

**PROVIDED CADASTRAL SURVEY MAPS COMMENCING RISKS TO IDENTIFYING AND VALUING THE LAND IN NEPAL**

**Madhav Prasad Koirala Ph, D.\***

Associate Professor, Pokhara University, School of Engineering.

Article Received on 03/01/2019

Article Revised on 24/01/2019

Article Accepted on 15/02/2019

**\*Corresponding Author**

**Madhav Prasad Koirala**

Associate Professor,  
Pokhara University, School  
of Engineering.

DOI: 10.20959/wjert20192-1092

**ABSTRACT**

*Really* the Cadastral Maps were traditional our property. It introduce the regarding the cadastral Maps, Historical backgrounds, problems, objectives, literature review, methodology, data collection and analysis, finally conclusion have been drawn. Objective of this paper is to identify the cadastral risks and find the dispute of valuing works,

identifying and the real estate projects. This research present the survey and analysis and conclusion based on the response. it is need to use new technology to expediting the existing cadastral maps by new system, because like blue print or trace maps is being outdated commencing risk factors in order to identifying and valuing work. Now also proved maps are important role during land purchasing, pooling, plotting and laying out the project. It is suffered the valuing engineers due to not able to identifying the land and conflict arises. This is significant on especially in multicultural communities like Nepalese society. It includes identification of cadastral survey risks and probable disputes among neighbor regarding the border line of the land and question about laying down the construction projects. It is important to minimize those problems for successful project delivery and increase the profitability of the project. Various cases of land disputes are not only due to landowners' negligence or unawareness about cadastral surveying activities but also some extent due to provided cadastral maps too.

**KEYWORDS:** Cadastral Survey Maps, Valuing Engineers, Identifying the Land, Risk.

## INTRODUCTION

It is known the Cadastral Survey Division is one of the four divisions of Survey Department under the Ministry of Land Reform & Management. This division deals primarily with the land property mapping, identifying land types as well as scientifically maintaining the land records for Land Information System uses. The maps and the records prepared by cadastral surveys are mainly to support land administration and to support the development of Land Information System. Cadastral survey therefore has become one of the most important activities of the Survey Department. The Value Engineers by the help of cadastral maps or Trace Maps or blueprint maps try to identify the four boundaries as well as the area of land.

### Historical backgrounds

Based on the existing record, the history of cadastral survey goes back to the early 17th century in Nepal. Since then partial surveys of land have been conducted several times in the essential locations. A systematic cadastral survey (graphical survey with plane tabling technique using local control points) however was commenced in 1965 where special care was taken to map accurately along with the dimensions of land parcels. The basic objective of the early cadastral mapping was to assist in land revenue, to support the land reform and management program. Other objectives of mapping are to provide security of land titles to private and public land, to assist in policy formulation and implementation of land reform and management programmes, and to establish a central archive of cadastral information ([http://dos.gov.np/?page\\_id=501&lang=ne](http://dos.gov.np/?page_id=501&lang=ne), retrieved on 2/7/2019).

Although Systemic Cadastral Survey was commenced only after the promulgation of land reform programme in 1964, the history of land recording system is very old in Nepal. The land recording system has been organized for land taxation during the Lichhabi Era (about 1,300 years ago). In those days, land taxation was the prime source of revenue to run the state activities and cadastral survey was basically, in the form of description of land (such as Shresta & Lekhot). Likewise, during the period of Malla Era (14<sup>th</sup> to 18th Century), significant improvements including the classification of lands, specification for land measurements, provision measurement units (as hale, pate, kute, kodale etc.), development of special profession for land survey and measurement (Dangol), land adjudication and boundary description of land etc. were made. During the period of Rana Rules, the essence of the cadastral maps was realized as an indispensable component for land administration and the chain survey method then was introduced to prepare cadastral maps in 1923 (1980 B.S).

Cadastral Survey, showing parcel boundary in the form of map, has been initiated and land records simply comprised of inventory of land parcels, land classification and landowners. This type of cadastral survey has been carried out in some major districts of Nepal but it was sporadic (Tamrakar, 2012).

