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**AJLP & GS**

African Journal of Land Policy and  
Geospatial Sciences



## **The Relationship between the Mining and Property Cadastre in Kenya**

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### **ABSTRACT**

The accelerated exploration of sub-surface mineral resources across much of Africa has created the need for proper administration of sub-surface land rights. The trend world-wide is to create a separate cadastre for mining. The reasons advanced for this separation are: the relatively short-term (issued as leases) nature of the mining rights, the mining laws relate exclusively to the right of exploiting minerals and are not modifying the property right; the boundaries of these rights are not linked to the limits of the "property" rights; the need for independence of decision regarding minerals and mining. However, it is important to establish the link between the mining and property cadastre so as to provide a complete documentation of all the public and private rights and restrictions for land owners and users. The link between the mining and surface property cadastre is established during the application process of the mining license, the consent from the owners of the surface land rights is required. The land in question is then identified in relation to the cadastral coordinates defining the mineral right area and this information is kept in the mining cadastre.

## 1. INTRODUCTION

Kenya's mining industry is set for tremendous growth following the recent discovery of petroleum and other minerals and this is attested by the creation of a dedicated Ministry of Mining and the planned country-wide airborne geophysical survey and mapping of all the mineral resources in Kenya (Michira, 2017). The importance of the mining sector in the national economy depends on an efficient legal and regulatory framework. To this end, the Mining Act (Mining Act, 2016) which was revised and re-enacted in 2016 has the principle objective of streamlining the country's mining sector and open it for development as well as ensure environmental conservation and sustainable development.

The Mining Act provides that an up-to-date computerized mining cadastre and registry system, including a register of mineral rights; and that this cadastre include an online transactional facility to enable applications for granting and renewal of mineral rights to be submitted online.

Unlike surface land rights, where administration regimes are quite established, the ownership and administration of rights to underground mineral resources are not as established in Kenya. The trend worldwide regarding the administration of mineral resources is to establish mining cadastres separate from the general land administration cadastres (Feast et. al., 2006). This trend is informed by one the key principles governing mining rights that the mineral rights granted through a license or lease are considered real estate properties but are independent from surface or land ownership rights (Girones et. al., 2009).

Although historically mining and property cadastres have been treated separately, the fact that mining rights are considered as leases makes it possible to integrate them. Traditionally, the lease was referenced on the

cadastral unit to show the part of the plot of land that is subject to the lease. Nowadays,

GIS technology provides a platform to integrate mineral and property cadastres – thereby showing the complete legal situation in land, including *surface* and *subsurface* public rights and restrictions. The current developments in 3D cadastre concepts have also presented the opportunity to integrate surface property and subsurface mining rights.

A mining cadastre as a cadastral system defines objects and rights for sub-surface mineral resources and these overlaps with other surface rights like private and community land ownership. In Kenya, all minerals and mineral oils as defined by law, is public land and vested in and held by the national government in trust for the people of Kenya and administered on their behalf by the National Land Commission (NLC).

The key questions that this article seeks to answer are: why is the establishment of a mining cadastre necessary when there is already a general land administration cadastre?; what is the relationship between the mining cadastre and the land administration cadastre; and what the role of surveyors in mining cadastres is?

To address the above questions, this paper starts with a highlight of the mining sector in Kenya, followed by discussing the mining cadastre in the context of the general cadastral concept and practice in Kenya and establishing the relationships between them (mining cadastre as a special kind of a cadastre). Finally, the paper will outline the role of surveyors in mining cadastres

## 2. THE MINING SECTOR IN KENYA

Kenya's mining and quarrying sector has not been significant and accounts only for 0.4% of the Gross Domestic Product (Yager,

2014). Soda ash as the only significant mineral amounts to 4% of the world's production. Over the years, Kenya has emerged as the third largest Producer of Soda ash in the World and the Seventh Producer of Fluorspar. Moreover, most of Kenya's mining and mineral processing operations have largely been privately owned.

Initially, the country was mapped as an agricultural zone and hence reduced exploration for minerals. The country is vastly under-explored for minerals and its mining sector is currently dominated by the production of non-metallic commodities. Kenya is still in the early exploration of its mineral potential as shown in Figure 1. The range of minerals found in Kenya in significant quantities includes soda ash (Trona) around Lake Magadi, Fluorspar at Kimwarer in Kerio Valley as well as Titanium in Kwale, Malindi and Lamu.

