procedure, which is pro-poor, 'flexible and fit-for-purpose approach' to land tenure security rose in response to the limitations of existing conventional approaches (Enemark, et al, 2014, p. 6; Zevenbergen, 2013, p.6; Enemark, 2012, p.13, in Hull and Whittal, 2013, p. 349). This global trend calls for

the need of spatial units of tenure security for 'unregistered owners or users of land' (Molen, in FIG 2014, p. 5).

The 'spatially-fit-for-purpose cadastre' or 'land administration' approach with 'general boundaries' or 'virtual boundaries' with its Social Tenure Domain Model (STDM) (Enemark et al, 2014, pp. 5-7, GIM International, 2015, pp. 22-24) provides land rights and claims based on social tenures- documented and legal, undocumented and illegal and other informal tenures. This pro-poor land tool, through a 'continuum of land rights' would gradually transform the mainly social and insecure informal land rights to formal ones at affordable cost when conditions permit (Augustinus, 2010, pp. 1-3, Enemark, 2013, p. 27).

The pro-poor land tool approach focuses on the relationship between the parties, social tenure relations and spatial units and recognizes land rights as a continuum ranging from informal to formal registration (Enemark, 2013, p. 27, Lemmen, 2013, pp. 9-10). Countries that have developed pro-poor land policies and testing the 'spatially fit-for-purpose cadastre' and 'continuum of land rights' include Rwanda, Uganda, Ethiopia, Tanzania, Mozambique, Lesotho and Eastern Caribbean (UN Habitat, 2012, pp. 9, 54).

3.6 Capacity Development

The development of sustainable cadastral systems requires the development of necessary skills and capacities. Modern cadastre is inconceivable without institutional and human resource capacity development. Capacity development, which is two-dimensional, is a continuing learning process. Capacity is defined as "…the process by which individuals, groups, organizations, institutions and societies increase their abilities to perform core functions, solve problems and define and achieve objectives; and to understand and deal with their development needs in a broader context and in a sustainable manner" (UNDP, 2002, in Williamson et al, 2010, p. 299). It is "the power of something- a system, organization, and a person to perform and produce properly" at societal, organizational and individual levels (Enemark, 2003, p. 3). It is evident that cadastral systems are dependent on expertise for development, maintenance, communication and operation.

4. CAUSES OF FORESTALLED MANDATORY REGISTRATION IN ERITREA

In many countries, the registration of transfer of immovable property is mandatory. The transfer of property through sale, donation, inheritance or exchange can't be processed without prior legal registration. A sale deed not duly stamped and registered in the name of the 'transferee' is not legally recognized (India Infoline News Service, 2014). In Eritrea, despite the mandatory Registration Law, immovable properties sold through non-legal means, estimated in many thousands are not legally registered. This means that an individual or legal person who has purchased a property through internal contract but not duly stamped and officially registered lacks secure property ownership or right.

The Eritrean legally proclaimed mandatory cadastral registration is not enforced. Only a small fraction of planned houses and land parcels allotted for commercial agriculture are registered. As discussed earlier, unplanned buildings are outside the formal registration system. Moreover, the allocation of land lease and building permit for housing did not pace according to people's demand. The construction of illegal unplanned houses continues to mushroom unabated. This shows that the lack of capacities and ripe socio-economic

conditions to enforce mandatory registration, as seen in many developing countries, including Eritrea becomes a cause for search of alternative courses of cadastral registration. Generally, informal settlements develop when people are poor and unable to save money or don't have access to credit to purchase a house or are ineligible to get government support through low-cost housing programs (Ebra et al, 2012).

Mapping and surveying are tools of development planning and managing. Without mapping and surveying of land and its resources, development initiatives contradict with sustainable use of resources. In Eritrea, so far, there is no comprehensive mapping and land use planning. Modern cadastre is not possible without mapping and land use planning. Experiences of many countries hint that failure to develop mapping and to modernize cadastral system result in failure to develop equitable land policies, which are the primary causes of poverty, inequality and political instability in many societies (UCL, 1998, p. 36, in Weldegiorgis, 2010, p. 4).

In Eritrea, despite, the proclamation of Mandatory Registration law, voluntary and sporadic registration continues. It does not provide comprehensive cadastral coverage, which is necessary for proper management of land and its resources. The mandatory Registration Law based on conventional approach has restricted the cadastral system from becoming flexible enough to accommodate other approaches. In the face of the formidable human, institutional, social and economic development challenges that really confront the country, it is time for the policy makers to reconsider the mandatory registration approach with all its impractical requisites. This is despite the fact that sporadic registration of property takes long time to complete to register, registration costs per unit are high, and don't provide an overview of all existing parcels and titles of immovable property (Larsson, 1996, p.43).