Due to the increase in population and great demand for land market, people are asking for updated and reliable land information. The relationship between man and land is becoming more significant and the people are more aware about their ownership right. The value of land as well has significantly increased over the time. Considering all these facts, the Cadastral Survey Branch under Survey Department has prepared a proposal for new innovative approach for cadastral mapping. This new approach is digital cadastral mapping. Since last few years Cadastral Survey Branch has been carrying out digital cadastral mapping as piloting project at Banepa Municipality of Kabhre district. Banepa Survey Office was then established in 2063/05/05 B.S. for the digital cadastral mapping in Banepa Municipality. There are 11 wards in this municipality and cadastral surveying of seven wards so far has been completed. The digital cadastral database of these wards has been prepared and the land registration of ward six is completed. Very soon the land ownership certificates of ward 6 will be distributed.

On 13th February, 2009, the Government of Nepal has dissolved all the Survey Goswara Offices and mapping works of these offices have been transferred to the corresponding district survey offices. In the meantime, survey offices are now categorized into five classes based on the responsibilities of their works. Survey offices under the category “Ka” and Kha” are entitled to carry out mapping works (previously undertaken by the Survey Goswara offices) as well have responsibilities of updating land records; while, the survey offices under the category “Ga”, “Gha” and “Nga” are limited to undertake updating exercises of the land records only. The flow charts of district survey offices have been modified and manpower of all the survey offices has been significantly strengthened as per their responsibility of works ([http://dos.gov.np/?page\\_id=501&lang=ne](http://dos.gov.np/?page_id=501&lang=ne), retrieved on 2/7/2019).

### **1.1. Beginning**

It is obvious that the urbanization is increasing in both the developed and developing countries so, in Nepal, rapid urbanization, particularly the growth of cities, associated the problems of agricultural land is being converted urban cities, Open space, unhealthy increasing land price, increasing land buying and selling, Un-natural fraud work in land and

housing works inviting challenges in many developing countries. It is very important to understand the current trend in land work is responsible in some extent on the cadastral maps provided by survey office.

### **1.2. Ending**

For urban and rural too survey office, the need to increase the effort to provide accurate survey maps for identifying the land and its periphery. Due to the proved survey maps provided by survey office of Nepal, valuating engineers are being suffered because either overlapping or not matching as per available in field as plotting in survey maps. There is an urgent need for rectification to consider the assessments of related risks in their planning and management as well as delivery of accurate survey maps to all customers.

### **1.3. Problems**

Existing data base Cadastral need to fair, and reliable. Everyone trust to government so government Authority must be responsible and they need to issue accurate and right cadastral maps to identify and value the land in the field.

### **1.4. Objectives of the Studies**

Main objective is the issue of inaccurate and faulty cadastral survey maps commencing risk to identifying the land and value of asset in Nepal

The specific objectives are:

1. To explore the risk factors from the provided cadastral survey maps
2. Conflict arising between land owner and Value Engineer due to imperfect Survey Maps

### **1.5. Limitations**

The limitation of this research is valid and reliable in urban as well as rural area of Nepal and cannot generalize economically, and technologically developed countries all over the worlds.

## **1. LITERATURE REVIEW**

### **• Risk factors due to inaccuracies survey maps**

Cadastral Survey maps are very sensitive and important property that must be accurate, efficient and easily available by the users. The authoritarian must be ready to provide the proved documents to their costumer. In Nepal, let us dream to get such service one day but not till now.

The reasons of inaccuracies and ineffectiveness in cadastral surveying activities have been observed in two broad perspectives: technical deficiencies and human factor. Use of traditional technology itself is realized as the major technical deficiency in cadastral surveying. Inaccuracies in control points, lacking standardization and regular maintenance of the instruments/equipments used, inferiority in the quality of accessories used, manual method of map preparation etc. are the technical deficiencies that directly influence the accuracy of cadastral surveying. Regarding the role of human factors in cadastral surveying activities, Land Surveyor has the most significant role, supported by other officials directly involving in cadastral surveying activities, in maintaining accuracy of cadastral surveying. Various cases of land disputes are due to landowners' negligence or unawareness about cadastral surveying activities. Lack of sincerity in performing respective responsibilities of various personalities with indirect involvement in cadastral surveying activities is the other factor that promotes the possibilities of land disputes.

