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Identifying Existing Capacities to Execute the National Land Records Modernization Programme in Madhya Pradesh: An Appraisal

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CENTRE FOR RURAL STUDIES

**LAL BAHADUR SHASTRI NATIONAL ACADEMY OF ADMINISTRATION
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Foreword

Land administration and management is one of the important factor for economic welfare and development for any developing country like India. Earlier land reforms programees were the prime focus of the Government. Now, it has shifted towards Land Records Management, because it has been argued that without proper information about land records, land reforms would not be successful. Schemes were launched by State and Central Government at regular interval to strengthen revenue administration. However, the success of such programmes varies significantly. To increase the efficiency of land records management, transparent services to the citizens etc. the flagship programme – NLRMP was launched in 2008.

Madhya Pradesh has a long history of land administration; the State has experienced different types of revenue administration and different tenurial system. Like other States in India, Madhya Pradesh has initiated land reforms as prime instrument for land administration after independence. In recent years, the nature of land administration has undergone transformation with use of information technology in revenue administration. Land reform have been taken up in the State, but issues of nature of ownership and improper records leading to corruption are not fully addressed.

This book studies existing capacities to execute NLRMP in the State of Madhya Pradesh and discusses all components of the programme. The State has made concerted efforts from grass root level to update their land records and provide instant and transparent services to the citizens. Grey areas and loopholes where administration needs to take extra caution have been identified.

I hope that this book will help the State officials in enhancing performance delivery of the land records computerization programme and will serve as a template for studying performance in other States as well.

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List of Abbreviation

MPLR	Madhya Pradesh Land Records
ICT	Information and Communication Technology
ISO	International Organization for Standardization
G2C	Government to Citizen
G2G	Government to Government
SQL	Structured Query Language
CLRMP	Computerisation of Land Records Madhya Pradesh
GIS	Geographic Information System
DPI	Dot Per Inch
SHP	Shape File
PPP	Public Private Partnership
HRSI	Higher Resolution satellite Imagery
DMS	Document Management System
MRR	Modern Record Room
CSV	Comma separated value
KAVARI	Karnataka Valuation And e-Registration
CARD	Computer Aided Registration of Deeds and Stamp Duties
IGRS	Inspector General of Registration and Stamps
SAMPADA	Stamps and Management of Property and Documents Application
GCP	Ground Control Points

GNSS	Global Navigation Satellite System
RFP	Request for Proposal
SCP	Secondary Control Points
TCP	Tertiary Control Points
PCP	Primary Control Points
GPS	Global Positioning System
ETS	electronic Total Station
SLDC	State Level Data Centre
GSDP	Gross State Domestic Products
TLDC	Taluka Level data Centre
DLDC	District Level Data Centre
PRI	Panchayati Raj Institutions
NGO	Non-Governmental Organization
API	Application Programming Interface
HTML	Hyper Text Mark-up Language
OGC	Open Geospatial Consortium
WMS	Web Map Service
WFS	Web Feature Service
WCS	Web Coverage Service

1. INTRODUCTION

Land records came into being when human beings recognised the need to distinguish the piece of land which they individually or collectively owned, in which they could exercise their rights to build, hunt or farm without encroaching on the rights of one another (Jha, 2002: 191). History of land records in India is quite older; maintenance of land records has been passed through several administrative processes and socio-economic obligations in India till today. Land record preparing and its maintenance started properly from the period of Mughals, from that time land records prepared for increasing revenue. At the time of the British empire, they are not very keen on the basis of accurate measurement or settlement process, however Survey of India involved by the using of chain and plain table survey to prepare revenue maps which are coarsely accurate, though the system of land records which was followed in the first phase after being independent India gained to a great extent from the legacy of the British. Till now the entire scenario has been changed, now all the stakeholders (govt., citizens, investors, etc.) are concerned more with land records and its maintenance. In a primarily agrarian-economy dependent country like India, the improper land records system can have severe bad implications on the execution of other land related policies and its reforms to the people. There is a lack of adequate transparency and accountability as well. India loses 1.3 % potential growth rate due to poor governance in land administration (McKinsey Global Institute Report on India, 2001: 7)¹.

India has implemented many significant policies, in view of administrative reforms and land reforms for the betterment of land

¹ The report reveals that in India major percentage of land parcels are disputed on ownership-titles, due to big projects and foreign investors were not keen to invest. India is unable to generate land market for retail and housing projects, which creates scarcity over land and amplifies land prices and fiscal deficit.

management. Reforms in land records management have taken place in different states in different degrees. Ministry of Rural Development, GoI had introduced one centrally sponsored scheme in the name of Computerisation of Land Records (CoLR), in 1988-89, aimed to provide computerised copies of the Record of Rights (ROR) to the Land owners at nominal rates on demand, achieving low cost and easily reproducible basic land record data for reliable and durable preservation, value addition and modernization in Land Administration, during the same year department introduced second important scheme Strengthening of Revenue Administration and Updating of Land Records (SRA & ULR) was started during with 50:50 sharing basis between the Centre and the State as updation of land records is vital for systematic maintenance to reflect ground realities in sync with ownership changes, ensure genuine land transactions & implement rural development programmes for effective enforcement of land reforms. Both the scheme had the same objectives to rejuvenate the entire land management machinery and provides authentic land records to the citizens. After 20 years of implementation, different states have different degrees of achievement on the basis of land administration and its management. After getting a mix of experiences on these two schemes, Government of India decided to implement the Centrally-Sponsored scheme viz the National Land Records Modernization Programme (NLRMP) in 2008 with the aim of rejuvenate and revive land records and all parts of land administration in India, and usher the idea of making land records in India non-fiscal in nature and non-presumptive in character. The more scientific and integrated programme than that of earlier programmes, viz. CLR and SRA & ULR, would modernize the management of land records, enhance transparency in the maintenance of land records, minimize the scope of land or property disputes and this would end the present presumptive nature of recording of the land titles, which would minimise land and property disputes.

2. BRIEF HISTORY OF LAND REFORMS AND LAND ADMINISTRATION IN MADHYA PRADESH

The pressure on land is ever increasing, India's land experienced different tenure system from time to time. Every time it has been recommended for better policies and scheme to maximize the utilisation of this assets but there have some challenges related to political will or administrative inefficiency or fewer interests of citizens, which played an obstructive role towards the journey of policy making and its proper implementations. Madhya Pradesh has a long history of land reforms. The state Madhya Pradesh came into existence in 1956 with a single revenue code. Since pre-independence the state was experienced different land revenue system in different areas; the present state included with five regions of Maha Koshal, Madhya Bharat, Vindhya Pradesh, Bhopal and the area of Sironj region of Rajasthan. Different types of revenue system such as zamindari, ryotwari, mahalwari, zamindari, jagirdari, malguzari, etc. were practiced at the pockets of the entire regions; most of the areas covered under ryotwari revenue systems in central province. To bring uniformity in land revenue systems, a common code for revenue law for the entire state was framed on 1959 known as MP Land Revenue Code, but before that the state had abolished the intermediaries by enforcing the law of Zamindari Abolition Act, 1951. The MP Land Revenue Code incorporated almost all the important features of land reforms by means of uniformity of tenures, the projection of tenants against arbitrary ejectment etc. (Jha, 2002).

2.a Land Reform initiatives taken

Land reforms in the state is not well-equipped and well-distributed to all the citizens, as the report of Land Reforms Unit of LBSNAA

on Land Reforms in Madhya Pradesh reveals that the land of the big land owners has not been identified by the revenue authorities for ceiling purposes, the report also revealed that land records in most of the areas of the state were not in a good shape. In spite of having several issues of land distribution, the ceiling of surplus land, etc. though the state had not any well-documented record of any large-scale peasant movements for land reforms. Every successful land reform requires accurate land records along with village maps. In respect to Survey-Settlement, Madhya Pradesh inherited four different units of area, scale of maps and working chain, as different princely states (Table-1) had used different types of units and mechanism for preparing maps. After the reorganisation of different parts to become the present state of Madhya Pradesh, administering and management of land records, uniformity in maps related to scale and units was actually a herculean task for the government and concerned departments; which resulted in slow progress in land records management.

Table 1: Chains Used During the Course of the Survey in the Different Integrated Units

Name of the Area	Length of Chain	Unit of Area
Mahakosal, Madhhya Bharat (Indore State) and Vindhya Pradesh	66 feet gunter chain	Area (43, 560 sq.ft.)
Madhya Bharat (Gwalior State)	150 feet Gwalior chain working chain 75 feet	Bigha (22, 250 sq.ft)
Madhya Bharat (Gwalior State)	146-2/3 feet Ratlam chain working chain 74-1/3 feet	Bigha (21, 512 sq.ft)
Remaining districts of Madhya Bharat	165 feet Shahjahani chain working chain 82-1/2 feet	Bigha (27, 225 sq.ft)

Source: Commissioner Land Records and Settlement, Gwalior

Land reforms in the state were not adequate and up to the mark till the 1980s, 1990s, as the different province had used different maps and survey scale, the different tenure system had their different land records maintenance system. The state did not get complete land records from the former rulers, zamindars etc., which predominantly hamper the entire process of land reforms and land records management and partially failed to provide a good land administration to each section of the societies.

Issues of Sharecropping and Tenancy

The ultimate aim of land reforms in India is to confer the rights of ownership to tenants to the largest possible extent². Evaluating Indian land reforms and its major impact on tenants, it is viable to produce here the comment of G.S.Balla as he aptly describes that “..land reforms were half-hearted with regard to the imposition of ceilings and security of tenure. Consequently, the skewness in land distribution was not reduced in any significant manner. Further, a very large number of tenants were actually evicted in the name of self-cultivation.” Different states have their own state laws; as per the Madhya Pradesh Land Revenue Code 1959, such provisions have been made that the land should remain in possession of actual land holders and a strict ban has been imposed on the actual land owner to give his land on pattas to someone else. Under this code, there is a provision that if a sharecropper (Patta Holder) ploughs the land for at least a period of

² 'LAND REFORMS REMAIN AN UNFINISHED BUSINESS' K. Venkatasubramanian: this paper discusses both the aspects of land reforms in India, where he pointed out that after taken several measurements from the both ministries of central and State, purpose of land reforms not achieved fully due to lack of adequate direction and determination, lack of political will, absence of pressure from below, inadequate policy instrument, legal hurdles, absence of correct-up-dated land records and the lack of financial support.

two years out of the fixed duration of three years, he will have a right to become land owner. The Govt. of M. P. has been keenly desirous towards the land reforms pertaining to Bhumi Kast for the last one and a half years and took some important policy decisions and put into force the provisions of M. P. Land Revenue code for allotment of land. A new management Act³ is under consideration at the Govt. level which will replace the old M. P. L. R. code after came into force. In new Land Management Act, special provisions are proposed in respect of the land and the plougher of land who will have legal recognition as bataidar. At present, there is no provision for actual land plougher who is treated just as a domestic servant while the actual land owner is either in other jobs. Hence, under new Land Management laws provision of written agreement is to be made between the land owner and the bataidar for a maximum period of 5 years and a minimum period of 3 years, which may encourage the bataidar to work hard and honestly to have good crop production. The law has also some provision such cases, if the land owner retires from service or death of his near relative, abrupt changes in this family condition or some physical disability where the agreement can be terminated before the expiry of fixed period; in such a situation the bataidar will have full right to get suitable compensation.

Land ceiling and distribution of surplus land

The Ceiling of surplus land and distribution of the surplus land to the landless people is one of the important objectives of land reforms in India. As per the data available, revealed that after so many years of independence, India still facing disparity and inequality of distribution of land holdings. A large number of farmers owning relatively lower amount of land than the big land owners who are smaller in number, but owning larger acreage of

³ Madhya Pradesh Bhoomi Prabandhan Vidheyak, 1999

land; which leads the disparities in the livelihood and income in India. Ceiling of Surplus Land Act, were initiated in many parts of the country in the late 50's and early 60's; Jammu and Kashmir was the first state in the country to pass this Act and was followed by West Bengal and Himachal Pradesh states. The Government of Madhya Pradesh has already enforced in the following legislation to ensure a better equitable distribution of land;

- (I) Madhya Pradesh ceiling on Agricultural holdings Act, 1960
- (II) Madhya Pradesh ceiling on Agricultural Holdings Act, 1974

The old Act (Madhya Pradesh ceiling on Agricultural holdings Act, 1960) had been broadly amended in 1974; in this Act, "Family" is clearly defined and ceiling limits were also reduced. As per the old Act; an individual holder was entitled to hold land maximum extent of 25 standard acres, i.e. 75 acres of dry land, the holder along with his scheduled heirs was entitled to hold land to a maximum limit of 50 standard acres i.e. 150 acres of dry land. Under the new Act, (1974) these two ceiling limits have respectively been reduced to 30 and 108 acres, however, based on the new definition of family defined in the new act, a family of 5 members will entitle to hold land to a maximum ceiling limit of 54 acres (dry Land).

Table 2: Implementation of land ceiling legislation in MP

Area of land acquired	220496.59 acres
Area of land distributed	133316.15 acres
Area of land not distributed	87180.44 acres
Reasons for Non- distribution of land:-	
1. Area in courts	39012.44 acres
2. Reserve for public purposes	8488.24 acres
3. Unfit for cultivation	20719.66 acres
4. Miscellaneous reasons	18960.10 acres

Source: Commissioner Land Records and Settlement, Gwalior

Table 3: Number of Beneficiaries and Area of Surplus Land Distributed, MP

	Number of beneficiaries	(%)	Area distributed (Acres)	(%)
Scheduled Castes	15979	34.14	38891.35	29.17
Scheduled Tribes	18295	39.08	50842.11	38.13
Others	12529	26.76	43582.69	32.69
Total	46803	100	133316.15	100

Source: Commissioner Land Records and Settlement, Gwalior

In a significant move to provide agriculture land to every landless person belonging to Scheduled Tribe & Scheduled Caste, the State Government has taken a decision to reduce the area of charnoi land (common grazing field) of the villages and land becoming available is being allotted to landless SC/ST persons. This is a high priority scheme of the State Government and its progress is monitored at the highest level in the Government regularly. By the Government of M.P. vide order dated 21.01.03 the distribution of land has been stopped due to stay order of the Court. Since that the distribution of land is as under:-

Table 4: Distribution of Land Caste-wise

Schedule Caste		Schedule Tribe		Total	
No.	Area (H)	No.	Area (H)	No.	Area (H)
227371	181622.38	120806	100590.68	348177	282213.07

Survey and Settlement Operations: Background

The initial survey and settlement operation in Madhya Pradesh was started in accordance with the Master Plan of Survey and Settlement Operation which was prepared in March 1975 and came into force from July 1975; aimed to conduct fresh revenue survey and settlement in phase manner by the conventional system of survey. Initial instruments used for the fresh survey are mainly chain survey, theodolite, aerial photography, etc. to prepare maps considering hectare as the main unit, use of a metric chain of 20 meters and the scale 1:4000. In the state, revision of survey and settlements were taken up for 26 districts, but the entire processes were suspended due to the opposition and persistent from the people. As per the Report of the Committee on Revitalisation of Land Revenue Administration, MoRD, GoI, 1995, reveals that before independence the state had initially started Settlement Operation from 1901–1950, and the revisional settlement of period of 1990–2000 was stopped without completion.