**Fig. 1: Geology and mineral potential of Kenya (Source: Barreto et. al., 2018)**

## 2.1 Mining policy

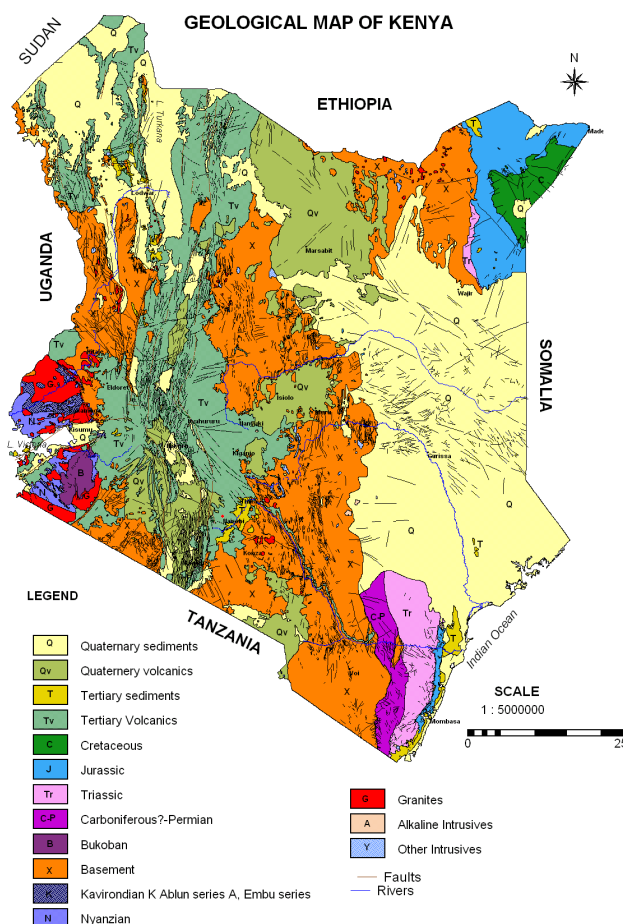
The Mining Act (2016) was enacted replacing the pre-independence Mining Act Cap. 306 of 1940, which did not make any provision for technological, economic and environmental advancements – and was deemed out of date and out of touch with the times. The law is intended to streamline the country's mining sector and open opportunities for its development as well as ensure environmental conservation and sustainable development. The law also seeks to address the key gaps that existed in the old law and align the sector to the latest global trends such as value-addition and the use of technology to spur investor interest.

The essence of the law is to give effect to the provisions of Article 60 of the Constitution of Kenya and the land policy, which provides that all minerals and mineral oils form part of public land and shall vest and be held by the national government in trust for the people of Kenya and to ensure that investments in property benefit local communities and their economies. The Act does not however apply to matters relating to petroleum and hydrocarbon gases

Kenya is not the only country to define a new mining law; many countries have also revised their existing laws (Hernandez, 2003). One common principle in all these laws is the requirement to provide a modern and open mining cadastre and title registry. In Kenya this provision is realised through the use of the Online Mining Cadastre portal for licensing and for management of mineral rights and permits (Trimble, ).

## 2.2 Mining Rights

In Kenya, every mineral in its natural state under or upon land, in or under a lake, river, stream or any water courses; as well as in the exclusive zone and any area covered by the





territorial sea or continental shelf is the property of the republic and is vested in the national government in trust for the people of Kenya. This provision applies to any category of land (Land in Kenya is classified as public, community or private) despite any right or ownership of or by any person in relation to any land in, on or under which any minerals are found.

Because all mineral and mineral deposits are owned by the state and also through the right of pre-emption, discovery of any minerals where there is no apparent holder of a mineral right shall be reported to the cabinet secretary. The person who reports the discovery of any mineral shall be granted the first right of refusal to apply for a mineral right over the area of discovery. The right to prospect or mine any mineral, mineral deposit or tailings in Kenya is only possible if a permit or license has been granted by the state.

### **2.2.1 Large-scale mining rights**

Mineral rights may be granted in respect of a large scale operation or small scale operation. For large-scale operations various categories of licenses are granted, which include: reconnaissance license; prospecting license; retention license; and mining license.

A reconnaissance license gives the non-exclusive right to carry out non-invasive investigations for minerals resources by geophysical surveys, geochemical surveys, photo geological surveys or other remote sensing techniques (only the state has the power to conduct airborne surveys) and surface geology together with limited sampling of surface soil and rocks. Intrusive activities such drilling, trenching and excavations or other subsurface exploration techniques are excluded.