Easy access of unauthorized persons to the maps and documents not only increases the rate of wear and tear but also possibility of losing important documents is high. Interference of Lekhandas (Lekhapadhibyabasayi) in land administration activities sometimes results in land disputes (Bhatta, 2006).

According to the old contribution, cadastral survey need to modernize and this need to address the people's desires which is provided cadastral maps may give exact quantity of land as in field.

From historical perspectives, the activities related to land recording and cadastral surveying is described in three historical periods; ancient period, middle period and modern period. The land administration activities were institutionalized since middle period of Nepal though it was initiated since Lichhabi era. The cadastral survey was sporadic in nature in the beginning. After the launch of land reform programme, the systematic cadastral survey began in Nepal. The first round cadastral survey has finished and the resurvey is in progress. Now, the cadastral Survey Branch has given emphasis for the completion of cadastral survey of village block areas and introducing of digital technology for cadastral surveying. This paper also proposed the future vision of cadastral system in Nepal (Adhikary, 2007).

Spatial structure of urban land use has been interest of study since early 20th century. The current study examines dynamics of spatial structure of urban agricultural land use and how

agricultural land use is placed within the existing structure. The study explores the direction and dimension of land use change and characteristics of spatial fragmentation in Kathmandu Valley. Technological tools like GIS and Remote Sensing, and Spatial metrics/indices has been used for spatial analysis. The study shows that within ten years time span of 2003 to 2012, urban land use has gone drastic change in Kathmandu valley. Remarkable change in terms of pace and direction is evident in agriculture and built-up classes which signifies the rapid urbanization trend in the valley. The finding shows that spatial structure of the urban land use of the valley is impending towards more heterogeneous and diverse landscape. Similarly, spatial fragmentation analysis highlights characteristic development of new isolated urban patches inside relatively larger agriculture patches fragmenting them into number of smaller patches. The study concludes that the importance of GIS/RS tools and technology in identifying and analyzing structure and dynamics of land use within prevailing complex urban system of Kathmandu valley is reasonable. The composition and configuration of spatial structure computed through spatial metrics are thus helpful for understanding how landscape develops and changes over time (Shrestha, 2017).

Efficient utilization of these data and information is necessary to achieve sustainable and rational use of land which will definitely leads to alleviate existing poverty of the Nepalese people. Recently Government of Nepal released the land use policy, so immediate action need to be taken to formulate related act. This will support to develop efficient land use plan and to implement the plan effectively. The land use act should address issues related to updating mechanism data sharing policy and data disseminate process. In order to materialize the plan, it is necessary to establish a separate organization with necessary infrastructures including proper and appropriate human resources (Sharma, 2012).

- **Conflict due to Authorized Survey Maps**

Provided cadastral map must be conflict free, when engineers and surveyors use to go in field to identify and survey the particular land conflict arises between the neighbors because of overlapping the land with one to others.

Landscape of stakeholder is dynamic and diverse. So, following state-society analytic perspective, strengths of state and societal actors can complement and contribute each other to precede common land reform processes. Land issue is not only technical, but also political issue i.e. political engagement (leadership, support etc.) in land issue. But, it is missing in current land and agricultural related affairs. Land research and land reform should have

mutual and symbiotic relationship. Importantly, conceptual research is needed to guide the land right movement in track (Manandhar & Nepali, 2016).

In Nepal Particularly valuing engineers are suffered from the land asset due to overlapping the land and not able to identifying due to conflict.

The Danish system is a typical "old world" European system which had its history in land taxation. The Australian systems could be considered "new world" systems which have been more heavily influenced by land market considerations. Even though the Australian and Danish cadastral systems are very similar, understanding the characteristics and functions of cadastral maps in the two systems remains difficult. This study discusses the different characteristics of cadastral maps which have been designed for different users or functions. In particular the paper concentrates on the issues concerned with developing digital multi-purpose cadastral maps.

The major conclusions from the paper are that the creation and maintenance of multi-purpose digital cadastral maps is a difficult and complex task. This complexity arises to a large degree because the characteristics of a cadastral map designed to serve traditional land markets or land registration purposes are quite different from the characteristics of a modern multi-purpose cadastral map (Williamson & Enemark, 1996).

