

Cadastre 2014: Performance of Nepal

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KEYWORDS

FIG, Cadastre 2014, Nepal

ABSTRACT

International Federation of Surveyors (FIG) is the federation of different nation's member associations representing the interests of surveyors in the professional fields of global surveying, geomatics, geodesy and geo-information. Technical work of FIG is led by ten different commissions with individual themes. Among these commissions, 7th commission with the theme "Cadastre and Land Management" decided to make a vision for cadastre in 20th FIG congress in 1994 and in line with this decision, "Cadastre 2014 - A Vision for A Cadastral System in the Future" was published in 1998. This vision addresses about the future development of cadastre and consists of views for ensuring the cadastre to be globally integrative and shaping the future of surveying occupation. This paper discusses on the vision of Cadastre 2014, its implementation status in Nepal to evaluate Nepal's "Cadastre 2014" performance.

1. INTRODUCTION

The International Federation of Surveyors (FIG) is the international organization working for the advancement in the field of surveying and mapping representing the interests of surveyors all over the world. It is a federation of the national member associations from different countries with technical activities in the professional fields of surveying, mapping, geomatics, geodesy and geo-information. It also provides an international forum for discussion to promote different surveying and mapping related development from the world. Technical task of FIG is led by ten different commissions. Commission 1-Professional standards and practice, Commission 2-Professional education, Commission 3- Spatial information management,

Commission 4-Hydrography, Commission 5-Positioning and measurement, Commission 6- Engineering surveys, Commission 7-Cadastre and land management, Commission 8-Spatial planning and development, Commission 9-Valuation and the management of real estate and Commission 10-Construction economics and management. Among these ten different commissions, 7th commission: Cadastre and land management decided to develop a vision on future cadastre in 20th ordinary congress in 1994. Accordingly, the work group was formed to develop the vision according to this decision which published a report named "Cadastre 2014 - A Vision for A Cadastral System in the Future" in 1998 (Polat *et. al.*, 2015). This report has underlined the view on how cadastre will be develop and how it will look like in the following twenty years (Polat *et. al.*, 2015). The report

contained six statements which deals with the public rights and restrictions, integration of services, the digital format and data model, Public-Private Partnership in surveying and the economic sustainability (Stuedler, 2006).

2. THE VISION OF CADASTRE 2014

Main aim of Cadastre 2014 is to recognize all rights and restrictions on the land legally to ensure the legal security of rights (Kaufmann and Stuedler, 1998). Besides this, combination of cadastral maps and records, the modeling of cadastral system, the usage of informational technology in the cadastre, cooperation of public and private sector in the cadastral field and conducting the cadastral applications and survey as cost-recovery system were stated in the Cadastre 2014 (Kaufmann and Stuedler, 1998).

2.1. Vision I: "The Cadastre 2014 will show the complete legal situation of land including public rights and restriction".

The concept of this vision is that, by 2014 all the detail information regarding land should be visualized by the cadastre (Figure 1). The world population and the consumption of land is increasing and hence to ensure the security for having lands, all facts related to land should be clearly realized by the cadastral systems (Kaufmann and Stuedler, 1998). The cadastral system should provide the detail information about the legal situation of the land in order to provide the required land tenure security (Paudyal, 2007).

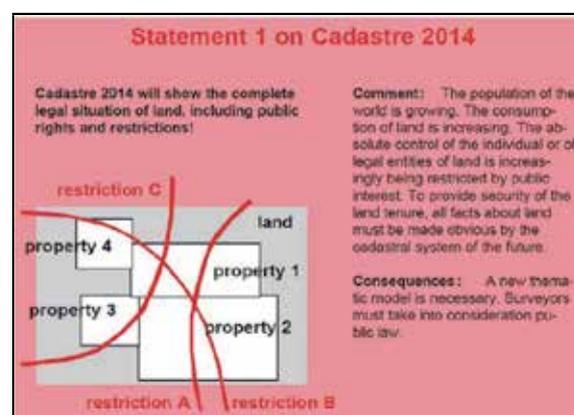


Figure 1: Vision 1 of Cadastre 2014. (Source: Stuedler, 1998)

2.2. Vision II: "The separation between maps and records would be abolished"

Many countries have a land registration system with both the land registries and cadastre components together in the same system. However, there are some countries still having land records and cadastral data separate like in Nepal. So, there exist two different organization involved in single land administration service as a result of this job distinction. The concept of this vision is that parcel based land administration system should be developed and there should not be disintegration of cadastral data and land records (Figure 2). Historically it was necessary because of the technologies adopted at that time where papers and pencils were used (Paudyal, 2007). But now, more advancement in the technology have come. Hence, entities of single service need not to disintegrated today. This also support in efficiency of land administration services in accordance with land governance.