The maximum area covered by reconnaissance license shall be a block or any number of blocks not exceeding five thousand contiguous blocks each having a side in common with at least one block the subject of the license. A block or cadastral unit is a

pseudo-quadrilateral formed by two meridians of longitude and two parallels of latitude of the cadastral graticule spaced fifteen seconds apart. The term of a reconnaissance license does not exceed two years and is not renewable. A reconnaissance license is subject to an area based annual charge as may be prescribed and an area subject to a reconnaissance license shall not overlap with an area under a prospecting or mining license. Any mineral acquired in the course of reconnaissance operations under reconnaissance license shall be the property of the state.

A prospecting license grants the holder an exclusive right to prospect for a mineral or minerals in the license area. The prospecting activities include mapping the deposits in more detail to evaluate grade and tonnage of the mineral occurrence and drilling to investigate and sample the mineralization in depth to determine its economic value. The area covered by a prospecting license shall be a block or a number not exceeding one thousand five hundred contiguous blocks each having a side in common with at least one other block the subject of the application. The term of a prospecting license shall be specified in the license, and in any case shall not exceed three years and cannot be renewed for more than two times after the initial grant of the license.

A retention license is granted upon application to the holder of a prospecting license who has identified a mineral deposit that is of potential commercial significance within the prospecting area; and the deposit cannot be developed immediately due factors beyond the reasonable control of the holder of the license. The holder of a retention license shall enjoy the exclusive right to conduct prospecting operations in the retention area; and apply for a mining license (in some instances compulsorily) in respect of all or a part of the retention area. The holder may demarcate areas that fall within the license area; enter the area of land specified in the license and erect equipment, plant and

buildings necessary to carry out the prospecting operations. The term of a retention license shall be specified in the license, and shall not exceed two years but can be renewed

Finally, a mining license grants a holder the exclusive right to carry out mining operations in respect of the mineral or mineral deposit within the area specified in the license. The license holder can enter the area of land specified in the license and erect equipment, plant and buildings necessary to mine the specified mineral and to transport, dress or treat the minerals so recovered; and dispose of any mineral recovered subject to the payment of the required fees and royalties. Upon the expiry of the approved license duration, the holder can request for a renewal which however should not exceed 15 years.

### **2.2.2 Small-scale mining rights**

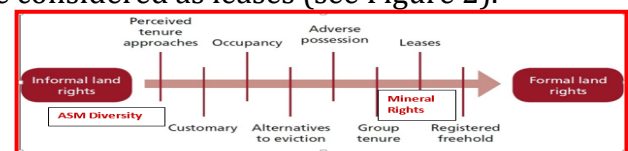
A proposed prospecting or mining operation is classified as small-scale if the proposed prospecting area does not exceed twenty five contiguous blocks; or if the proposed mining area does not exceed two contiguous blocks. For small-scale operations, permits instead of licenses are granted and they include: prospecting permit; or mining permit. The reconnaissance, prospecting and mining permits have almost the same terms as the corresponding licenses except that they are for small scale operations and the periods of the permits should not exceed one, five and five years respectively.

### **2.2.3 Mining rights in the context of continuum of rights**

The Constitution of Kenya 2010 provides that all minerals and mineral oils is public land and vested in and be held by the national government and administered by the National Land Commission. However, mineral rights will overlap with other surface rights other than public land, for example, private or community land, reserves, farms and villages. In general, the mining law provides that a

mineral right cannot be granted upon any land where mining operations are excluded or restricted, or which is already subject to an existing permit or license. In case the mining right is in relation to a public land, approval must be obtained from the National Land Commission and further approval from relevant state agency or cabinet secretary.

If the mineral right are over private or community land, a prospecting and mining right cannot be granted without the express consent of the registered owner, and such consent shall not be unreasonably withheld. Consent is by way of a legally binding arrangement with the applicant for the prospecting and mining rights or with the Government, which allows for the conduct of prospecting or mining operations and payment of adequate compensation. The agreement is valid as long as there isn't any change in land ownership and the prospecting and mining rights subsists. Provisions of compulsory acquisition are invoked if consent is unreasonably withheld or if the cabinet secretary considers that withholding of consent is contrary to the national interest. In the continuum of land rights, mining rights can be considered as leases (see Figure 2).



**Fig. 2: Mining right in the continuum of land rights**

## **3. RELATIONSHIP BETWEEN THE MINING CADASTRE AND THE PROPERTY CADASTRE**

The International Federation of Surveyors (FIG) has defined the cadastre as a parcel-based and up-to-date land information system that contains a record of interests in land (Rights, Restrictions and Responsibilities) and is may established either for fiscal purposes, legal purposes, to assist in the management of land and land use; and generally to enable sustainable development and environmental

protection (FIG, 2011). The concept and practice of the cadastre however, takes on different meanings in every country (Dale, P.F 2006) as a consequence of each country's historical development, its laws and customs, and to a large extent its form of conveyance and methods by which land registration was introduced. Other factors that will influence the format and management of the cadastre include: population distribution; level of technology; traditional public administration arrangements; and land policy priorities for the jurisdiction (International Federation of Surveyors 2011). In most countries, the land parcel is considered as the basic unit in the cadastre; however in some countries both land parcel and buildings are included – in Kenya, the cadastre does not include the buildings (Siriba et al, 2011).