Land administration systems, and particularly their core cadastral components, are an important infrastructure which facilitates the implementation of land use policies. While most land administration systems traditionally have a primary objective of supporting the operation of land markets, they are increasingly evolving into a broader land information infrastructure which supports economic development, environmental management and social stability in both developed and developing countries (Williamson, 2001).

It seems that the Government has a clear concept on Land Reform activities for the upliftment of people in Nepal. But, due to political instability, administrative inefficiency, lack of skilled human resources and prominent resource gap, the progress so far made for the land reform programmes has not been as desired. Therefore, proper consideration in these issues and effective implementation of land reform programmes is essential in order to gain support from all the concerned sectors and to obtain positive attitude towards the programme from the related people. To fulfill these requirements, the resources from the HMG/Nepal

alone could not be adequate and so it is felt necessary to obtain bi-lateral / multi-lateral assistance for some of the sectors of the ministry (Sharma, 2002).

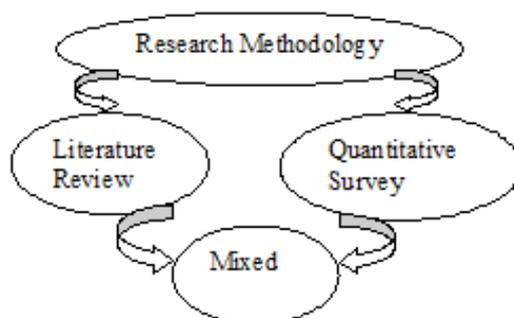
Risk identification is important for all Housing and Real estate projects among various risks cadastral survey risk is one, which play important role during land purchasing, pooling, plotting and laying out the project. This is significant on especially in multicultural communities like Nepalese society. It includes identification of cadastral survey risks and probable disputes among neighbor regarding the border line of the land and question about laying down the construction projects (Koirala, 2012).

## 2. Research Methodology

The methodology of the study is described below

1. A thorough literature review was done.
2. A questionnaire was developed with the help of information extracted from literature review.
  - i. Distribution and collection of questionnaire.
  - ii. Analyze the collected data.
  - iii. Relevant conclusions and recommendations were drawn.

The methodology is explained as following diagram. In the first step, a thorough literature review was performed to identify the key elements that can cause the alteration in the cost of the project. Using those factors then a questionnaire was developed. In this step a structured questionnaire was designed.



**Figure 1: Conceptual Methodology.**

Questionnaire surveys were distributed to (30) respondents who are doing their business regarding land buying plotting and selling, involved in property valuation work who are identifying number plots with the help of cadastral survey maps. The purpose of the

questionnaire survey was intended for a better feedback on the extent of the use of arrangement and the Cadastral survey problem during real estate identification works.

- **Sample**

The following were the respondents from land buying and selling who are not investing their investment, the investors who are really investing their property and the land building asset property valuing engineer who are listed engineer of different bank of Nepal.

- **Research area**

Research area was chosen the Katmandu, Pokhara, Lalitpur, Bharatpur, Biratnagar, and Birganja Metropolitan Cities

### **3. Data Analysis**

55% respondents replied that, to get survey map (Blue print and trace map) is very difficult and rest of 25% said it is difficult and no one said it is very easy or easy.

Similarly that the 70% respondent reply that land available in the field is not exactly same as mentioned in the land ownership certificate and rest of 30% said that their land is same as land ownership certificate.

70% respondent said that the land available in the field is less than land ownership certificate and rest of 20% said that the land is same as available in the field and land ownership certificate and 10% reported that land is more than the ownership certificate.

70% respondents said that the land available in the field is less than survey map and rest of respondent said that it is more than survey map.

90% respondent said that they compared their land as per available land ownership certificate and the survey map and rest of the respondent said they did not compare.

60% respondent said that the land mentioned in land ownership certificate is less than survey map, followed by land slightly less, more and slightly more are 20%, 10% and 10% respectively.

60% respondent said that they applied to district survey authority to verify the land in the field and 40% did not applied.