Cadastre has a unique identifier containing textual and spatial data. Integration of the two and of cadastral works and mapping is imperative. However, the separate institutional and data arrangements of cadastral data and of the built environment, and topographic spatial data hinders harmonized development planning. As in many countries, in Eritrea 'integrating cadastral and land registration with mapping works and integrating spatial and other topographic data' (Williamson et al, 2010, pp.124, 234) with the cadastral data is a big challenge.

Secure property right or ownership encourages development efforts. In Eritrea, the Land Law is not fully enforced and thus life-long usufruct right not implemented. It is evident that this inadequacy negatively impacts the development efforts, such as food and environmental security and climate change. With the obvious inadequacies of competence to undertake the legislated mandatory cadastral registration, the current land tenure system in rural Eritrea should look for other flexible approaches to registration.

Finally, the relationship between cadastral and land administration systems and economic growth is evident. Failure in the development of modern cadastre and/or land administration system negatively impacts development. For instance, Greece is a case without digital land ownership registry, with more than 60% of its land parcel not surveyed and unregistered due to the absence of a well-functioning modern cadastre, illustrates its failure to modernize its economy, and to pay its debt and thus engulfing it in persistent debt crisis (GIM International, 2015, p. 13 and 2018).

5. CONCLUDING REMARKS

A country that aspires for sustainable socio-economic development must develop a modern cadastral system. Modern cadastre is a basis and tool for sustainable land management. It is evident that the development of a cadastral system is inconceivable without an integrated nation-wide mapping and land use planning. In addition, sustainable cadastral systems require the development of the necessary skills and capacities; capacity development is crucial. Modern cadastral systems support proper management of the scarce resource, land (including building) and its resources. Thus, the enforcement of mandatory and systematic approach to registration is difficult, if not impossible, without building the necessary competent institutions and building the awareness and ripe socio-economic conditions**.** Hence, the search for an alternative approach, which is flexible and upgradeable that complements the mandatory registration looks appropriate for Eritrea at this stage.

6. RECOMMENDATIONS

The development of modern cadastral system in Eritrea requires serious considerations at senior Government levels:

Recognizing the difficulties of mandatory registration, applying the 'fit-for- purpose cadastre' which is flexible and upgradeable looks relevant for Eritrea. Hence, the cadastre system of Eritrea in its mandatory cadastral registration has to adopt and skillfully introduce and enforce the 'fit-for-purpose cadastre', which ensures 'continuum of land rights'. However, political will is highly essential for its enforcement.

Secondly, mapping and surveying are tools for planning and managing of land and its resources. Hence, mapping and surveying related institutions require institutional capacity enhancement to carryout comprehensive mapping and land use planning of the country. These are tools for the development of modern cadastre and through it to proper management of land and its resources.

Thirdly, there is no educational institution or college that provides lessons in cadastral system. But, cadastral systems are dependent on expertise for development, maintenance, communication and operation. Sustainable cadastral systems require the development of necessary skills and capacities. Cadastral professionals are drivers for the development of modern cadastre and through it to proper management of land and its resources. Thus, as capacity development is at the core of modern cadastre, the need for education on cadastral system is high.

Fourth, there is no timely and secure transfer of immovable property outside the Maekel Region. To ensure secure and timely transfer of immovable property and collect government revenues in the form of tax and fees, reinstating the Public Notary Offices in all the other regional administrative seats is felt more than ever.

Finally, cadastre as a parcel-based and up-to-date land information system consists of the textual and spatial data. The integration of these two data is essential in modern cadastre.

Thus, structural integration or very close cooperation between cadastral and mapping works is a necessity that must be done for the development of modern cadastre.

7. REFERENCES

Augustinus, C. (2010) Social Tenure Domain Model: What it can mean for the Land Industry and the Poor, FIG Article of the Month November 2010, http://www.fig.net/pub/monthly_articles/november_2010/november_2010

Bakici, S. (2018) Land Registry and Cadastre in Turkey, General Directorate of Land Registry and Cadastre, Second Edition, Ankara, May 2018

Bennet, R., Rajabifard, A., Kalantari, M., Wallace, J., and Williamson, I. (2011) Cadastral Futures: Building a New Vision for the Nature and Role of Cadastres, Article of the Month June 2011, International Federation of Surveyors (FIG)
http://www.fig.net/pub/monthly_articles/june_2011/june_2011_bennet...