Based on world-wide trends, Kaufmann and Steudler (1998) observed that cadastres were undergoing reforms and observed in the first statement of Cadastre 2014 that the cadastre of the future will contain a complete documentation of public and private rights and restrictions for land owners and land users embedded in a broader land information system, fully co-ordinated and automated, without separation of land registration and cadastral mapping. This became very realistic through the introduction of the concept of a land object, which is as a piece of land in which homogeneous conditions exist within its outlines. The conditions are normally defined by law which defines the phenomena, rights, or restrictions which are related to a fixed area or point of the surface of the earth. A difference is made between a legal and a physical land object. Whereas a legal land object is a piece of land where either a private or a public law imposes identical juridical parameters, a physical land object is when a piece of land is under unique natural or artificial conditions and there is no definition in the legal framework. Examples of legal land objects include: private property parcels; land use zones; areas where the exploitation of natural resources is allowed.

The concept of a legal land object would then allow mining rights to be included in the cadastre as encumbrances. However, the trend is usually to have a separate cadastre for mining. The reasons advanced for this separation are: the mining laws relate exclusively to the right of exploiting minerals and are not modifying the property right defined in the land act; the boundaries of these rights are not linked to the limits of the "property" or use rights; the necessity of independence of decision of the ministry responsible for minerals and mining (Hernandez, 2003). This is in addition to the relatively short-term nature of the mining rights which will imply a significantly dynamic cadastre. Therefore a mining cadastre is a repository and information management tool established for the purposes of regulating the issuance of licenses and permits of mineral rights and dealings in minerals.

During the application of a mining license, consent from the owners of the surface land rights is required, of which land is identified in relation to the cadastral coordinates defining the mineral right area. A land information system if based on the Land Administration Domain Model (LADM) provides a framework for linkages of the mining cadastre and the land registry and cadastre. LADM-based land information system conceptually suggests legal and/or institutional independence that requires each institution to assume the responsibility for its own data (legal land objects) and an adequate way to guarantee interoperability.

#### **4. CONTENTS OF THE MINING CADASTRE**

The Mining Act requires that an up-to-date computerized mining cadastre be established and maintained including a register of mineral rights, which is a public document. The mining cadastral register contains the following details:

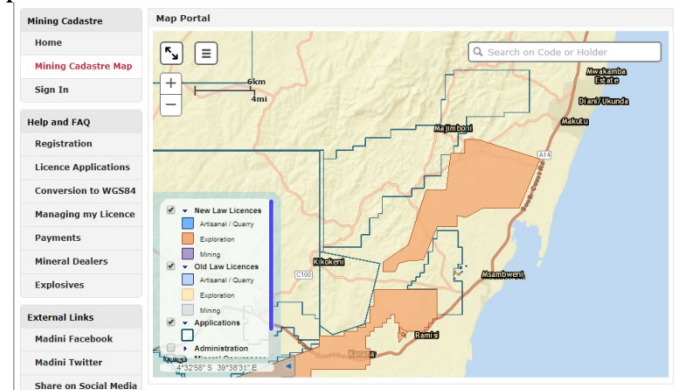
1. online mining cadastre registration number;

2. full name, nationality and contact details of the holder or a party to an agreement;
3. date of issuance and expiry of a license or permit;
4. description of the license or permit including, where relevant, the mineral right area
5. mineral or minerals for which a license or permit was issued;
6. cadastral coordinates defining the mineral right area including any updates as a result of enlargement or relinquishment;
7. duplicate licenses, permits or mineral agreements, including all conditions;
8. date that an official receipt was issued confirming the receipt by the Ministry of any report submitted as required by these Regulations and the type of report;
9. date on which any Community Development Agreement became effective and the name of the affected community - for a mining license,
10. date on which any notice was sent by the Ministry to the holder or party to a mineral agreement and the nature of such notice;
11. date that any communication was received by the Ministry from the holder or the party to a mineral agreement and the nature of such communication;
12. all confidential and non-confidential reports;
13. all environmental reports;
14. all notices from the Ministry and any other government agency;
15. dates on which a fee was paid, the service to which it relates, and the amount;
16. dates on which royalty was paid, the category of minerals for which it was paid, the weight and quantity of the mineral on which the royalty was calculated, and the amount paid;
17. date and nature of any assignment or transfers;
18. any other modification including any extension or renewal, areas relinquished and any charges or encumbrance in respect thereof; and
19. other information as may be required.