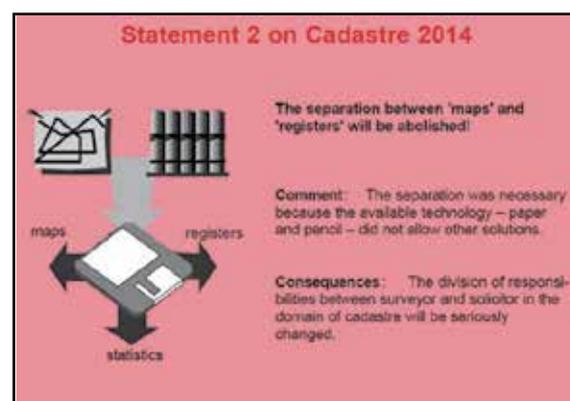


Figure 2: Vision 2 of Cadastre 2014. (Source: Stuedler, 1998)

2.3. Vision III: "The cadastral mapping will be dead! Long live modeling!"

Maps are the models that depicts the land surface. The adopted technology in the past doesn't support dynamism in mapping and hence maps with different scales need to be prepared according to the requirement. The concept of this vision is that, there must be flexibility in the scale during mapping and different scales has to be represented by different data model (Stuedler, 1998). Different scales must be shown by different data models (Figure 3). Advanced

modern technology can create maps of different scales and registers in different forms from the same data so that there would not be any draftsman and cartographers in the cadastral field (Kaufmann and Steudler, 1998).

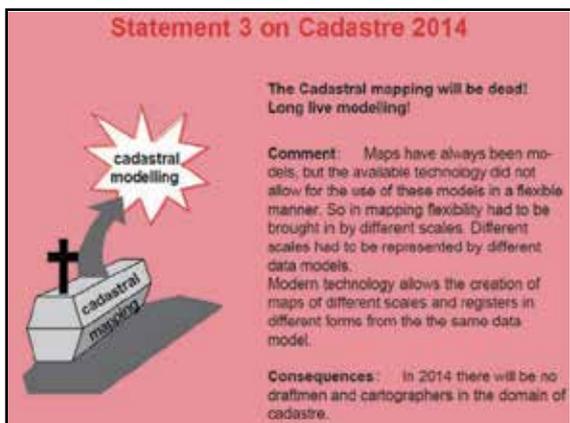


Figure 3: Vision 3 of Cadastre 2014. (Source: Steudler, 1998)

2.4. Vision IV: "Paper and pencil-cadastre will have gone".

In the past, paper and pencils were used to prepare the cadastral data. With due advancement in the technology, it has been replaced by computers and machines. Hence the concept of this vision is, all the cadastral activities will be conducted by computers and there will not be any paper and pencil used in cadastral field. All surveyors across the world should think in the manner of model and should obtain these models by using the modern technology (Figure 4) (Kaufmann and Steudler, 1998).

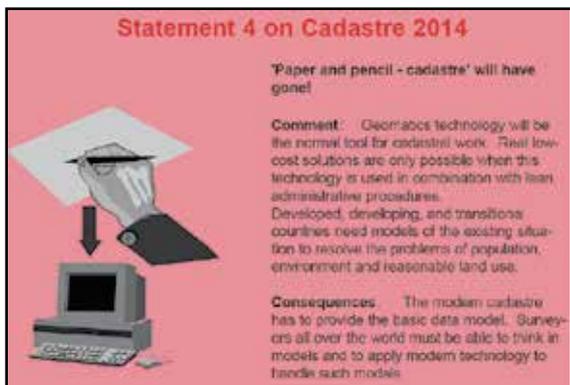


Figure 4: Vision 4 of Cadastre 2014. (Source: Steudler, 1998)

2.5. Vision V: "Cadastre 2014 will be highly privatized! Public and private sector are working together!"

Public sector and systems tend to be less flexible and customer oriented rather than private organizations and private sector can help public sector to improve the efficiency of service delivery (Paudyal, 2007). The concept of this vision is that, there must be Public Private Partnership (PPP) in cadastral system where private sector can conduct the task like preparation of deeds, warrants, registries and the public sector can focus on registration, supervision & monitoring of private sector, control and ensuring security (Figure 5).