60% respondent said that surveyor report was land being used in road and other public infrastructure, 20% said that the public land is mixed, 10% said neighbor's land also accumulation and remaining 10% said that the land is overlapping with neighbor's land.

60% respondent said that they identify the land by hire of the surveyor followed by the respondent can identify themselves by measured, by inspection and according to neighbor's statement are 20%, 10% and 10% respectively.

#### 4. CONCLUSION

This paper, examined cadastral survey provided by survey department from the existing maps now are outdated and do not fulfill the needs of the general public requirements, Based on the cadastral maps tried identify land while valuing work by the engineers also facing lot of risk factors. The survey map and trace map provided by District Survey department is not tally as per the land available in the field as well as, the Land Ownership certificate provided by District Authority. Similarly the field verification process by district survey authority is not beneficial. This is big risks in the housing and real estate sector. So, updating cadastral maps is not only necessary but vital in Nepal. As the real estate become more global and more complex, involving more developers, more professional contractors and more specialist consultants and generating more invention controlling and monitoring that information will become an increasingly important part of the risk management process which replaces the unusual work that is being practiced. Cadastral Survey risks in real estate and property valuing Engineers are observed in most of their works; it is found that the problems shut out where the professional capable man powers are employed and being suffered if weak management team existed.

#### REFERENCES

1. Koirala, M.P. Risk in housing and real estate Projects in Nepal and role of cadastral survey, Nepalese Research Journal of PhD Doctors and Scholars, A bi-Annual Journal, Year 1, December, PhD Doctors and Scholars' Association, Nepal, Dillibazar Kathmandu-32 (ISSN:2091-2269), 2012; 1(1).  
[https://www.researchgate.net/publication/281194618\\_Risk\\_in\\_housing\\_and\\_real\\_estate\\_Projects\\_in\\_Nepal\\_and\\_Role\\_of\\_cadastral\\_Survey](https://www.researchgate.net/publication/281194618_Risk_in_housing_and_real_estate_Projects_in_Nepal_and_Role_of_cadastral_Survey).
2. Adhikary K.R. Cadastre In Nepal: Past And Present. Nepalese Journal on Geoinformatics, Government of Nepal Ministry of Land Reform and Management Survey Department, Min Bhawan, Kathmandu, Nepal, 2007.

3. Bhatta, G.P. Technical Deficiencies and Human Factors in Land Disputes: in the Context of Nepalese Cadastral Surveying. Nepalese Journal on Geoinformatics, Government of Nepal Ministry of Land Reform and Management Survey Department, Min Bhawan, Kathmandu, Nepal, 2006.
4. Manandhar, S. & Nepali, P.B. Community Land Governance And Its Conflicting Theories, Nepalese Journal on Geoinformatics, Survey Department, Nepal, 2016.
5. Sharma, R.K. Evolution of Land Use Policy in Nepal, Nepalese Journal on Geoinformatics, 2012.
6. Sharma R.K. Status of Land Reforms, the Legislation, Policies, Programmes, and its Implementation in Nepal, Nepalese Journal on Geoinformatics, 2002.
7. Shrestha, S. Spatial Structure of Urban Landuse in Kathmandu Valley, Nepalese Journal on Geoinformatics, Survey Department, Nepal, 2017.
8. Tamrakar, R. M. A Prospect of Digital Airborne Photogrammetry Approach for Cadastral Mapping in Nepal. Nepalese Journal on Geoinformatics. Government of Nepal Ministry of Land Reform and Management, Survey Department, Min Bhavan, Kathmandu, Nepal, 2012.
9. Williamson, I.P. Land Administration “Best Practice” providing the infrastructure for land policy implementation, Department of Geomatics, The University of Melbourne, Victoria, Australia 3010, [www.geom.unimelb.edu.au/people/ipw.html](http://www.geom.unimelb.edu.au/people/ipw.html), 2001.
10. Williamson, I., Enemark, S. Understanding Cadastral Maps, The Australian Surveyor, 1996; 41(1): 38-52. <http://hdl.handle.net/11343/34005>.
11. [http://dos.gov.np/?page\\_id=501&lang=ne](http://dos.gov.np/?page_id=501&lang=ne), retrieved on 2/7/2019).