Revenue Administration

Madhya Pradesh Land Revenue Code, 1959 defined the function and execution of powers of each officer concerning to land administration. The Board of Revenue is the highest body that decides matters pertaining to land and revenue management, etc. According to the Code, “the Board shall, in respect of all matters subject to its appellate or revisional jurisdiction, have superintendence over all authorities in so far as such authorities deal with such matters and may call for returns”. Apart from the ‘Madhya Pradesh Land Revenue Code, 1959’, the state is following eight others legislation/act rules & laws related to land management, namely:

(i) M.P. Agriculture Ceiling Act 1960

- (ii) Land Records Manual (Part I to IV)
- (iii) Revenue Book Circular
- (iv) M.P. Gramo me ki dakhil rahit bhoomi (vishesh upbandh) Adhiniyam 1970
- (v) M.P. Padat Bhoomi ka Krashikaran Adhiniyam 1966
- (vi) M.P. Vas Sthan Dakhalkar (Bhumi Swami Adhikaron ka Praday kiya jana) Adhiniyam 1980
- (vii) M.P. Krashi Prayojan ke liye upyog ki ja rahi dakhil rahit bhoomi par bhoomi swami adhikaron ka pradan kiya jana (vishesh upbandh) Adhiniyam 1984
- (viii) M.P. Samaj ke kamjor bargon ke krashi bhoomi dharkon ka udhar dene wale ke bhoomi hadapne sambandhi kuchakron se paritran tatha mukti Adhiniyam 1976.

2.b Gender and land right issues

With respect to gender and land rights issues; states like Madhya Pradesh have decided that issues relating to property, including landed property, would be dealt with in accordance with the appropriate Personal Laws. However, some states, including Haryana, J&K, Delhi and Punjab are yet to take adequate steps to provide the Constitutional/Legal safeguards to women with respect to their access to land. Study of Vandana Shiva (1991) mentioned that most farmers in India are women, but they have been perpetually deprived of property rights and the right to access and control over livelihood resources. Excepting examples like Vahini of Bodhgaya, resistance movements over this continued injustice have not taken place. In developing countries like India: where women are “invisible farmers” and their participation in agricultural training, research and extension are negligible. However, as per the govt. of India guidelines their name has to be included in patta land, but not found on patta lands that were distributed in 60s, 70s or even 80s, even there

was no enforcement machinery to ensure compliance of equal wages for equal work. But now the situation is slightly better as most of the states have implemented policies on the exemption of registration fees to the women property buyers. Govt. of Madhya Pradesh has taken an apt measure for enhancing asset base of women; as per the recent approval of the government:

- Pattas now in the joint name
- Registry rates and stamp fee lowered by 7.5% to 5.5% if the property is in the name of women.

3. LAND ADMINISTRATION OF MADHYA PRADESH: A PARADIGM SHIFT

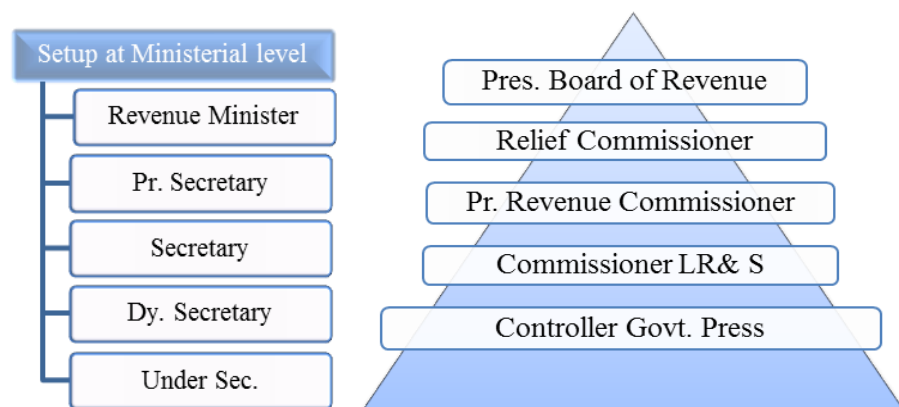
After discussing the history and current trends of land reforms in the state; it shows the mixed of experiences and not adequate to provides tenant protection or quality land to the landless labourers or full protection of owners, etc. Apart from the failures in the entire state since three to three and half decades after independence on these issues now the state is trying to revamp the entire administration by strengthening its management, implantation and monitoring of current land policies. In Madhya Pradesh, under the revenue department, maintenance of land records and its updation is under the jurisdiction of the office of Commissioner Land Records and Settlement, Gwalior, which is one of the major offices under the Revenue Department with 18,493 no. of sanctioned employee strength. The Department looks after mainly six major works for the entire state; updation of land records, agricultural statistics, survey and settlements, land reforms, *nazul* and other welfare schemes and other land related policies. In Madhya Pradesh land records and survey-settlement are the biggest activity. The Department is the nodal agency for the state to execute NLRMP with all components; excluding registration.

In Madhya Pradesh, the local name of the unit or subunit for land measurement is Bigha, (1.75 Bighas = One Acre) and local name of the Record of Rights is Khasra / Adhikar Abhilekh. Local name of Maps and Field Measurement Book (FMB) / Khatiyani in the state is Patwari Naksha. As per the MP Land Revenue Code 1959, Collector has the power to form new patwari circles, alter the limits of the existing circles, shall arrange the patwari circles in the tehsil into the “Revenue Inspectors” circles for the maintenance and corrections of land records. At the district level; land administration is governed by district Collector, assisted by Sub-Divisional Officers (Revenue), followed by Tehsildars / Naib Tehsildar, Superintendent Land Records / Assistant Superintendent Land Records, and in village level Patwari is the revenue official who is responsible for land administrations for a Patwari Halka under the supervision of Revenue Inspector and under the control of Tehsildar. As per the rules, Record of rights (RoR)⁴ be prepared and maintained for each village of the state and records included with following particulars:

- (a) the name of all bhumiswamis, with survey numbers or plot numbers and the area whether irrigated or unirrigated;
- (b) the name of all occupancy tenants and govt. lessees with detailed information;
- (c) condition or liabilities;
- (d) the rent or land revenue payable;
- (e) such other particulars as may be prescribed.

⁴ Renumbered by Act No. 25 of 1964 (w.e.f 23-4-1964)

Figure 1: The setup of Revenue & Land Administration in Madhya Pradesh



No maps, no records, no reforms

Land continues over time as the most valuable natural resource, which is neither inexhaustible nor indestructible but limited in amount. Hence the management of land-related records is the essential thing for the state or country. The original land surveys in India have mostly prepared in the pre-independence period, therefore, land records are more than 100 years old and there is a variety in them according to the system of the administration prevalent at that time. In India and worldwide whenever land reforms have been discussed, they all mentioned about the importance of updating land records on land reforms, not only that it has several others direct and indirect impacts on like; strengthening agrarian structures, rural credit, tenancy protection, farmer welfares, agricultural productivity, legal, economic empowerment to the weaker sections of our society and so on. Now it is well understood that if land records and its management and updation are not executed properly the government and its

associated departments and machinery could not be able to provide services to the citizens and to implement any developmental programmes. Any attempt at effective land-use reform by farmers in MP, especially in the tribal segments, however, faces the bottleneck of outdated land records⁵. Evaluating the scenario of survey and land records of MP and its direct relation to land reforms, Prashant Mehta aptly describes that after independence MP could not fully implement land reforms due to inadequate records and maps, no complete survey has taken place since hundred years before 1975-76 where from new survey for the entire state begins, but partially completed. Management of proper land records has so many far-reaching implications for developments, MP has far lagged behind towards that direction, without improper land records both maps and textual records and due to that reasons land reforms progress not effectively implemented.

Table 5: State at a glance

Area	308, 252 Sq. km./ 119, 252 Sq. mi
Districts	51
Sub-Divisions	10
Tehsil	417 (368 Tehsils, remaining are tappa tehsils)
Development Blocks	313
Villages	51929 (50631 Mapped and 909 Un-mapped)
Total Popluation	
Urban and Rural Population	20, 059, 666 Urban & 52, 537, 393 Rural
Co-ordinates	23.2500° N and 77.4170° E

⁵ LAND REFORMS IN MADHYA PRADESH REDEFINING THE AGENDA
P.S.VIJAY SHANKAR MIHIR SHAH 1998: Land Reforms in India: Vol 7,
Edited By; P.K.Jha

4. BHU ABHILEKH: LAND RECORDS INFORMATION SYSTEM FOR MADHYA PRADESH

4.a Introduction to the Cutting Edge Technologies

The economic liberalisation in India from the 1980s, lead towards a phenomenal growth of IT sectors and impose his bright future in informatics development. Today the nation has much influenced by the neo-liberalised economic reforms and IT revolutions. After recognising the fact that in the era of electronic and information technologies, governments have made policy and managerial changes for the early adopting and promoting of cutting-edge technologies like ICTs in their governance structures and citizen-society relationships. In the Second Administrative Reforms Commission Eleventh Report Promoting e-Governance⁶ mentioned that ICT will definitely create “SMART government” which provides simple, moral, accountable, responsive and transparent governance. E-governance may use as an instrument to transform the public administration to sustainable developments, as E-government is better defined by “the use of ICT and its application by the government for the provision of information and public services to the people” (Global E-Government Readiness Report 2004).

Technological innovations or ushering ICTs is to provide not only for quicker services to the citizens, but also to fill the gaps between the governments machinery with the citizens; who are even not accessible; to make government more efficient, drive down costs and increase transparency. However IT revolution that has taken

⁶ Govt. of India. 2008. Preface to the Second Administrative Reforms Commission-Eleventh Report on Promoting e-governance: The Smart Way Forward, New Delhi.

place in the country, not seen actually in the real field or village level; as most of the countries believe that adoption of new technologies and ICTs would provide better governance to the citizens. The United Nations Survey 2012 aptly described that the model of e-governance which are mostly used by the developed countries or the rapid-developing countries for the smart, inclusive and sustainable growth for the next generations, but the country like India, where the population as well as the geographical coverage are huge, implementation of this scheme is quite challenging task to do.

Table 6: E-government development in largest population countries

Country	e-gov. development index		World e-gov. development ranking		Populations 2014 ⁷
	2012	2014	2012	2014	
China	0.5359	0.5450	78	70	1,393,783,836
India	0.3829	0.3834	125	118	1,267,401,849
United States	0.8687	0.8748	5	7	322,583,006
Indonesia	0.4949	0.4487	97	106	252,812,245
Brazil	0.6167	0.6008	59	57	202,033,670
Pakistan	0.2823	0.2580	156	158	185,132,926
Nigeria	0.2676	0.2929	162	141	178,516,904
Bangladesh	0.2991	0.2757	150	148	158,512,570
Russian Federation	0.7345	0.7296	27	27	142,467,651
Japan	0.8019	0.8874	18	6	126,999,808
Mexico	0.6240	0.5733	55	63	123,799,215

Source: United Nations E-Government Survey 2012 & 2014

⁷ www.worldometers.info/world-population/population-by-country, viewed on 20 May 2015

In land administration and management in India, most of the states are using cutting edge technologies or ICTs to provide quality services to the citizen, transparency etc. by implementing different e-governance scheme, however, the success are not very high except some states like Maharashtra, Karnataka etc. Limitations of e-governance in Indian context has rightly pointed out in the book, The State and Land Records Modernization, 2015 that; e-governance in India not getting much momentum due to the lack of integration between contemporary public administration with the growing theories and models of e-governance and most of the research of e-governance carried upon over-optimism and hype⁸. Administrative reforms and managerial supervision may lead India towards a better future in ICTs.

Madhya Pradesh has already started his journey towards ICTs innovation on land governance arena by introducing an application software Bhu-Abhilekh, designed and developed by NIC for the office of the Commissioner, Land Records & Settlement, Department of Revenue, Government of Madhya Pradesh to deliver excellent grass root governance within the domain of land management. Bhu-Abhilekh is an ISO certified “G2C” and “G2G” software implemented up-to tehsil level. Presently Bhu-Abhilekh Version 4.2 has been successfully implemented in all the 342 Tehsils of

Bhu-Abhilekh Technology: at a glance

Client Server Architecture
Windows 98/2000/XP
SQL Server 7.0/SQL Server
2000
GIST SDK 2.05

⁸ The State and Land Records Modernization: Pradeep Nayak, 2015, Foundation Books, Cambridge University Press

all (51) districts of Madhya Pradesh and stored over 41524776 no. Khasra (Plot/Survey) numbers comprising of more than 10.5 million Land owners, Up-dation of Land Records and distribution of Khasra (RoR) & Khatauni (B1) are being done with this software.

4.b Objectives

Bhu-Abhilekh aims to facilitate delivery of citizen services as well as computerisation of land management. The prime objectives of the scheme include, inter alia, the following:

- Computerized recording, storage and retrieval of attribute (non spatial) data, comprising ownership and land use information
- Creation of master database storing plot wise and owner wise details of land, crop, revenue, irrigation, demand, collection, land type, tenancy etc. and to computerise two major documents i.e. Khasra & Khatauni
- Generation and issue of periodic reports, including a copy of the Record of Rights (ROR), Khatauni, etc. to the landowners through the computerized system.
- Land owner satisfaction by providing improved and efficient service delivery.
- Easy maintenance and updates in user level.
- Information retrieval via user friendly screens and customized reports.

In a word the system-application provides SMART (Simple, Moral, Accountable, Responsible and Transparent) land administration to the citizens as well as government.

Features at a Glance

Bhu-Abhilekh Version 1.0 was released on 25/01/2003 and successfully implemented in all the Tehsils of all 48 Districts of Madhya Pradesh. Time to time it was up-dated with easy and user oriented tools. Some major modules are;

Data Entry: - Khasra, Code Master, District to Village Master (Location Code).

Report Generation: - Khasra Report PII (Individual, Village wise, Khatedar wise, Khatedargaon, Summary etc.), Kistbandi Report B1 (Individual, Village wise, Khatedar wise, Khatedargaon, Summary etc), Khatedar List, Error Check List.

Utility: - Khasra-Basra Change, Khasra Deletion, District to Village updation, Data Merging, Land Conversion, Bantwara (Partition).

Query:- Name Wise Search, Basra Details, Village Data availability Report.

Graph:- Village Wise tax collection, Year Wise tax collection, Land Utilization, Irrigated /Un-irrigated/ Double Crop Area.

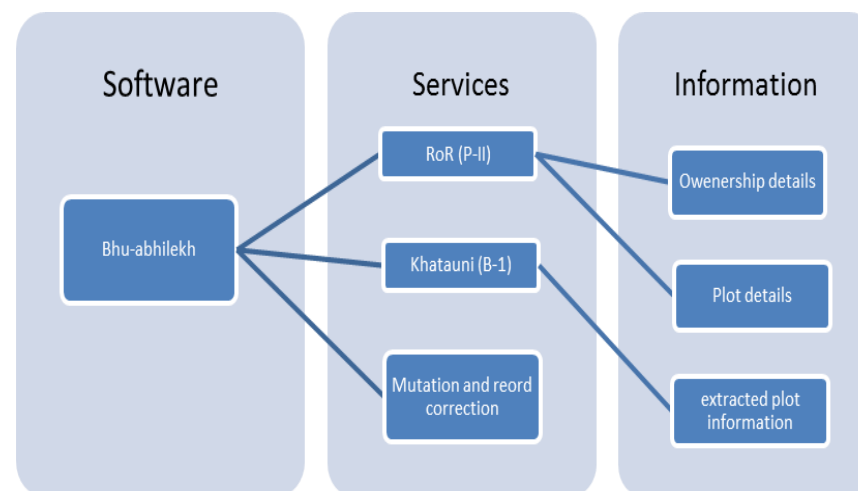
Tools:- User List Maintenance, User Rights, Year End, Village Wise year End, Back-Up, Restore, Password Change.