Figure 5: Vision 5 of Cadastre 2014. (Source: Steudler, 1998)

2.6. Vision VI: "Cadastre 2014 will be cost-recovering".

There is a need of high investment in cadastral survey and record management (Polat, et. al., 2015). There is a huge difference between the total sum of the cost for land tax and land administration service and the cost of cadastral data acquisition. The concept of this vision is that, at least a part of costs necessary for the cadastral data acquisition and processes must be taken back from the customers (Figure 6).

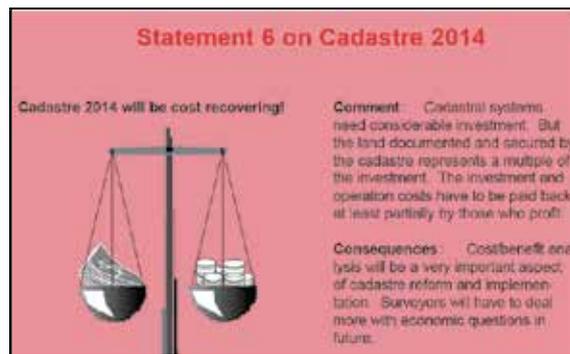


Figure 6: Vision 6 of Cadastre 2014. (Source: Steudler, 1998)

3. PERFORMANCE OF NEPAL ON CADASTRE 2014

Performance measurement is generally a measurement of outcomes and results, which generates reliable data on the effectiveness and efficiency of programs on the basis of set indicators. It can involve studying processes or strategies to see whether output are in line with what was intended or should have been achieved. Several performance measurement systems are in use like, the Balanced Scorecard, performance Prism, action-profit linkage (APL), Cambridge Performance Measurement Process, Total Performance Measurement (TPM) Process, 7-step TPM Process Total Measurement Development Method (TMDM). However, in this study, authors' own experience have been used to list out the performance of Nepal. The performance of Nepal in land administration system and services have been identified and discussed on the base of six vision statements of Cadastre 2014.

In Nepal, under the Ministry of Agricultural, Land Management and Cooperative, there is Survey Department (SD), Department of Land Reform and Management (DoLRM) and Department of Land Information and Archives (DOLIA) working for land administration system and services. SD has District Survey Office (SO) for conducting cadastral survey and parcel data updating. DoLRM has District Land Revenue Office (DLRO) working for land transactions and records management. DOLIA is responsible in developing digital environment for all land

administration services.

3.1 Performance on vision one statement

The first statement is to legally recognize all restrictions and rights on the land and to ensure the legal security of these rights and restrictions. In Nepal, complete documentation of the legal situation of land has been addressed. The surveyor verifies and validates the information about the land object during adjudication and conducting first registration. The land parcels are delineated and all rights and restrictions are recorded and registered to provide the tenure security. The first registration is conducted by district survey office. Approximately 95% of the cadastral survey has been completed where legal rights and restrictions has also been recorded. Remaining 5% includes village blocks. These blocks are also identified and surveyed already but delineation of individual parcel is not conducted because of the small parcels in the blocks that could not be shown in the cadastral survey and map due to technology adopted for surveying and time limits. As new technology is adopted later for cadastral survey now, parcel delineation within this village blocks are under process. After the first registration, the collected land records are transferred to DLRO and cadastral maps are kept in SO itself. Hence, all the land transaction are conducted through DLRO and parcel sub-division if necessary is conducted by SO. During land transaction, in the registration deed, all the information are kept. If any parcel is left for registration during first registration, then there is legal provision to request to DLRO for registration with due submission of formal request letter along with available proofs legally.