Crowther, J. (1995) Oxford Advanced Learner's Dictionary of Current English, Oxford University Press

Economic Commission for Europe (ECE) (1996) Land Administration Guidelines, United Nations, New York and Geneva
Enemark, S. (2013) Building Sustainable and Transparent Spatial Frameworks, Fit-For-Purpose Land Administration, GIM International, Issue 7, Vol. 27, July, 2013

Enemark, S. (2015) Cadastre in a Changing World: Issues and directions, in Coordinates, A Monthly Magazine on Positioning, navigation and beyond, VOL. X1, Issue 4, April 2015

Enemark, S. (2003) Capacity Building for Developing Sustainable Land Administration Infrastructures, Paper presented at WPLA/FIG Workshop Athens, 28 -31 May 2003

Enemark, S., Bell, k., Mc Laren, R. (2014) Fit-For-Purpose Land Administration, Joint FIG/World Bank Publication, International Federation of Surveyors (FIG)

GIM International (2015) A New Era in Land Administration Emerges, Securing Land Rights of the world is Visible, The Global Magazine for Geomatics, Issue 1, VOL. 29, Geomares Publishing

GIM International (2013) Fit-for-purpose Land Administration, Issue 7, VOL. 27, The Global Magazine for Geomatics

GIM International (2018) Mapping the World, the Necessity of a Modern Cadastral System,
http://www.gim-international.com/content/article/the-necessity-of-a-modern-cadastral-system

GIM International (2010) The Global Magazine for Geomatics, Issue 10, Volume 24, October 2010, Geomares Publishing

GIM International (2015) The Global Magazine for Geomatics, Issue 11, Vol. 29

https://www.gim.international.com/.../how-a-well-functioning-cadastre-can-help-greece,2018

Government of Eritrea (GoE) (1994), Macro Policy, Asmara, Eritrea

GoE (1994) Proclamation NO. 58/94: A Proclamation to reform the system of Land Tenure in Eritrea, Asmara, Eritrea

GoE (1997) Proclamation NO. 95/1997: A Proclamation to Provide for the Registration of Land and Other Immovable Property, Asmara, Eritrea

Hull, S. and Whittal, J. F. (2013) Good e-Governance and Cadastral Innovation: In Pursuit of a Definition of e-Cadastral Systems, https://www.researchgate.net/publication/268152772

India Infoline News Service (2014) Why Registration of Immovable Property is Important? https://www.indiainfoline.com/article/search-articles/why-registration-of-immovable-property-is-important--50083880_1.html, 2018

Kaufmann, J. and Steudler, D. (1998) Cadastre 2014: A Vision for Future Cadastral System, FIG, Denmark, www.fig/net/cadastre2014>

Larsson, G. (1996) Land Registration and Cadastral Systems, Longman Malaysia, CLP Economic Commission for Europe (1996)

Lemmen, C. (2013) The Social Tenure Domain Model, A Pro-Poor Land Tool, International Federation of Surveyors (FIG), Global Land Tool Network (GLTN) and UN-Habitat

Masser, I. (2010) Building European Spatial Data Infrastructures, Second Edition, ESRI Press

Osterberg, T. (1994) Cadastre: A Land Information System, Swedesurvey, Gavle, Sweden

Steudler, D. (2014) Cadastre 2014 and Beyond, FIG Publication NO. 61, International Federation of Surveyors (FIG), May 2014, Copenhagen, Denmark

UN Habitat (2012) Handling Land: Innovative tools for Land Governance and Secure Tenure

University College London (UCL) (1998) Department of Geomatic Engineering, Lecture at Sewdesurvey, 8 September 1998

Weldegiorgis, H. (2016) Cadastre as a Tool for Sustainable Development, presented at International Conference on Eritrean Studies, 20-22 July 2016, Asmara, Eritrea

Weldegiorgis, H. (2015) Land Tenure in Eritrea, Presented at FIG Working Week 2015, 'From the Wisdom of the Ages to the Challenges of Modern World', Sofia, Bulgaria, 17-21 May 2015

Weldegiorgis, H. and Bereket, A. (2018) Revised Cadastral Template 2.0 of Eritrea cadastraltemplate.org/Eritrea.php

Weldegiorgis, H. (2012) The Challenges of Developing Cadastral System in Eritrea, Presented at FIG Working Week 2012, 'Knowing to Manage the Territory, Protect the Environment, Evaluate the Cultural Heritage', Rome, Italy, 6-10 May 2012

Williamson, I., Enemark, S., Wallace, J., Rajabifard, A. (2010) Land Administration for Sustainable Development, ESRI Press Academic, Redlands, California

World Book Inc. (1994) The World Book Encyclopaedia, L Volume 12, A Scott Fetzer Company, Chicago

Zevenbergen, J.A, Antonio, D.R., Augustinus, C., and Bennet, R. M, (2013) Pro-poor Land Administration: Principles for recording the land rights of the underrepresented https://www.researchgate.net/publication/257098666

BIOGRAPHICAL NOTES

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