4.c Service Types of Bhu-Abhilekh

In Bhu-Abhilekh version 2.0 'Mutation' feature was included, it contains complete processing of mutation workflow i.e. application processing, notice generation (application acknowledgement, notices to applicant and non-applicant, general notices, general proclamation), printing of mutation register (for approved, rejected, pending and mutated cases), status of application, after approval, mutation processing includes khasra/basra change, ownership change, land type conversion, bantwara (partition), khasra deletion etc. This version enables to complete mutation up-dation only after 30 days from the registration date and add several options on user specific report.

The major information and reports provided by the Bhu-Abhilekh are: B2 Report, B3 Report, Fasal Girdawari report, Khasra Name Wise search report, updated Khasra Report, District to village khasra availability report, general proclamation Bantwara report for mutation, facility to generate Diversion Khasra/Khatauni, facility to print diverted Khasra/Khatauni in Sq. feet/meter, District to village data availability report including khasra numbers.

Figure 2: Services provided by Bhu-Abhilekh



Department developed the web-page for retrieve land records information <http://landrecords.mp.gov.in/>; earlier it was <http://www.mpbhuabhilekh.nic.in/> (Bhu-Abhilekh Web Site was released on 01/02/2007). All the Fifty districts (342 Tehsils) data are hosted on the web with address (URL) <http://www.landrecords.mp.gov.in> for the dissemination of Records of Rights (ROR), Khatauni(B1) in a local language, Departmental Circulars and Tender documents. Total hits as on date are 34 Lakhs

- Khasara with name: search with name of property owner
- Khasara with number: search with the Khasara number of property
- Khasara with all accounts: Select from the Khasara number list.
- Khatauni kishtbandi: Select the Khasara number from given list.
- Location specific reports: Area Report in Hectare
- Types of land: Information regarding the all reports of land in MP
- Khasara official list of numbers: All the information in Hectare via the Revenue Dept MP Report
- Details of land: All the details regarding to the land made by the Dept of NIC CLRMP
- Details of crops: Page is not online yet, but once the research completes it will provide all kinds of crops information in the state.

Continuous up gradation on Bhu-Abhilekh provides easiness to the user and integrates features as per the users request. Updated version having feature viz. data extraction of patwari halka by administrator, patwari can easily modify data and update it into the server by using his laptop. This version provides full functionality (operator level) to Patwari over data i.e. modifications, printouts of Khasra/B1 etc.

- Area calculation is automatic
- Layers on Plot map : can be displayed and printed
- Plot division: – can be done with the help of useful editing tools. Division by free hand or specifying area or drawing lines at an angle is possible.
- Plot division Size & shape can be adjusted
- Plot dimension display (distances between vertices)
- **Alamats:** Symbols on plots can be displayed and printed as well
- **Grid:** for help in drawing lines (Facility to rotate grid CW/ACW)

Figure 3 & 4: Web Interface of Bhu-Abhilekh and Bhu-Naksha

<http://records.mp.gov.in/newweb/index.htm>

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बीम का प्रदान करें



अनवरत भू अभिलेख एवं बंदोबस्त, मध्यप्रदेश की वेबसाइट पर आपका स्वागत है।

प्रशासनिक

अनवरत की कसब से

प्रस्तावना

विभागीय अनवरत

अंतिम अनवरत

संपूर्ण/विस्तृत पत्र

फावका अनुरोध

स्वाभाविक अनवरत

परिचालन अनुरोध

Data As On Report

नगरिक सेवाएं

<http://mpbbsbbs.gov.in/>

Link Aadhaar Number with Voter-ID-CEOMR

अनवरत

वेबसाइट से अनुरोध

कृषि सहायक

नगर क्षेत्र, क्षेत्र, क्षेत्र

प्रशासनिक अनुरोध

प्रस्तावना

प्रतिभाषा

प्रतिभाषा

प्रतिभाषा

प्रतिभाषा

नयी जानकारी

हिमालय देखें

Server एवं SAN Storage Facility की दूर आगंतुक करने हेतु कृपया फावका के साथ में / मित्रित (Reader) देखें

कम्प्यूटराइज्ड नक्शा देखने के लिये कृपया नक्शे पर क्लिक करें

जिला

अनवर

तहसील

रा.नि.म.

हल्का

ग्राम

वर्ष

विकल्प चुनें

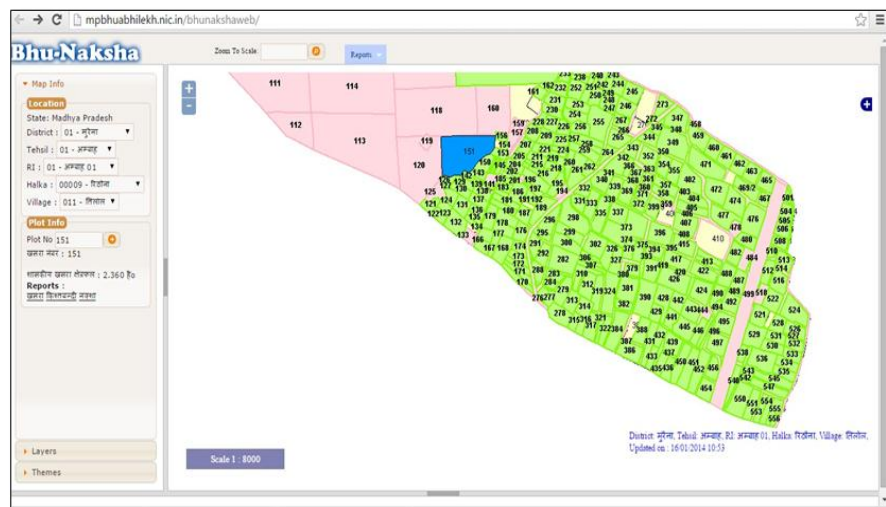
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नक्शा

चुनिये

12/2

Submit करें



Source: <http://landrecords.mp.gov.in/>

5. STATUS OF NLRMP IN MADHYA PRADESH

Madhya Pradesh had started the computerization of land records since 25 years ago when Ministry of Rural development launched two programmes namely; Computerisation of Land Records (CLR) and Strengthening of Land Records and Updating Revenue Administration (SRA&ULR). Both the centrally sponsored schemes are not successfully implemented in the entire state but partial achievements were visible like; ⁹computerized copies of the khasra (RoRs) are being distributed in 257 of 273 tehsils on demand, gram panchayats are empowered to certify undisputed mutations at the village level and other types of mutations are being approved by revenue officials, efforts are being made to register all mutations on tehsil computers and distribute only computerized copies of RoRs

⁹ Annual Report 2006-07: Bharat Nirman through Rural Development; MoRD, GoI. Delhi

and land records data have been put on the web site for easy access and display. In SRA&ULR, under this scheme, ¹⁰in 232 location construction of record room was completed, 545 nos. of Talathi office cum residence is completed, 10 nos. of tehsil kacharies constructed and moreover 13 nos. of training institute renovated/upgraded/constructed; though both the schemes are merged with NLRMP in the year 2008.

5.a Initiatives taken under Computerization Programme

I. Computerization of land records: Computerization of Land Records consisted of both Maps (Spatial) and RoRs (Non-Spatial), the integration of the two elements of land records need to provide to the citizens as directed in NLRMP norms. But in Madhya Pradesh the integration of textural and spatial data is in progress, because of the new maps generation will take some more time. As an important component of land records modernization, the state had completed computerization process of land records for each tehsils of each district and computerized RoR are placed in the web-portal <http://landrecords.mp.gov.in/newweb/index.html>. Certified copies of records and maps are available in tehsil office and also in the website, citizens can easily avail the facility from anywhere.

Table 7: Status of Computerization of Record of Rights, District wise in MP (as on April, 2015)

S. No.	District	Computerization of RoRs (No. of RoRs completed)	Agency doing data entry (by Dept./PPP model/outsource)
1	Sheopur	379410	
2	Morena	927160	

¹⁰ (As on 31.03.2011)SRA & ULR Physical Progress; http://dolr.nic.in/dolr/SRA_ULR_Physical_Progress.asp

3	Bhind	1010175	OUTSOURCE
4	Gwalior	758951	
5	Shivpuri	1413032	
6	Guna	583651	
7	Ashoknagar	599226	
8	Datia	577296	
9	Dewas	747488	
10	Ratlam	734056	
11	Shajapur	847319	
12	Agar Malwa	567372	
13	Mandsaur	932692	
14	Neemuch	510004	
14	Ujjain	984164	
16	Indore	517528	
17	Dhar	1110871	
18	Alirajpur	473149	
19	Jhabua	642907	
20	Khargone	643020	
21	Badwani	394563	
22	Khandwa	494454	
23	Burhanpur	128887	
24	Bhopal	348533	
25	Sehore	722013	
26	Raisen	613141	
27	Rajgarh	1379566	
28	Vidisha	856761	
29	Betul	740761	
30	Hoshangabad	494946	
31	Harda	187604	
32	Sagar	1167379	
33	Damoh	770423	
34	Panna	1238654	
35	Chhatarpur	1668202	
36	Tikamgarh	1047439	
37	Jabalpur	741530	
38	Katni	880175	
39	Narsinghpur	557123	
40	Chhindwara	1148973	

41	Seoni	781536	OUTSOURCE
42	Mandla	656820	
43	Balaghat	1084517	
44	Dindori	496829	
45	Rewa	2078624	
46	Singrauli	878828	
47	Sidhi	928538	
48	Satna	1857670	
49	Umaria	517723	
50	Shahdol	983181	
51	Anupur	719912	
Total		41524776	

Source: Commissioner Land Records and Settlement, Gwalior

In the entire state, issuance of manually signed RoR is stopped as RoRs are available in web-portal for free access to citizens, but due to delaying process of providing digital signatures of tehsildar/officials, citizens are deprived to get digitally signed RoR, but department is ready to be start the process from 1st May 2015.

II. Creation of Spatial Database (Digitization) of Village Maps in Madhya Pradesh: With a view of efficient revenue administration and development, Department has decided to undertake the digitisation of every village land revenue maps (popularly called as Khasra) in the state. Land records modernization is meant to provide a digital copy of ownership details with digitized maps; Madhya Pradesh is doing notably well to provide both the textual and spatial data from web server. To avoid damages to the original record of map sheets, the department is interested in taking up the job of converting approximately 1.23 lakh village map sheets in electronic digitized vector form with the help of the latest technology available in this field. The Digitization of cadastral maps started in April 2008 and is completed in June

2014 for the entire state of MP. Digitization of cadastral maps (legacy data) is done through complete outsourcing for the entire state of MP under the direct supervision of land records department. Though Madhya Pradesh Land Revenue Code has cleared provision of ground truthing for updating of cadastral maps but updation of maps and ground truthing were not done properly in the state.

Process followed for scanning of cadastral maps; Most of the village maps (source maps) are stored in A0 size on the scale of 1: 3600 or 1: 3960 or 1: 4000, which were scanned as per the specifications:

- Scanned at 600 dpi gray scale mode.
- Images stored and delivered in .tiff format.
- The image orientation should be upright.
- The image should be cleaned and despeckled to remove noise.
- Legibility features should be good.
- Measured length and width within the bounding box of map should be +/- 0.01% of the original maps.
- The image should not be skewed or wrapped.

After the scanning process, vendors asked for raster editing before starting digitization (vectorization) of scanned maps. Village maps are digitized by using three features: point, line and polygon (area) and after completion of digitization process cleaning of data like; misplaced features, adding missing features, removing undershoots and overshoots and Deleting extra features etc. are done before creation of the spatial database. All the features are stored in .shp format for further use.

Each and every polygon will be assigned a Khasra number as specified in the original map, so that Land Record ownership and other details could be integrated easily. To form a complete village map Department has followed edge matching of the map sheets.

Process followed for cadastral map digitization:

- Vector data digitized in planner form and permissible error level is +/- 0.01%.
- Output format of each digitized map in ARC .shp.
- Labels marked on the map should be digitized as point and not as text or annotation.
- Complete and proper association of the corresponding feature codes for all features, various features are stored in different classes /coverage.
- Data sets are topologically corrected, all polygons have individual and unique label.
- Softcopy checking by the Commissioner Land Records.

Table 8: Status of Digitization of Cadastral Maps, District wise in MP (as on April, 2015)

District	No. of Maps needs to be digitized	No. of Maps already digitized	Agency doing/PPP model	Ground truting done on the maps
Sheopur	2782	2782	Complete Outsource	No
Morena	2687	2212		
Bhind	2712	2522		
Gwalior	2315	2299		
Shivpuri	4106	4008		
Guna	3481	1399		
Ashoknagar	3581	2459		
Datia	1704	1745		
Dewas	2932	3354		
Ratlam	2557	2564		
Shajapur	1811	3081		
Mandsaur	2452	2453		
Neemuch	1789	1482		
Ujjain	2942	2879		

Indore	1584	1573
Dhar	3796	3666
Alirajpur	1677	1676
Jhabua	1720	1771
Khargone	3088	3082
Badwani	1730	1716
Khandwa	2189	2684
Burhanpur	726	726
Bhopal	1312	1310
Sehore	2773	2766
Raisen	3636	3631
Rajgarh	3250	3244
Vidisha	4156	4145
Betul	3074	3041
Hoshangabad	2282	1956
Harda	1344	1273
Sagar	4798	4798
Damoh	3471	3546
Panna	3030	3030
Chhatarpur	4490	4505
Tikamgarh	2270	2270
Jabalpur	2686	2686
Katni	2532	2531
Narsinghpur	1926	1932
Chhindwara	4065	4192
Seoni	3473	3470
Mandla	1501	2532
Balaghat	2846	2849
Dindori	2045	2037
Rewa	4692	4704
Singrauli	2180	2217
Sidhi	2166	1940
Satna	3219	3278
Umaria	2473	2464
Shahdol	3176	3231
Anupur	2349	2393
Total	135576	134104

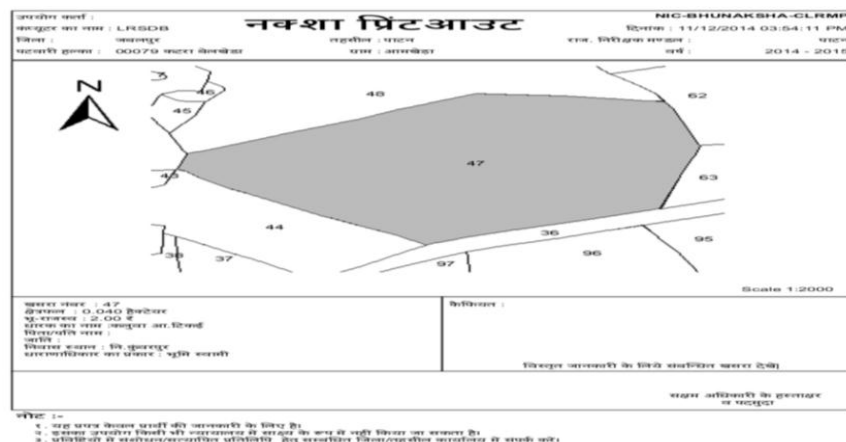
Source: Commissioner Land Records and Settlement, Gwalior

Based on the above table it is relevant to say that digitization of village maps are done through complete outsource and almost all the maps has been uploaded to the web. As per the discussion with the officials, it was found that remaining maps are ambiguous or not in a proper situation so that after re-survey this map will be prepared.