3.2 Performance on vision two statement

The second statement is to abolish the separation of maps and registers. In Nepal, this vision has not been achieved. Initially during first registration, both collection of land records and cadastral survey are conducted by SO. But afterwards, land registers are handed over to DLRO and cadastral plans are kept with SO itself. During land transaction, deed registration

is conducted by DLRO and parcel sub-division if necessary are done at SO. Both the offices performs the task on their own separate system and separated business workflow. However, digital cadastral survey, which is being conducted as pilot survey if some municipality of the country is tasking in line with this vision. The system used is the "Parcel Editor" with the provision to record spatial as well as attribute data in same system and database. The system is also capable of generating all legal reports and notice required during registration. But since, legally land register are handled by DLRO, after this survey also land registers are handed over to the DLRO where they use their own separate system (Land Records Information Management System, LRIMS where adopted) which does not support this database and system. Hence, the cadastral data and land registry are separated again technically as well. Besides, Parcel Editor, MoLRM also developed open source based system for land administrations services called "Solution for Open Land Administration" (SOLA). This system is not developed for first registration process as of Parcel Editor but to handle pre-collected data. The system merge land registry from DLRO and parcel data from SO. But due to immaturity in the system and existence of separate organization for land registry and cadastral data, the system could not be continued. Thus it can be said that very few percentage (<5%) of this vision has been covered.

3.3 Performance on vision three statement

The third vision is cadastral modeling than cadastral mapping. All the cadastral survey was completed producing paper maps using plane table survey in Nepal. But now, many of the SO have started conducting digital cadastre adopting Parcel Editor. Since the records are collected digitally, cadastral maps of any scale can be produced according to requirement. Like for urban area, larger scale (1:500) maps can be produced and for rural area reduced scale (1:1250) cadastral maps can be produced as per the requirement. Besides this system, SO are also using Spatial Application Extension (SAEx) system which is used to digitize the

paper maps that were prepared by plane table survey and conduct parcel subdivision during land transaction. Since the paper maps has been digitized it can be modeled for any scale. Almost all the paper maps of 76 districts among 77 districts have been digitized. However, in most of the SOs, parcel sub-division is not being conducted in digital data but only in paper maps which has created the outdated digital cadastral database.

3.4 Performance on vision forth statement

The fourth vision is paper and pencil free cadastre. In Nepal, this vision has not been achieved to full extent. In spite of the availability of the digital cadastral data, since we are not in position of conducting digital transaction fully in all the survey office, we are still using paper maps and pens to update cadastral maps. Parcel Editor is using digital data to produce cadastral maps and record land registries. But the system does not support parcel sub-division. SAEx can conduct parcel sub-division but does not support first registration and record land registry. There is also no connection between systems of DLRO and SO. DLRO also produce paper print of Land Ownership Certificate (LOC).

3.5 Performance on vision fifth statement

The fifth vision is use of private sector in cadastral survey. In Nepal, no private surveyors are involved in cadastral data acquisition. All the process are conducted by government surveyors from SOs. However, if anyone wants to know the status of their land like area then they can request for any private surveyor. But that is only for their personal information and affirmation of their land. This cannot be used for legal purpose. During land transaction, there are legal writers who helps in preparing deeds. This is more or less like private conveyancing. But help and use of legal writer is not compulsory. If any individual is capable of preparing the deeds then they can do it themselves without help of legal writers. Besides, private sectors are fully involved in system development of land information system.

3.6 Performance on vision sixth statement

The sixth vision is cost recovery cadastral survey. But in case of Nepal, the cadastral survey is not cost recovery. There is huge investment of money for cadastral data acquisition. All the budget is from Government of Nepal. The only get back of this investment are the land tax and revenue during land transaction which are very nominal in comparison to total investment of cadastral data acquisition. Hence, cadastral survey in Nepal is not cost recovery.

7. CONCLUSION

Almost all the information regarding rights and restrictions on the land has been recorded in Nepal. Remaining few percentage are to be conducted with priority to complete 100% of recording. Regarding the vision two: abolish of separation between map and registers, it is only possible if the two cadastral and land registry organization are merged institutionally or not, both organization use single system technically. Regarding the vision three and four, digital parcel sub-division should be made compulsory in order to keep the digital data up to date. For this necessary physical infrastructure, training and technical support need to be provided to the Survey Offices. Also, at least there must be single system for first registration and cadastral data updating. Support from private sector may be helpful in conducting land administration services. Private sectors can be used for cadastral

survey and public sector can inspect and monitor their task, conduct adjudication, land registration and LOC distribution. Regarding vision six, the service cost and tax may be revised in order to increase the cost recovery which still may not be 100% recovery. To sum up with the study, it seems that the vision of Cadastre 2014 is more relevant and achievable to the developed country rather than developing country. There still exist big room for development in cadastral sector to increase the efficiency in land administration services.

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