The computerized mining cadastre and registry system includes an online transactional facility to enable applications for granting and renewal of mineral rights to be submitted online. The cadastre being a public

document can be inspected by an interested person upon the payment of a prescribed fee. The National Land Commission, as the agency responsible for the management of public land is mandated to keep a copy of the cadastre.

The Kenya mining cadastre portal in Figure 3 has advanced user communication tools that allow portal users to apply, manage and make payment of mining licenses. Over 1,500 mining rights applications are managed through the portal. The mining cadastral map indicate all areas (i) where mineral rights' applications are pending; (ii) where mineral rights are currently in force; (iii) which are reserved for small-scale mining or artisanal mining operations; (iv) which are reserved for the award of mineral rights by tender; (v) which are excluded from prospecting and mining operations under the Act or any other written law; and that have been declared to be strategic minerals or strategic mineral deposits.



**Fig. 3: The Kenya Mining Cadastre Portal**

## **5. ROLE OF SURVEYORS IN MINING CADASTRES**

The physical boundaries of a mineral right area (cadastral block) are defined by the cadastral coordinates (vertices), which denote the various boundary points of a mineral right. The surface demarcation points of a retention license area, a mining license area and a mining permit area are required and identified by markers set in or on the ground or river bed. The boundaries of mineral rights



shall be deemed to extend vertically from the surface.

The holder shall be responsible for erecting, marking and maintaining the mineral right boundary markers in a mineral right area – and also removal of the removal of the demarcation markers at the expiry of the license. Reconnaissance license does not require demarcation unless the holder of the right wishes to. The manner of demarcation is prescribed and the posts erected at the major vertices should stand at least one meter above the surface and sunk not less than fifty centimeters in the ground or riverbed.

The demarcation point marker locations of the cadastral block are to be surveyed by a licensed land surveyor. Any dispute between parties on the demarcation of boundaries, placement of markers or any other boundary matter should be reported to the Director of Mines for resolution and the Director of Surveys should be requested through the Director of Mines, to order a survey of that marker's location and the applicant bears the cost.

The role of surveyors will not be limited to surface demarcation of the extent of mining rights, but also to facilitate recognizing and identifying other holders of rights, lawful occupiers, negotiating compensations. Besides surface demarcation of mining rights, it may become necessary to arbitrate underground boundary disputes in which case underground measurements of boundaries should be carried out and modern underground surveying techniques become handy.

## **6. CONCLUSION**

Mining activities, particularly for minerals, present a different perspective to land rights – they may be exclusively sub-surface rights which can co-exist with surface rights. Although they can be incorporated in the property land registry and cadastre, the prevailing trend is to establish them separately – however with a linkage to the

property cadastre through the location attributes. This practice allows a more effective administration of mining rights instead of mixing them with the administration of other surface land rights – where the process has been observed to be usually slow. This practice is hoped to expand to modern cadastre and registration systems – and therefore the mining cadastre becomes a special kind of a property cadastre.

Mining rights and surface land rights can exist without issues. The existence of either a mining right or a surface land right should not preclude the issuance of the other right. The offices responsible for the two cadastres should ensure that a thorough review of existing or overlapping rights is complete. For easier checking of potential conflicts between mining right applications and surface land ownership, both the property and mining cadastre should be made public to allow the integration of the cadastres in 3D space to provide a more complete picture of the interest that affect a particular parcel of land.

## **7. ACKNOWLEDGEMENT**

The author would like to thank Mr. Abiud Nyabunga from the Ministry of Mining, Kenya who provided valuable information regarding the establishment, operation and maintenance of the Kenyan Mining Cadastre.

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surface and underground space, analyzing 3D cadastral registration, modeling 3D objects in data bases. 3D cadastre concepts present an opportunity to integrate surface property and subsurface mining rights.

**Mining cadastral portal** is an online web page that provides a spatial view into the mining cadastre data

## **9. KEY TERMS AND DEFINITION**

**Mining Cadastre** is a themed cadastre that Provides information on the Location of mining blocks, their Status and information on ongoing applications for rights to prospect and mine

**Property cadastre** is a comprehensive land recording of the real estate or real property's metes-and-bounds of a country

**Mining Right** entails the right to prospect or mine any mineral, mineral deposit or tailings in Kenya is only possible if a permit or license has been granted by the state

**3D cadastre** is the use of the third dimension to represent the use of the above