Figure-3 & 4 shows that Village maps are stored in the server and citizen can get their map from the Departments website. Every map has their unique plot no. and consisted of location information (District, Tehsil etc.) and adjacent plot numbers (Figure-3). Maps which are stored it different from the other states like West Bengal, here state govt. scanned and digitized the village maps which are shows only the plot information neither has it displayed the adjacent boundary length, nor the ownership details. This has a limited scope of geo-referencing without using HRSI or other sources, as one of the main objectives of NLRMP: geo-referencing cadastral maps and provides maps to the citizens with all latitude-longitude information but this present approach does not give space for its utility. Department is understand the issue and taking several measures to sort out this problem¹¹.

¹¹ In my last visit of Madhya Pradesh, discussed with various key officers about state preparedness to execute the NLRMP; it is observed that Department are trying to provide citizen services through web platform in a slow but steady manner. That's why deptt. had scanned and digitized maps and upload in web by which citizen can aware of the usage of the web-platform to get any kind of land related data and records through the web-portal. An advance land records management solution is developed by the Deptt. for the purpose of store, retrieve, analysis and output of land records and other informations', will be implemented from May, 2015 (discussed in Web-GIS part).

Figure 5: Digitized plot map; showing location information, ownership records and adjacent plot numbers)



Source: Commissioner Land Records and Settlement, Gwalior

III. Integration of textual and spatial data: As one of the important feature of NLRM Programme, integration of maps and records are prepared by the state with the active co-operation of the state unit of NIC. Under the direct supervision of Dept. integrated records are kept in the NIC state unit server in Bhopal. Till April 2015, maps of 52806 villages are already integrated with RoR and still maps of 2040 villages need to be integrated.

Providing e-services on land related matters to the citizens by the means of digitized copy of maps and records is the highest priority for the Department. Towards the direction, Department has done notably good, as it may be seen that after computerization of land records and maps, helped to earn more revenue, that may strengthen the economy for the state. Computerization of land records is done well for the entire state

due to some factors like political will, efficiency of administration. As per the strict instructions of Hon. Chief Minister; manual/hand written record by Patwari should be deposited in Record Room and they will have access only to computerized copies of Khasra/ Khatauni and issue computerized parcel maps to land holders. In spite of having facility of free downloads of maps through website, state government has earned a large amount of revenue from the distribution of computerized copies of ROR and B1, Table-9 & Figure-6 it shows increasing popularity and use of computerized copies.

Table 9: Distribution of ownership records and revenue collection year-wise

Year	Copies of ROR, B1 & Naksha (No.)	Revenue Collection (Rs.)
2002-03	5,57,898	55,13,287
2003-04	5,80,489	60,91,043
2004-05	7,93,548	91,88,006
2005-06	10,63,405	1,46,77,193
2008-09	17,70,420	2,51,16,398
2009-10	25,10,416	3,64,52,186
2010-11	29,78,083	4,14,47,330
2011-12	53,56,925	5,93,99,298
2012-13	65,08,704	5,62,79,191

IV. Land Records Management System: Land records management is an inevitable task as land records updation, as old

data/legacy data are subject of importance to any dispute or judicial matter. Land records have several benefits, on that note, NLRMP comes with vivid guidelines to create or convert the existing record room into a modern and cyber record room for all the tehsils of every District for safe and secure keeping of all land related documents. The basic aim to convert or create modern record room is to preserve and early retrieval of records in a scientific manner so that records become available to who-so-ever may need. Maintaining of land records a severe task for every state, Office of the Commissioner Land Records & Settlement, Madhya Pradesh has taken the initiatives to maintain all kinds of land records by introducing e-system. Department had outsourced the task of scanning, and indexing of all of its documents pertaining to land records, preserving the data in digital format and implementation of a document management system-software to convert the overall operations of the department including services to the public into an effective e-System. Department is very keen to introduce the facility to kept land records in modern record room in all 361 tehsils located in 51 districts of the state, the broad objectives of the project are as follows:

- a. To prevent and preserve the valuable case records and documents of land records for future use and prevent the issuance of fraudulent, duplicate land Records
- b. Easy to retrieve, reduce manpower and man-days.
- c. To provide accurate, current and speedy land record status verification and faster service delivery in a time-bound manner to the citizens.

Figure 6: Distribution of ownership records and its impact on revenue collection, year-wise

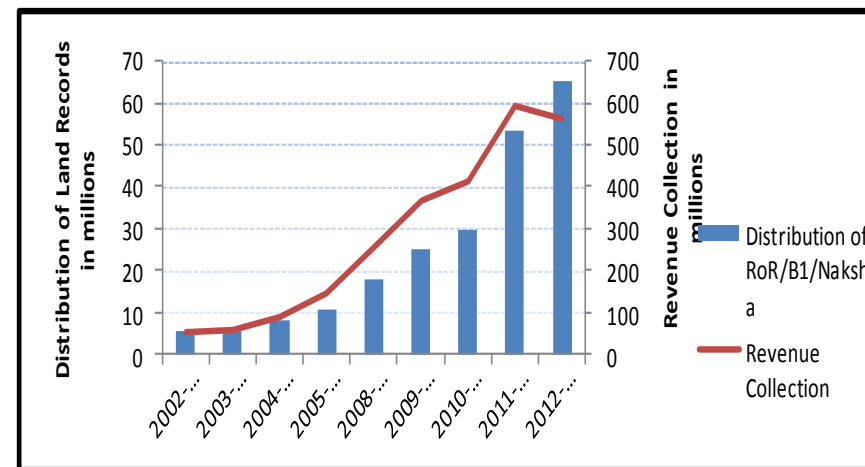
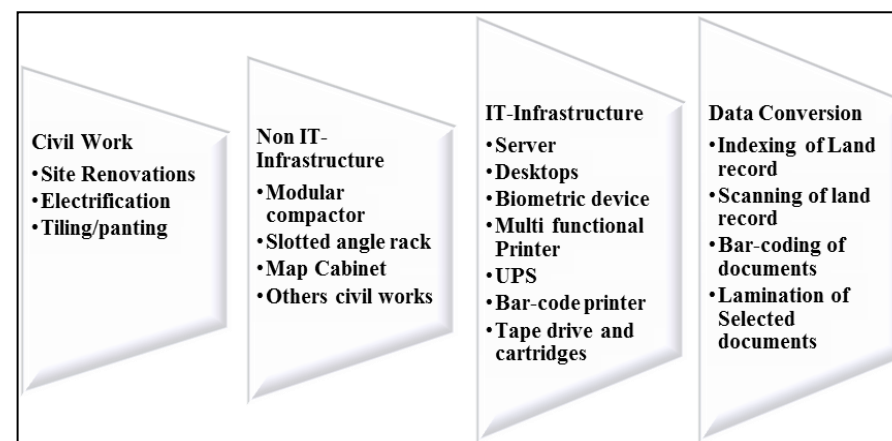


Figure 7: Division of work under modern record room project of MP



The entire process of land records management by creating modern record room in MP is well managed in document storing-retrieval and citizen service point of view¹².

Figure 8: Conversion of existing record room to a modern record room in MP



A Tehsil office of MP where documents were stored in that manner, before implementing MRR

After implementing of MRR, modular compactors are used for safe storages of land records

¹² During my visit of Madhya Pradesh, physically I was seen the entire process of data creation for storing in modern record room established in the Office of Collector and District Magistrate, Gwalior. Record room is quite well equipped with all the modern facilities to prevent from tampering, fire accident, insects, thefts and Natural Calamity. Preserve all records in a chronological manner in the Electronic Device as well as in Compactor for future reference and use. The record room area is very spacious, the entire area has been bifurcated for several utilisations like storage area where compactors can be placed for physical storage of records and maps, an operational area where server, computers and attached accessories are located, public services area where space provided for reception and waiting of members of the public. Besides that, vendors are developing the Document Management System for scanning, indexing of case records, storing of records in digital format corresponding to their physical location in compactors etc. Overall it's a very good experience, needless to say, that land records management system developed by the department is enormously modernized in nature.

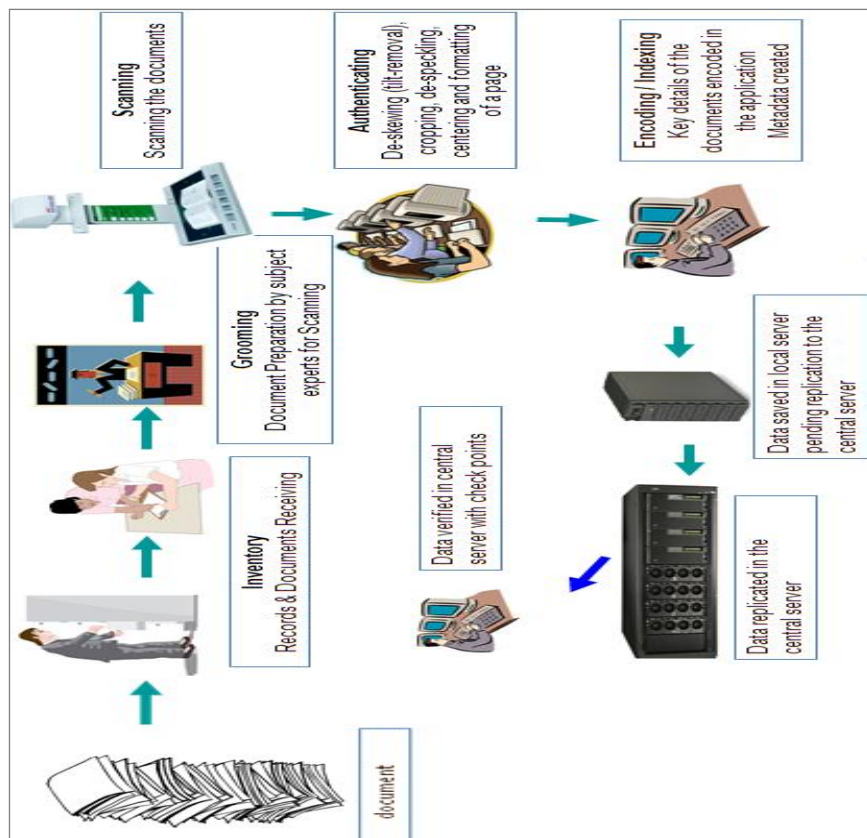
Developmental status of modern record room in Madhya Pradesh

The Commissioner, Land Records and Settlement, Gwalior, MP have the responsibility of creation and maintenance of Land Records by the Government of Madhya Pradesh. This initiative of converting the current activities of the departments into an e-System will enable the department to provide effective land records and settlement services to the citizens and efficiently manage their in-house functions:

- Conversion of Existing Record Rooms to Modern Record Rooms at 361 Tehsils
- Scanning, Indexing, and Lamination of existing hard copies of Land Records
- Barcode Tagging of hard copies of Land Records
- Data Entry corresponding to the scanned Land Records
- Design, Development and Implementation of a Digital Document Management System (DMS) Software for effective management of the digital Land Records
- Training of the users of the DMS solution
- Warranty services for the infrastructure and the software solution

Discussions on MRR Components: The project involves a number of activities from civil works to data manage and delivery (Fig-6). In the entire state, most of the established records room are not well in structured; in this project civil renovation and electrification works are done for all the record rooms. It is important to understand each component for creation of modern records room, the process is illustrated in the diagram below;

Figure 9: Graphical view of components used for creation of MRR in MP



A. Scanning and Indexing: Scanning of all the records available with the department for each of the record room in minimum resolution of 200dpi using “Black & White from Color” option and storing the document in encrypted pdf (portable document format) in a predefined file naming convention and indexing it. Most of the cases where records are in poor condition, that time high resolution

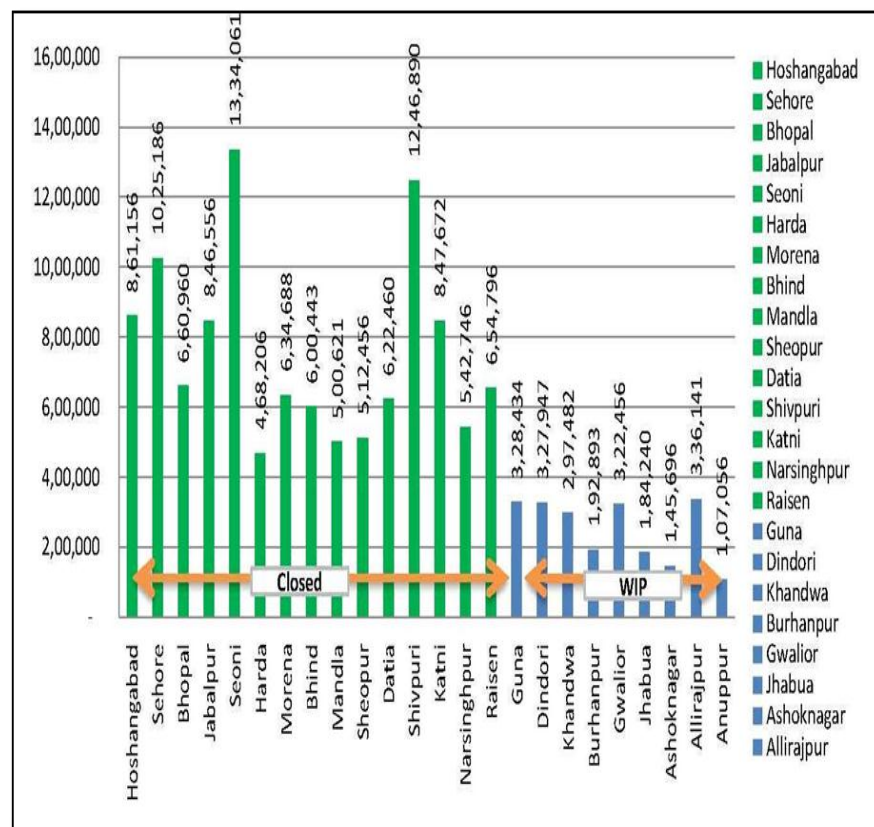
scanners are used for the betterment of the digital copy. After scanning process done, all scanned documents will be tagged with digital metadata information, used as “keywords” by which the document can easily identify for future use. The entire mechanism of document scanning for record management is designed as per the user needs; like during scanning documents are stored in CSV file with details like DOC No., Scanning location code, File No. and Document type, Rack No., etc. After scanning, vendors have returned all the physical documents and scanned documents with bar-coded.

B. Document Management System: NLRMP guidelines clearly indicate the usage of ICTs to create modern system software for easy and systematic handles of the record storage. In MP, Department has established the system throughout the state with the key initiatives by the vendor, they had developed a steady improvised system for document management in modern record room. This system will enable efficient storage of scanned documents, index these documents (by attaching multilingual tags to each of them), retrieve and display the stored scanned documents (digital as well as physical) upon searching for the relevant tags. The system software designed scientifically, as well as priority is given to the database security and intensive quality management. The system has limited user based access: One Supervisory User (to view digital documents and for creating reports), One System Administrator (to provide access rights on documents, folders, and metadata based on users and groups) and Five Normal Users at each location.

Outcomes of MRR Project: Creation of modern record room for the entire state is done well because the project is vendor driven, and after completion of the project the entire mechanism has uploaded to the District authority for future uses. So it needs to create a good capacity building and training for the officials as well

as the upper to lower staff who will use the system, as the system used modern techniques and most of tehsil level staff is not well aware of it. The constant need for support from the developers/vendors end to train properly about the know-how of the system and intense knowledge of database security, retrieval, capture and storing mechanism which are inevitable to run the system properly; rather it will be a complete waste of public money.

**Figure 10: District wise status of Land Records Scanning
(As on 10 November 2014)**



The entire process of conversion of existing record rooms to modern record rooms for all the 361 tehsils of MP is done through phase-wise manner. Department had given proper instruction to the vendors to complete the project in a time bound and phase wise manner like identification of space, civil renovation work, electrification works, etc. The state has developed a viable mechanism of creation modern record rooms, though it needs constant monitoring from the Commissioner Office or district level offices. However the programme needs to be started from 2008-2009 but due to some administrative reasons, it starts from the end of 2012.

The project has several implications to the citizens as well as government point of view, as the system improves citizen services, fraud or duplicate land records can be easily checked. This system means to provide a secure, transparent e-system to the citizens and will be able to provide effective land records management and settlement operations. The effectiveness and efficiency of the project mostly depend on the vendor, but for future use, department staff needs to be trained on the complex technicality of the scanning and document management system as well as query based search to retrieve documents and after all the database security. With this point of view, it is needful to say that department has partially achieved the goal to create land records management system, as far as training and capacity building is concerned.

Table 10: Phase-wise Development of MRR in MP

S. No.	Activity	Total Districts	Total Tehsils	Completed Districts	Completed Tehsils	In Process Districts	In Process Tehsils
1	Survey	51	361	51	361	0	0
2	Phase-1 (Renovation, Electrification and Non IT Equipment Installation)	51	361	38	247	13	114
3	Phase-2 (IT Equipment Installation)	51	361	36	232	15	129
4	Phase-3 (Scanning & Bar-coding)	51	361	24	136	27	225
5	Data Migration	51	361	15	96	36	265

Table 11: District wise Status of Modern Record Room in MP

S. No.	Districts	Total No of Tehsils	No. of Modern Record Room Completed+	Types of Documents	No. of Scanned Documents ++
1	Sheopur	5	5	Misele	211023
2	Morena	6	6		370228
3	Bhind	8	8	Bandobast	600443
4	Gwalior	3	4	Namantar	309132
5	Shivpuri	8	8	Panji	595727
6	Guna	7	5	Khasra	328434
7	Ashoknagar	5	5		171696

8	Datia	4	4	Khatoni	249575
9	Alirajpur	5	5	Adhikar	380537
10	Jhabua	2	5	Abhilekh	233309
11	Khargone	9	10	Renumbering	
12	Badwani	9	9	Soochi	
13	Khandwa	5	5	Sweksha	326108
14	Burhanpur	3	3	Khasra	135947
15	Bhopal	2	2	Parivartan	216215
16	Sehore	8	8	Suchi	612659
17	Raisen	7	8	Huk	519088
18	Hoshangabad	7	8		740138
19	Harda	6	6	Adhikar	468206
20	Jabalpur	7	6	Chabandi	734671
21	Katni	7	7	Chakbandi	515309
22	Narsinghpur	5	5	Kishbandi	378157
23	Chhindwara	12	13	Khatoni	
24	Seoni	8	8	66 Fasli	948202
25	Mandla	6	6		500621
26	Dindori	2	2		375268

+ Data as on April 2015

+ + Data as on December 2014

Designing of Modern Record Room

During my last visit in the DC office Gwalior, the model MRR is established, where I find the design is unique in nature and a strong database security is provided, here are some findings;

- a. Installed modular compactors for storage adequate strength of A3/A4 size hard copy records and modular map cabinets for storage of hard copy maps sizing A1.
- b. Installed modular slotted angle racks for maps and records.
- c. Design, development, testing, implementation, commissioning and maintenance of Document Management System software to facilitate easy management of the storage, easy retrieval of the records. Technical robustness and the advantages of DMS (Document Management System) are as follows;
 - The system is developed in client server based and used common Java language.
 - System Administrator has full access to documents, add, edit, delete, print, view and multiple access of the system is also available. It has user permission control and other security features.
 - System back-up is also provided for month wise report generation and future loss of records. Addition or editing documents may not corrupt the original document, as it has an automatic backup solution.
 - Smart query for real time search option is available. It integrates nicely with barcode, biometric fingerprint for any sort of authentication purposes.
 - It supports both Hindi and English language.
- d. Barcode tagging and indexing of hard copy records, lamination of documents etc.

Creation of Data Centres: Computerisation of land records and to provide e-services to citizens, it is mandatory to establish dedicated data centres in tehsils level up to state level, as the data are diversified in nature and quantity is too huge. During the preparation of the NLRMP guidelines, Department of Land Resources puts ample emphasize to create data centre from tehsils to state level to handle land records more easily and to achieve that goal Government of India provides full monetary support to the states to implement.

In MP, the establishment of the Tehsil level data centre, District Level data centre, Sub-Divisional data center has been done in the year 1999-2000 to 2006-07. Citizen services are provided through the district and tehsil level data centres and in Bhopal, State level data centre is established under the direct supervision of State NIC. Rural citizens, mostly went to the tehsils and district headquarters for their documents as Tathya Mitra Kendra established in each tehesils. State level data centre is established only for data hosting and storing, servers are well equipped and stored in SQL format, and used GIST SDK format to store regional language in the server. MP has delivered data centres facilities in tehsil offices but most of the time citizens are facing problem of internet connectivity, lack of staff, staff leave, printer issues, etc. and citizens are frustrated with the system. There is no connectivity between the block offices and state level data centres and among the revenue offices which causes severe problems regarding up-dation of land records and several other issues.

**Table 12: Developmental Status of Data Centres in MP
(Data as on April, 2015)**

Sl.	District	No. of District level data centre (DLDC)	No. of Sub-divisional data centre (S-DLDC)	No. of Tehsil level data centre (TLDC)
1.	Sheopur	1	2	5
2.	Morena	1	4	6
3.	Bhind	1	5	8
4.	Gwalior	1	2	4
5.	Shivpuri	1	5	8
6.	Guna	1	4	7
7.	Ashoknagar	1	3	5
8.	Datia	1	3	4
9.	Dewas	1	4	8
10.	Ratlam	1	4	8
11.	Shajapur	1	4	5
12.	Agar Malwa	N.A	N.A	4
13.	Mandsaur	1	4	8
14.	Neemuch	1	2	5
15.	Ujjain	1	6	7
16.	Indore	1	4	5
17.	Dhar	1	4	8
18.	Alirajpur	1	2	3
19.	Jhabua	1	3	5
20.	Khargone	1	5	9
21.	Badwani	1	2	9
22.	Khandwa	1	3	5
23.	Burhanpur	1	1	3
24.	Bhopal	1	2	2
25.	Sehore	1	5	8
26.	Raisen	1	5	8
27.	Rajgarh	1	5	7
28.	Vidisha	1	7	10
29.	Betul	1	4	8
30.	Hoshangabad	1	5	8
31.	Harda	1	1	6

32.	Sagar	1	6	11
33.	Damoh	1	3	7
34.	Panna	1	4	8
35.	Chhatarpur	1	5	11
36.	Tikamgarh	1	3	9
37.	Jabalpur	1	4	7
38.	Katni	1	4	7
39.	Narsinghpur	1	3	5
40.	Chhindwara	1	5	12
41.	Seoni	1	4	8
42.	Mandla	1	3	6
43.	Balaghat	1	4	10
44.	Dindori	1	2	2
45.	Rewa	1	6	11
46.	Singrauli	1	2	3
47.	Sidhi	1	3	6
48.	Satna	1	5	10
49.	Umaria	1	1	5
50.	Shahdol	1	2	4
Total:		50	182	342

Source: Settlement Commissioner and Director Land Records, Gwalior, MP

5.b Computerisation of Registration

Registration of documents is one of the biggest activity of every state in India, as the registration process is cumbersome in nature and due to that reason every state lost a huge revenue annually. From Mughal period or British or in Zamindari system India had experienced several types of tenure systems and land was treated as a steady source for revenue collection. Now the time and nature of land administration have changed widely, governments not just treated land as revenue-earning machinery but imposes focus on strengthening its management. Authors and experts have expressed their concerned about different departments who deals with land and

no integration between their offices which causes difficulty for any developmental plans. To resolve the problem, integration between all land related departments are marked as one of the important features in guidelines or manuals of government programmes. In the guidelines of NLRMP, Department of Land Resources clearly mentioned that integration of the property registration and land records maintenance systems is very important and a necessary step for achieving the goal of maintaining real-time revenue records¹³.

After thirty years of computerisation programme on land administration, some of the states are still using the age-old manual system of registration which results in high rates in corruption and delay. In a report of National Institute of Urban Affairs, New Delhi reveals that The Government of Karnataka collected revenue of Rs. 666.06 Crores in the year 2000-01 before introducing of KAVARI (an integrated computerized system for registration), but after that collection significantly raised of Rs. 3415.2 crores in 2006-07 which proves that E-Governance is not only benefiting the public in getting the documents registered in 30 minutes but also the state collects a good amount of revenue¹⁴. Developing countries like India, where land is inevitable for any plans or projects and it has more importance as far as food-security of the nations is concerned so that fraudulent practices happened very frequently. To stop such practices and active role of intermediaries, government realised that ICTs may play a crucial role by introducing some computer aided system for registration of documents. Now most of states and UTs

¹³ The National Land Records Modernization Programme (NLRMP): Guidelines, Technical Manuals and MIS 2008-09. Department of Land Resources, Ministry of Rural Development, Government of India.

¹⁴ Documentation of Best Practices Volume 2: Urban Reforms Under Peer Experience And Learning (PEARL) JnNURM; National Institute of Urban Affairs December 2009.

are fully/partly using the computerisation system for document registration. It is indeed very important to know that why states are moving from manual system of registration and adopting ICTs, here are some clarifications:

- To provide transparency, reduce time in document searching and hassle free services.
- Calculation of stamp value, registration fees become easier.
- Non-Encumbrance certificates are easy to get.
- Integrated with Land Records - genuine land transactions & keeping records updated

Apart from these, the manual system is erroneous and broaden the scope of corruption as well as governments have faced a huge-loss in revenue collection. Investors are also facing problems of such fraudulent practices. States and UTs are steadily moving from age-old manual systems of registration towards computerisation process. States and UTs like Karnataka, Haryana, Bihar, Andhra Pradesh, Delhi are the best practices states where the computerisation process is taking place in a significant way and citizens are served through e-governance initiatives, however, the system has several drawbacks. In the book of The State and Land Records Modernization, author points out that, introduction of Computer Aided Registration of Deeds and Stamp Duties (CARD) in Andhra Pradesh was expected to remove the age-old process of document registration and reduce corruption but failed to provide, as the traditional actors like deed writer involved in 'deed registration' played as a middleman for the whole process.

In Madhya Pradesh, Department of Registration and Stamps is taking care of documents registration and other related works, follows Indian Registration Act, 1908, Indian Stamp Act (which is amended in 2014 and known as The Indian Stamp Madhya Pradesh Amendment Act, 2014), Madhya Pradesh Stamp Rules 1942. Indian

Registration Act, 1908 tells about the "Registration of deeds and documents" is a concurrent subject under the Constitution of India, but due to administering and technological advancement of the registration process, 100 years old act need to be amended. Secretary DoLR asked that after implementing NLRMP, there has a constant need for amendment of the Act, and after getting recommendations from IGRs and other Departments of states, proposed amendment of the said act is pending before Rajya Sabha. State was also amended Madhya Pradesh Stamp Rules, 1942 which includes e-registration system, e-stamp system, slot booking for registration, etc. for the betterment of registration system and provide a sustainable e-governance facilities.

Madhya Pradesh has started the computerisation process of registration by states own monetary support. Registration department is one of the biggest revenue earning department, consisted of 234 Sub-Registrar Offices and 4 Deputy IGR, which controlled by Inspector General of Registration. E-registration starts phase-wise in five districts namely Anuppur, Balaghat, Tikamgarh, Sehore and Ujjain, after getting successful reports from pilot-driven districts Department rolls out the entire process from 1st July, 2015. To provide 'one step solution' on all kinds of registration of property related works, Department has initiated e-Registration process by introducing SAMPADA (Stamps and Management of Property and Documents Application) for anywhere registration by any individuals.

The application is accessible from the IGR web-portal, consisted several modules for one-time completion of registration process. Any individual easily registered independently or by service-provider or from Sub-Registrar office, after the successful completion of registration process slot booking options is used to book a time slot to visit the Sub-Registrar office to complete the

registration process based on convenience. SAMPADA provides e-stamps facilities to the applicants and they can get online stamp duty from a financial organization like Bank, Post Office, etc. after online check of property value for the same unit. After checking all documents, photographs are taken from web-camera and biometric of all the transacting parties are captured.

Project of computerisation of 234 SROs is out-sourced by the Department, but data entry of valuation details is done by in-house departmental staff. Property valuation updates once in a year for the state. Data entry of legacy encumbrances for consecutive 13 years is in the progress. As per the guidelines of DoLR on NLRMP components depicts that after online registration of documents, applicant can apply for online mutation, that provision is not successfully implemented in the state.

5.c Survey of Districts of Madhya Pradesh and Preparation of Digital Land Parcel Map

Under NLRMP guidelines all states and UTs are advised to update maps and land records by using modern technologies of survey, which provides mirror images of ground reality. Modern technologies like satellite images, aerial photography, electronic total station, global positioning systems are used to provide real scenarios of field and ensure true depiction of cadastral maps and land records that would help to reach the stage of conclusive land titles. Most of the states did not have proper act or rules on survey and settlement operation that's why land surveying and updating of maps have not done adequately, only West Bengal has one dedicated department for regular surveying of lands and updating records. Survey of land and keep updating records both are integral parts for any sustainable developments, however cadastral survey is one of the oldest mechanisms for ownership of land. Land is a

subject which natures are changes over time, thus surveying of lands to capture changes in real field is a subject of necessity. Under the flagship programme of Govt. of India, survey of land is defined as a crucial component that's why Central Government bears all expenses on survey or resurvey.

Before independence different regions of Madhya Pradesh experienced different tenure systems and follow different types of survey mechanisms, but from 1975 state was initiated survey (settlement) operation in accordance with Master Plan of Survey and Settlement Operation. Though the plan was very clear to conduct fresh survey of district land to updating land records and maps, but due to strong resistance from people's it was suspended. In MP most of the districts have been surveyed under British rule (Table-13), cadastral maps never been updated and records are 70-80 years older. From 1975 onwards resurvey was undertaken in a phase-wise manner for 10-11 districts in the state, but failed to achieve the ultimate goal. As a result, it impacted to the slow economic growth. It makes very clear from the table that a large part of the state were not been even surveyed. Thus, land records were failed to capture the changing dimensions of land and its conversion rate.

Table 13: Last cadastral survey/re-survey undertaken in Districts of MP

Sl.	District	Year in which the last cadastral survey/re-survey was undertaken	
1.	Sheopur	1948	
2.	Morena	1948	
3.	Bhind	1944	
4.	Gwalior	1932	
5.	Shivpuri	1923	1975-76

6.	Guna	1927	
7.	Ashoknagar	1927	
8.	Datia	1935	
9.	Dewas	1939	1993-94
10.	Ratlam	1945	
11.	Shajapur	1929	
12.	Agar Malwa	1929	
13.	Mandsaur	1944	
14.	Neemuch	1944	
15.	Ujjain	1927	1986-87
16.	Indore	1938	
17.	Dhar	1936	
18.	Alirajpur	1925	1977-78
19.	Jhabua	1925	1977-78
20.	Khargone	1928	
21.	Badwani	1928	
22.	Khandwa	1903	1975-76
23.	Burhanpur	1903	1975-76
24.	Bhopal	1917	
25.	Sehore	1917	
26.	Raisen	1928	
27.	Rajgarh	1954	
28.	Vidisha	1950	
29.	Betul	1928	
30.	Hoshangabad	1928	
31.	Harda	1928	
32.	Sagar	1928	1976-77
33.	Damoh	1928	1975-76
34.	Panna	1937	1975-76
35.	Chhatarpur	1936	
36.	Tikamgarh	1927	
37.	Jabalpur	1926	1977-78

38.	Katni	1926	1977-78
39.	Narsinghpur	1926	
40.	Chhindwara	1926	
41.	Seoni	1926	1976-77
42.	Mandla	1926	1977-78
43.	Balaghat	1928	
44.	Dindori	1926	1977-78
45.	Rewa	1923	
46.	Singrauli	1906	1976-77
47.	Sidhi	1906	1976-77
48.	Satna	1936	
49.	Umaria	1915	
50.	Shahdol	1915	
51.	Anuppur	1915	

Source: Settlement Commissioner and Land Records, Gwalior

In MP, Settlement Commissioner and Director Land Records is responsible for survey/re-survey of lands and updating cadastral maps and RoRs. In Chapter-10 of MP Land Revenue Code-1959, survey and other works are mentioned as per the rule of Govt. of MP, other Acts are Land Records Manual Complementary Instructions for Survey and Kanapurti and Revenue Book Circular also been followed for any jurisdictional reference of survey/re-survey, boundaries between villages, survey numbers etc.

Activities have taken up for Survey/ Re-survey: After implementing NLRMP with active monetary support from Central Govt., state have started the process of district survey and prepares digital land parcels map in phased wise manner. In NLRMP manual, survey or re-survey can be taken by two interrelated methods one is pure ground method by using of ETS, DGPS etc and second concept followed by hybrid method of using satellite images, aerial

photogrammetry, ETS, DGPS etc. States like Gujarat, Himachal Pradesh have opted for the first method but in MP they are choosing hybrid method for doing survey to prepare land parcels map and updating records. Under the technical guidance of Madhya Pradesh Agency for Promotion of Information Technology (MAP_IT) and active support of Commissioner Office and District Collectorate, Dept. had outsourced the project, though the monitoring and evaluation is not taken care properly. This inevitable component has been executed by the Dept. in two phases mainly:

- a. Establishment of Control Points across Madhya Pradesh State and
- b. Preparation of most up-to-date GIS compatible land parcel map for Districts of Madhya Pradesh.

Phase: 1- Establishment of control points across state is one of the most important work for doing new survey and of preparation of parcel maps. The whole process for creation of control points followed the concept of whole to part of survey, the primary control points should be established first, then the secondary and tertiary.

Mechanism follows:

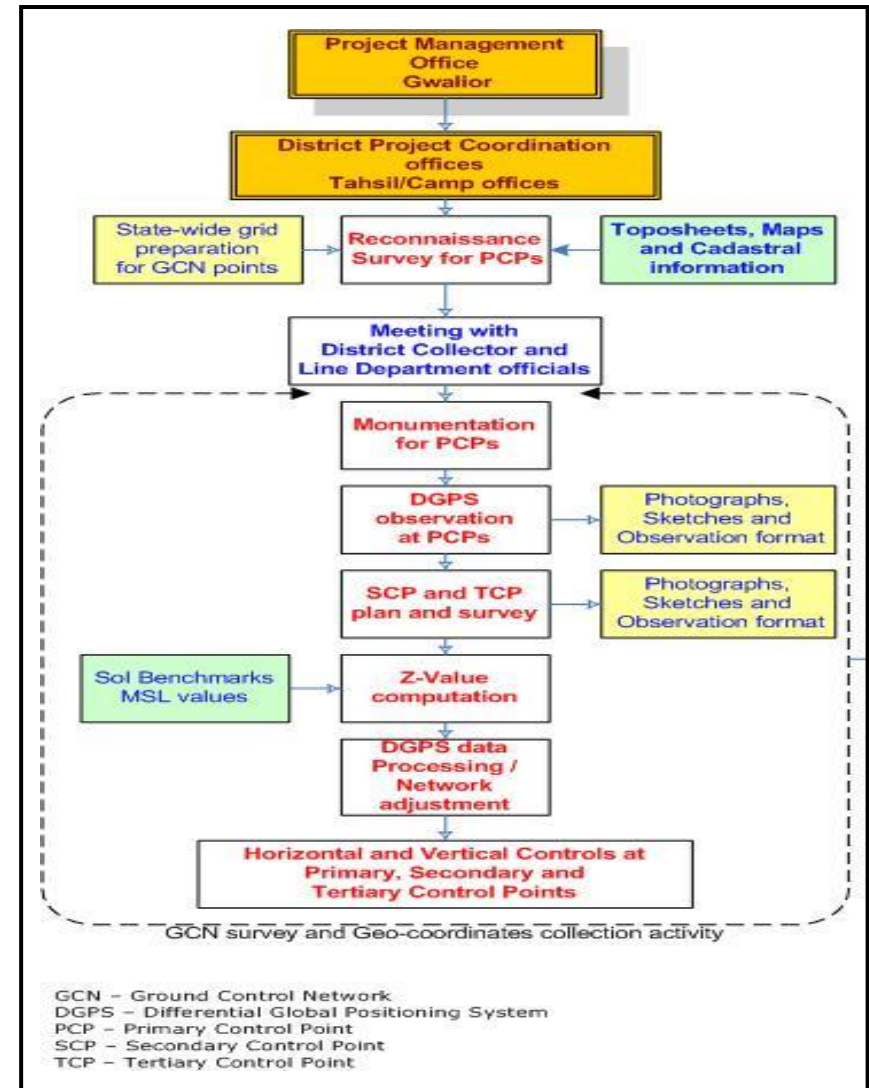
- Establishment and Monumentation of Primary Control Points, Secondary Control Points and Tertiary Control Points on ground
- Pre-signalization of Primary control Points
- Collection and Recording of Attribute information from field.
- The entire State of Madhya Pradesh shall be divided into a grid of 16X16Km, 4X4Km and 1X1Km network.

- Selection of GCP location using satellite Data available on Google Earth GIS Application
- Reconnaissance Survey of Primary and Secondary GCPs
- Monumentation and Pre-signalization of Primary GCPs (size: 25cm x 25 cm x 120 cm, ground fixing: 40cm above ground and 80 cm below ground)
- Observation time for DGPS Measurement of different type of GCPs is, Primary GCP- 72 Hrs Observation, Secondary GCP- 3 Hrs Observation, and Tertiary GCP- 45 Minutes Observation.
- Data Management of GPS/GNSS data
- Data Processing of GPS/GNSS data- Differential Correction and Network Adjustment of GCPs
- Leveling for Z-Value calculation with reference to SOI MSL Values
- Deliverables of GCP Data as per RFP
- Validation of delivered data

Figure 11: Pillar of Primary Control Point located in Gwalior District



Figure 12: Process Flow Diagram



As the project of fresh survey for all the districts of MP has driven by vendors, so it's been done in time bound manner. Dept. has posed provisions for further checking of GCPs and its accuracy from the third party evaluation, but still the progress is lagging behind. The process of ground control points network creation has started, but due to the large geographical extent of the state, it needs more time to complete. As they have proposed for complete modern survey of 55305 villages of 50 districts of the state, comprised 202874.99 sq.km of rural area, 10677.63 sq. km of urban and 94689.38 sq.km of forest areas. Under this scheme, department has also proposed for a survey of 377 no. of cities and municipal areas to prepare city-survey or municipal GIS maps.

Phase: 2- Preparation of land parcel maps and updating RoRs is another most important works to achieve the goal of updated land records and transparent land administration. To execute this work department had choosing hybrid method usage of stereo high resolution Multi-Spectral Satellite images, Pan Sharpened to have 50cm resolution or higher, DGPS and ETSM to be used for agricultural land and abadi land in villages as well as urban land. Preparation of land parcel map through high resolution images and ground control points is tedious task to do as the number of districts and area of the state is so big, so it may take a long time to complete. After completion of ground control network, following steps are followed by the vendor to execute the second phase of this project:

- Processing of Satellite Images to remove any sort of errors, DEM Generation and Orthorectification of images
- Feature capturing with reference to Ortho-rectified Satellite Images and existing cadastral map.
- Identification, Establishment and Monumentation of Auxiliary Control Points on ground as per requirement of field survey for achieving the required accuracy levels.

- Collection and Recording of Attribute information from field.
- Geo-referencing and overlaying of Existing Digital Map on the newly generated map data, ortho-rectified satellite imagery.
- Preparation and Distribution of Draft Land Parcel map
- Conduct Public Interaction Sessions.
- Preparation and Delivery of Final Digital Land Parcel

Survey/re-survey and updating survey and settlement records are one of the main component of NLRMP to provide guaranteeing titles of land to the owners. Phase 1 and 2 has integrated by the department to execute the component more vividly, as it has provisions for conducting gram sabha (Public interaction) to resolve any sort of land boundary disputes which is indeed useful to prepare non-erroneous land record generation. Department had mentioned every aspect of survey and updating land records in their RFP (Request for Proposal) and asking for vendors through a tender process, that contains not only the technical part but it also includes provisions like gram sabha or public interactions.

Mechanism follows: Technical experts are used satellite images to capture land parcels and updating with their old records and further ground survey to check the accuracy levels. After the successful completion of updating maps vendors are asked to collect additional information like digital photograph of the owner(s)/aadhar no. /voter id no. and tagging it against the new parcel number, digital fingerprints of the owner(s) and tagging it against the new parcel number, type of land, details of soil type, cultivable area, land irrigation details, ownership type, crop details, crop irrigation details etc. which are useful to prepare RoRs. Preparation of draft land parcel maps which consists of amount of information like old and new boundary, old and new area, etc. Integration of information

with updated maps; agencies are delivered to the competent authority for checking then supplied to the owners for further verification and asking for comments. The vendors conducted public interaction sessions along with the competent department officials to refine the database as well as to resolve issues to the extent possible. Involvement of PRIs and citizens of the villages has taken part in the public interaction sessions, whereas members from government officials and technical team members are also taking part in the interaction session. As per the MP Land Revenue Code and its subsequent amendments, during the interaction sessions if owners have no such issue on his newly surveyed boundary, area and other details; the approval statement or Certification of No Objection” noted in the Register, if owners are found mismatch of their boundaries in updated maps and mismatch of the area from the old records the issue shall be referred to be recorded in the “Disputed Register”. In accordance with the Madhya Pradesh Land Revenue Code and Related Acts & Rules, the competent authority shall suggest the solution within 3 days after hearing of the issues from all parties concerned; if the decision by the competent authority is accepted by all the parties concerned the dispute case shall be marked as closed and if it is not accepted then it shall be marked as pending.

According to the scope of work which had been given to the vendors is quite transparent in nature and there have enough provisions given to the involvements of Panchayati Raj Institutions as well as common peoples to raise their voice, but ground reality is far away from this. Modern survey to prepare updating records and maps in MP are progressing in a slow manner, out of 51 districts, only 16 districts have completed the phase-1 (Establishment of control points), whereas in 2 districts the work is under progress (Table-14).

**Table14: Status of Survey/Re-survey in Districts of MP
(As on April 2015)**

S. No.	Name of the district	Methodology used for the survey	Status of the re-survey	No. of points established			No. of final maps updated and delivered	Has it been published in the gazette	Aam Sabha conducted (Yes / No)
				#P	#S	#T			
1	Sheopur	High Resolution Satellite Imagery + ground truthing	GCP collection Completed	24	245	2771	No Started	No Started	No Started
2	Morena		GCP collection Completed	17	250	3244			
3	Bhind		GCP collection Completed	17	300	3,860			
4	Gwalior		GCP collection Completed	17	233	2512			
5	Shivpuri		GCP collection Completed	36	503	5350			
6	Guna		GCP collection Completed	28	361	4801			
7	Ashoknagar		GCP collection Completed	19	270	3726			

8	Datia	GCP collection Completed	9	149	2,257
9	Shajapur	GCP collection Completed	15	197	3229
10	Agar Malwa	GCP collection Completed	11	150	2316
11	Ujjain	GCP collection Completed	20	383	5738
12	Bhopal	GCP collection Completed	10	161	2586
13	Sehore	GCP collection Completed	25	397	4990
14	Raisen	GCP collection Completed	32	442	5706
15	Rajgarh	GCP collection Completed	23	385	5778
16	Vidisha	GCP collection Completed	28	466	6259
17	Dewas	GCP collection in progress	30	227	0
18	Ratlam	GCP collection in progress	0	1	610

#P = Primary Points, #S = Secondary Points, #T = Tertiary Points

Source: Settlement Commissioner and Land Records, Gwalior

Phase-2 of this project, for generation of updating records is not completed in any districts of the state. It is also been examined that vendors are working to complete the first phase of control points generation but lack of trained manpower who understand the basic aim of the project and proper monitoring is not done on regular basis which are the most acute problem to execute the programme on time bound manner. Survey and settlement operation cannot be done only through technological advancement, it is an inevitable part for administration as well as citizens socio-economic perception. So there must be a bridge for evaluation this component on both techno-socio perspectives, if competent authority only involves vendor to utilize the fund; common citizens will be deprived to get the real benefits of the programme.

5.d Web Based GIS Solution for Managing Land Records in Madhya Pradesh

Department of Revenue, Govt. of MP has taken initiatives for converting the current activities of the departments into an e-System, though Department had started web-portal for providing online services on land records and maps by introducing Bhu-Abhilekh in 2003 and Bhu-Naksha in 2011 respectively. Aiming to provide transparent administration, minimize scope of land/property disputes, and facilitate moving eventually towards guaranteed conclusive titles to immovable properties, Commissioner, Land Records & Settlement, MP has taken initiative for the development of "Enterprise Web based GIS Solution for Managing Land Records" through Public-Private Partnership (PPP) model. Earlier updating land records and maps had been served to citizens through NIC developed software called Bhu-Abhilekh and Bhu-Naksha, but to provide all land related services in a single system. Department has developing web based GIS Solution caters to computerization of mutation, land diversion & updating of land records (Cadastral

Maps, RoRs & Khasra etc) & distribution of digitally signed copies of RoR (Record of Rights) having legal sanctity along with details of plot boundaries to the landowners on demand at reasonable charges. Department was trying to start this solution from 2008-2009, but due to political barriers, approval and financial questions they have finally prepared the draft design of this project in 2012 and rolled out in the entire state in phase wise manner. Department has started Pilot level evaluation for five districts and after getting positive reports they has rolled out for the entire state from July, 2015.

The main objective of Enterprise Web based GIS solution is to transform the existing system of land records maintenance using ICT (Information, Communication & Technology) thereby ensuring efficient, accurate and transparent delivery mechanism and conflict resolution in ownership of land.

The key objectives of project are:

- Reengineering of Master database storing details on land, crop, revenue, irrigation, demand, collection, land type etc.
- Maintain all records in integrated digital form in a central repository
- Integrating land records data with spatial data to achieve inter-operability and creating a comprehensive land records database
- Maintain and disseminate authentic and real-time land-related information to assist in developmental planning, welfare activities and levy of land-related taxation.
- To focus on citizen-services which will ensure true implementation of e-governance at the grass root level and in a cost-effective manner with efficiency and easy accessibility.
- Issuance of smart cards to the owner, “e-Bhu Adhikar avam
- Krin Pustika” on demand.

Project Architecture: An Overview

The solution provides an enterprise-class GIS platform based on Java, Open Standards such as WMS, WFS, and WCS from Open Geospatial Consortium implemented using Geo-Server & Oracle Spatial Relational database. The solution is been designed through inter-operability with the department infrastructure by using standards such as OGC (Open Geospatial Consortium). The solution is implemented by utilizing Geo-Server for the spatial analysis and visualization through standardized workflows. The MAP Viewer is based on HTML5 and JavaScript utilizing Open Layers Mapping API to provide advanced Web mapping capabilities for rich, user-centric web and mobile applications. The solution is based three tier based technologies i.e. presentation layer for user group, application for administrator group and database layer for managing all kinds of databases (Fig-13).

Figure 13: Application Architecture & Delivery of Services

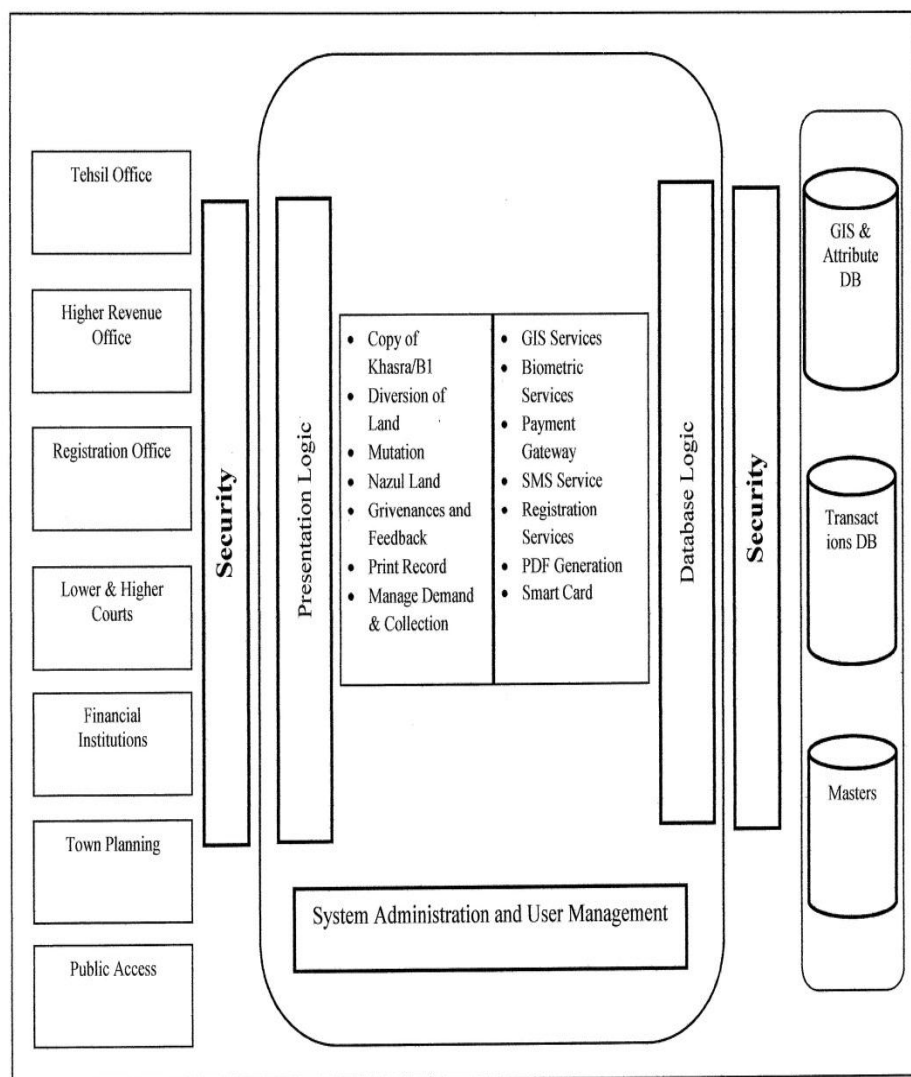
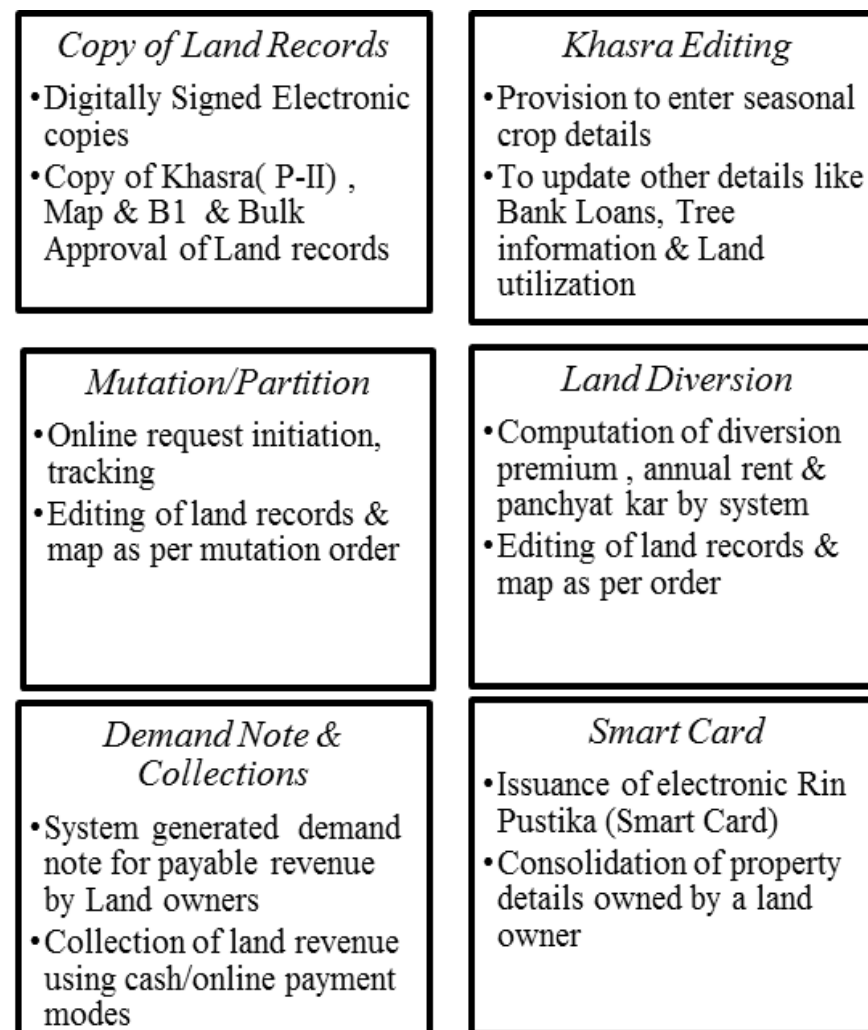


Figure 14: Application modules and services offered through web-GIS



In Madhya Pradesh, all digitized maps and updated records are been used as a common database for web based solution. Online mutation is also possible by using this solution, online request initiation and tracking for new mutation demand and editing as per the mutation is done automatically, [for better understanding of mutation process mechanism followed in the said solution refer (Annexure-Mutation)]. Before implementing web-GIS platform to integrate all land related services in MP, citizens are getting maps and records through previously developed software, but the solution is developed aiming to modify records online instantly. The solution helps not only citizens but definitely to the other department who deals with land records like; Financial Institutions, Town Planning Departments, Registration Department, Courts (Revenue and Civil), Statistics department of CLR etc.

Table 15: Web-GIS Project Status (As on June, 2015)

S. No.	Activity	Districts	Status Completed	Remarks
1	Development	51	Completed	Enhancement In Process
2	Data Migration		22 (154 Tehsils)	
3	Digital Signature		10 (68 Tehsils)	
4	Copy of Khasra/B1/Map		4(23 Tehsils)	Live Districts (Gwalior, Bhopal, Jabalpur & Shivpuri)
5	Khasra Editing		7	Live Districts (Gwalior, Bhopal, Jabalpur & Shivpuri)

6	Mutation Batwara		4(23 Tehsils)	Live Districts (Gwalior, Bhopal, Jabalpur & Shivpuri)
Web-GIS is proposed to be available for all 51 Districts of MP from July 1 st 2015, to provide all types of services; http://mpbhulekh.gov.in/				

Source: CLR Gwalior, MP

5.e Training and Capacity Building

For the success of National Land Records Modernization Programme (NLRMP) initiatives and transparent land records methodology, relevant training and capacity building has to be done for all department officials on a mass scale. Under the NLRMP guidelines, Department of Land Resources put similar importance on training and capacity building as other component like computerization of land records or registration, aiming to provide quality training and build capacity of staffs and officers of land departments. As most of the staff are not well aware or trained on the modernized technologies or even handling computers, for that reason training to officials on different aspect like operating the system of online mutation, survey land boundaries with modern equipments, updating land records etc. are proposed to be given with the monetary support from the Govt. of India. Under the NLRMP guidelines states and UTs given mandate to train each level officers i.e. heads of the departments, their offices and staff, master trainers and field-level functionaries including the surveyors, village accountants and other revenue staff on handling systems efficiently. This is one of the inevitable components of this programme for effective maintenance and sustenance, but most of the states are not effectively utilised, as a result they are

facing problems to operate and execute each and every component efficiently.

In MP, NLRMP Centre /Cell established at State Level Training Institute, Gwalior and RCVP Noronha Academy of Administration, Bhopal. In every year Patwari Training School (Morena, Sehore, Rewa, Khargone, Balaghat, Sagar, Jabalpur, Ujjain, Hoshangabad), Revenue Inspector Training School (Indore & Umaria) and state training institute in Gwalior quality training has been provided to the probationer officers (IAS, Dy. Collector, Tehsildar, Naib Tehsildar, Superintendent of Land Records & Assistant Superintendent of Land Records) along with this root level officials like Patwari, Revenue Inspectors & Data Entry Operators are also being provided quality training on different aspect of technologies evolved in land records modernization. Dedicated institute also provides training to the newly enrolled officials not only on thorough theoretical grounding of land revenue code, settlement operations, issuance of certified copies, handling land records etc. but also on modern equipments like ETS, GPS, database management systems. Apart from that Department are also arranged training programmes in divisional and district head quarters as per requirement to resolve the basic problems. Official including field staff are trained on different aspects on land records modernization (Table-16), but no such trainings of Panchayat members, NGOs, citizens etc. has been provided by the department officials till today which will effects on citizens awareness about the scheme. Whereas it has been well understood that without active involvements of PRIs, NGOs or common citizens on any land related matter or whatever modernization took place; could not be successful.

Table 16: Status of Last Three Years Training and Capacity Building of MP under NLRMP (As on December 2014)

S. No.	Year	Category	Duration of Period	No. of Trainees
1	2014-15	Revenue Inspector Patwari	5 Days	46 12
		Patwari		86
		Superintendent of Land Records Asst. Superintendent of Land Records Revenue Inspector Patwari	5 Days	1 5 2 23
		Revenue Inspector Patwari	5 Days	9 26
		Asst. Superintendent of Land Records Revenue Inspector Patwari	5 Days	5 4 20
		New Enrolled Patwari	9 months	240
2	2013-14	Asst. Superintendent of Land Records Revenue Inspector Junior Data Entry Operator Patwari	9 Days	2 3 2 23
		Asst. Superintendent of Land Records Revenue Inspector Patwari	12 Days	1 7 58
		Revenue Inspector Patwari	12 Days	19 53
		Superintendent of Land Records Pargami Revenue Inspector Patwari Anurekhekh	10 Days	2 2 14 21 1

		Revenue Inspector Patwari	10 Days	5 9
		Revenue Inspector Patwari	6 Days	10 27
		Assistant Collector Deputy Collector	12 days	9 25
		Assistant Collector	12 Days	15
		Indian Administrative Service State Administrative Service	21 Days	25 25
		Asst. Superintendent Land Records	1 Months	3
		New Enrolled Patwari	9 Months	801
3	2012- 13	Nayab Tahsildar	21 Days	42
		Nayab Tahsildar	15 Days	63
		Asst. Superintendent of Land Records	3 Months	34
		New Enrolled Patwari	9 Months	1804
		Nayab Tahsildar	18 Days	42
		Superintendent of Land Records Revenue Inspector Patwari Anurekhekh	18 Days	1 9 5 4
		Nayab Tahsildar	12 Days	63

Source: CLR, Gwalior, MP

6. MAJOR FINDINGS

Under land records modernization schemes from different governments, state has implemented many of them but due to improper training and awareness about the computerization most of the schemes are not been able to achieve the goal of transparent and easy services to citizens. In Madhya Pradesh two nodal departments who dealt with land record activities has used the ICTs properly as they had given most of the instrument of land records modernization

like registration, survey and settlement operation, updating of records etc. to the corporate vendors. The basic problem occurs when tehsil staff are used vendor-develop solution to provide citizen services such as issuance of computerized RoRs, if any technical problem arise they behave like helpless due to their less involvement and improper training, so ultimately the service delivery on time bound manner is delayed. Not only training, but quality training on each and every components of computerized process to all staff and officials would be mandatory. However, department has mentioned in their respected tender document about the training would be given by the vendors to the in-house officials and staffs but the problem still persists. In any nation, citizens has their deepest emotion over their land, it is suitable for the success of any schemes or programmes regarding land management and its administration, that active involvement of local communities should be higher for that reason DoLR put such provision on their guideline to conduct aam sabha/gram sabha to manage the scheme properly. But in Madhya Pradesh vendor driven programme has no such scope to train local communities, it would be miserable for states land administration in near future. It is recommended to provide quality trainings to the field level staff and officials and monitor on regular basis, number of training staff should increase and evaluation on regular basis for the trained staff which are necessary measure and should take by the department at earliest possible for the sustainable and effective management of the programme. Role of state level NIC (National Informatics Centre) is inevitable to ensure percolation of technology to the district level, from where it would be transferred to the village level and generates capacity of human resources to handle the project productively, but in the state, role of NIC is not adequate on land record modernization or to provide quality training.

7. CASE STUDY OF SEHORE AND HOSHANGABAD DISTRICTS

District Sehore was a part of Bhopal estate, and after formation of MP the state capital Bhopal was a part of the Sehore Dist. In 1972 it was bifurcated from Bhopal. It extends from lat 22031' to 23040' and long 76022' to 78088'. The total geographical area of the state is 6578 square kilometer covered most part as rural area. Urban population is 18.95% as per 2011 census and rural population 81.05%.

Table 17: District Sehore at a glance

Population (2011)	1379131
Growth	18.22%
Sex Ratio	982
Literacy	72.12
Total Area (km ²)	6578
Rural	4625.42
Urban	243.443
Forest	1709.14
Density (/km ²)	199
Tehsils	8 Nos. (Sehore, Ashta, Ichhawar, Budni, Nasrullahganj, Shyampur, Rehti, Jawar)

Hoshangabad district lies in the central Narmada Valley and on the northern fringe of the Satpura Plateau. It lies between the parallels of 22 degree 15 minute and 22 degree 44 minute east. The total geographical area of the state is 5408.23 square kilometer covered most part as rural area and total forest area lies 2229.74 sq.km. Hoshangabad district has 923 villages and 4 Municipalities, total populations of Dist. is 12, 40, 975 from which rural population is 8, 51,126 and urban population is 3, 89,849.

Table 18: District Hoshangabad at a glance

Population (2011)	570465
Growth	20.25%
Sex Ratio	935
Literacy	72.5
Total Area (km ²)	6698
Rural	4625.42
Urban	243.443
Forest	1709.14
Density (/km ²)	185
Tehsils	8 Nos. (Seonimalwa, Itarsi, Hoshangabad, Babai, Sohagpur, Pipariya, Bankhedi)

Both the districts faced a steady growth of population as well as urban area expansion. Therefore land administration and management is essential for all districts of MP, including these two. These two districts are in the part of the National Land Records Modernization Programme. Current status of each NLRMP components is as follows;

A. Computerization of Land Records: Sehore is one of the successful district of MP with 100% computerization of RoRs across all eight tehsils namely Sehore, Ashta, Ichhawar, Budni, Nasrullaganj, Rehti, Shyampur and Jawar. Total 1058 villages in the district having 715719 khatiyans are all computerized. But the mutation process is still operation and takes huge time to complete. Hoshangabad is also computerized all RoRs (489083), of 913 villages of 8 tehsils.

Table 19: Computerization of Land Records in Sehore

Sl. No.	Name of the Tehsil	Total No. of Villages	RORs Computerized (No.)
1	Sehore	159	127005
2	Ashta	200	159107
3	Ichhawar	152	97715
4	Budni	90	43785
5	Nasrullaganj	126	67237
6	Rehti	97	41330
7	Shyampur	146	101431
8	Jawar	88	78109

Table 20: Computerization of Land Records in Hoshangabad

Sl. No.	Name of the Tehsil	Total No of Villages	RORs Computerized (No.)
1	Seoni Malwa	174	94279
2	Itarsi	123	72100
3	Hoshangabad	48	33561
4	Bawai	109	69827
5	Sohagpur	145	61566
6	Pipariya	138	60201

7	Bankhedi	125	63881
8	Dolariya	51	33668

B. Digitization of Cadastral Maps: Both the district has faced the same problem of bad condition of cadastral maps and that's why it delayed the districts cadastral map digitization and updating land records process. But still department and district collector office are keeping their effort on digitize each and every cadastral maps of districts. In Sehore dist. out of 2766 cadastral maps only 1058 maps has been digitized, which means less than 40% maps are available to make integration of maps and RoRs, whereas the updation of records through cadastral maps has not been completed till December 2014. In Hoshangabad dist. the cadastral maps digitization process is worse than Sehore, though it is very nearest to the state capital Bhopal. In this Dist. out of 1956 cadastral maps only 826 maps are been digitized till December 2014. The ratio of total number of cadastral maps and digitized maps (Figure-15) is shown that both districts the development is not so high, however huge money and time has been already spend.

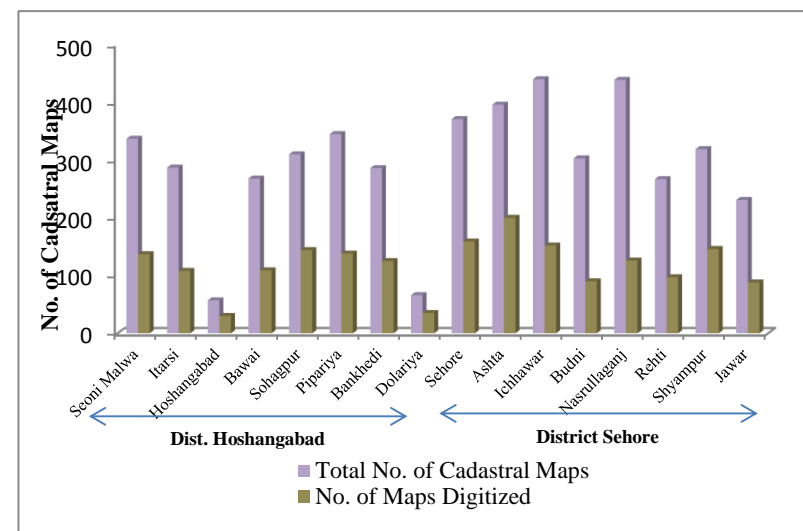
My observation from the field visit is, due to the improper management of records and maps in tehsil and district records rooms, databases were not maintained properly in record rooms so that the digitization process for both the districts is still being a tedious work to do. Another point is viable that maps are not been still geo-referencing, so that integration or mosaicing of all village maps still not possible. Transactions of land through sale-purchase and other ways have been done very frequently in both the districts, but maps and records are not renewed on regular basis, so that records did not reflects the ground reality, which

creates a big problems for the entire districts land administration and its management.

Table 21: Digitization of Cadastral Maps in Dist. Hoshangabad & Sehore (Data as on Dec-2014)

District	Name of Block/ Tehsil	No. of Cadastral Maps	Maps Digitized (No.)	Geo referencing done	Cadastral Map Linked with RoRs	Cadastral Map Updated with RoRs	Last Updation
HOSHANGABAD	Seoni Malwa	337	137	No	137	In Process	On Regular basis
	Itarsi	287	108		108		
	Hoshangabad	57	30		30		
	Bawai	268	109		109		
	Sohagpur	310	144		144		
	Pipariya	345	138		138		
	Bankhedi	286	125		125		
	Dolariya	66	35		35		
SEHORE	Sehore	371	159		159		
	Ashta	396	200		200		
	Ichhawar	440	152		152		
	Budni	303	90		90		
	Nasrullaganj	439	126		126		
	Rehti	267	97		97		
	Shyampur	319	146		146		
	Jawar	231	88		88		

Figure 15: The ratio of maps digitized to total number of cadastral maps in Hoshangabad & Sehore Districts



C. Survey/ Resurvey and Updating of Survey & Settlement Records: The entire state of Madhya Pradesh, the important component like survey or resurvey for updating settlement records is bit slow for so many reasons like; political will, administrative processes and mass protest of citizens as they thought that new survey and preparation of new records would be a blunder for them, basically less awareness of the process is the prime reason for delay the entire work. In both the districts where last survey were taken place in almost 100 years back, till then no such well-developed survey had taken place, but after the NLRMP implementation state has started the resurvey process for all districts of MP by modern techniques. From 2012 new survey has taken place, however it

needs almost another two three years to complete. Last survey by using traditional method was undertaken in Sehore and Hoshangabad in 1917 and 1928 respectively (Table-22). Under NLRM Programme both districts are in the first stage of survey operations that is to GCP creation, updated map preparation and RoR updating stage are far away from completion. District administration of both districts has very keen to complete the entire project within this financial period. Public awareness camp and necessary action were also taken up from the district administration to implement and complete the project timely, though several issues has been raised as far as resurvey and preparation of updated land records are concerned.

Table 22: Status of Survey/Resurvey in Dist. Sehore & Hoshangabad (As on December 2014)

Dist.riect	Tehsil	Last Survey Undertaken (Year)	Area under resurvey	Methodology used	Cost per Sq. Mtr.	Expected date for final output	Ground control point set up
Sehore	Sehore Ashta Ichhawar Budni Nasrullaganj Rehti Shyampur Jawar	1917	6578.00	GCP network, high resolution satellite imagery & ground truthing	a. GCP Network- Rs. 1801.13 b. Preparation of Map & RoR Rs. 10909.03 c. Procurement of Satellite Imagery 37\$	Digital map and RoR will be completed in the year 2016-17	GCP networking would be completed in year 2015-16

Hoshangabad	Seoni Malwa Itarsi Hoshangabad Bawai Sohagpur Pipariya Bankhedi Dolariya	1928	6707.00				
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NLRMP Infrastructural Support Status: Apart from the components like digitization of cadastral maps, online registration, integration of land records etc. infrastructural components like creation of record room to store records and maps safe and easy to retrieve, creation of data centre for store all kind of land related transactions, report etc. are played an crucial role for the successful implement of the programme. Both the districts has utilized its central as well as well as state funds related to the generation of infrastructural support for NLRMP (Table-23).

Table 23: NLRMP Infrastructural Support: Physical and Financial

Particulars Districts	Modern Record Room	NLRMP Cell	District Level Data Centre	Tehsil Level Data Centre	Funds Received		Funds Utilized	
					Component	Rs. in Lakhs	Component	Rs. in Lakhs
Sehore	Completed in all 8 Tehsils	Bhopal and Gwalior	Established	Completed in all 8 tehils	MRR	187.50	MRR	165.03
					NLRMP Cell	537.17	NLRMP Cell	510.47
					DLDC & TLDC	5168.46	DLDC & TLDC	5168.46

Hoshangabad	Completed in all 8 Tehsils	Established	Completed in all 8 tehsils	MRR	206.25	MRR	163.74
				NLRMP Cell	537.17	NLRMP Cell	510.47
				DLDC & TLDC	5168.46	DLDC & TLDC	5168.46

MRR- Modern Record Room, DLDC- District Level Data Centre, TLDC- Tehsil Level Data Centre

Key Observations:

1. In both the districts e-district centres are available to provide instant service delivery to the citizens; however citizens are not well aware of it.
2. There is acute shortage of man-power; due to this the entire process has been driven very slow in nature.
3. Officer and staff needs to work several other works to do, so that land record management hampers.
4. Training of staff and operators to handle the entire operations is not done properly, so that service delivery process still been time consuming. Quality training to the staff is necessary, as they can handle very easily the complex technicality of new land administration.
5. Vendor driven project of cadastral map digitization and other components should be monitored very closely by the officials.

8. CONCLUSION AND RECOMMENDATIONS

Land plays an important role for nations socio-economic developments, the country like India where the agrarian economy still persist, land considers as the main instrument for country's GDP growth and so many other development factors. Due to the federal structure in our country, land administration and management are done by respective state government by their own efforts and efficiencies; however this topic still neglected even after

seven decades of independence. History of land administration in India portrays that land and its ownership viewed as one of the principal sources of generating revenue. India inherited different types of land administration and management and followed different land revenue mechanisms, rulers were not keen to develop land records and ownership rights to the common people as land treated as the crown of their dynasty. From that time land records creation and its transparent administration not followed by any rulers, even in British empires, land administration is strengthened for the only purpose of revenue generation. Though during that period survey-settlement operations followed in several princely states, but due to non-uniformity of land laws in states, they were failed to implement effective survey-settlement operations. It is unfortunate that whatever land administration mechanism used in British period, India follows more or less same even today.

Madhya Pradesh is located in the central part of our nation, huge in area and numerous in populations, earlier it was depicted as one of the BIMARU (The term BIMARU – an abbreviation for Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh – was coined by the demographer Ashish Bose (1988)). In spite of being a less developed state, in the field of land administration and management, they are doing exceptionally well from last one decade. Over the years the state has experienced massive pressure by so many factors like demographic situation, political compulsions, forest rights and other socio-political factors, which creates a herculean task for proper administration of land. It must be admitted that political stability helps to strengthen the entire land administration for the entire state, apart from this so many factors like, one dedicated department handles land records and its up-dation and also survey settlement operations, good private outsourcing mechanism etc. are also incorporated for its successful implementation of NLRMP in the state. However, there are ample of weaknesses to provide better

and transparent service delivery of land related cases to the citizens. Most of the components of this programme have been executed by the vendors with little involvement of district administration as well as the nodal department, which leads the departmental staff uneducated on the modernized way of land records management, its updation and computerised delivery mechanism. Registration department has no such involvements with the land records department, which is one of the main reasons for unable to provide a single platform for all kind of land related services to the citizens till today. The state tried several times to initiate land parcel survey and update land records but whatever the reasons behind they could not be able to complete so that land records and maps are still not reflecting ground reality. Though under the NLRM Programme state further proceed for a fresh survey with modern equipment but how much they will be successful it depends on the support from both government and citizens of the state.

Human Development Report of India, 2011 aptly describes that human development determines by ownership of assets and employment by and large. Madhya Pradesh is still counted as low developed states as far as socio-economic indices of human lives are concerned, and which is mostly because of marginal section of societies still deprived of different govt. welfare schemes, lack of credit for the marginal farmers, land reforms and land related schemes were not implemented well etc. Land continues to play a very important role in states socio-economic developments and human growth, so to continue the growth of state GSDP (Gross State Domestic Products), better education, health services, land distribution to the poorer section of society, increasing employment etc. it is necessary to manage and administer well of their land resource. Land record modernization, update land records, fresh survey of all land-parcels and effective settlement operations to minimize the scope of litigations would help the states' sustainable

socio-economic growth. The experience of land records modernization in MP is not sweet not sour in nature. Land records modernization aims to provide authentic property rights to the citizens and also to get accurate land information for state as well the nation to use this natural resource for different developmental aspects and consider for the upliftment of human development. As land records have so many positive factors on humans socio-economic development indicators like land distribution to the land less, creation of land markets, providing e-governance to the citizens for timely and transparent land related services. As of now govt. have no accurate database of government land boundary, encroachment, and common property area, etc. In papers, most of the state administrators claimed that problems of landlessness have been solved in their state, but the reality is different, as govt. allotted land to the landless which are neither arable nor irrigated, so that the landless still being deprived and unemployed. After preparing the accurate land database by successful completion of NLRMP, Govt. may have a proper idea of govt. land area and would be able to distribute to the landless.

Major Challenges faced by the state land administration, are as follow:

1. Three major components of NLRMP are computerization of land records, computerization of registration process and survey-resurvey operations; however dept. of land records and settlement is undertaken major works to execute NLRMP for the entire state, but it needs continuous and effective integration with registration department, as integration between the both department has not been seen and that's why citizens are faced major problems.
2. The role of National Informatics Centre (NIC) to execute, monitoring and evaluation of programmes is essential, but the

involvement of state NIC for any such vendor-driven programmes is not adequate.

3. Control, Supervision, Monitoring and Review of project machinery in widespread geographical mass and a huge number of districts is quite difficult and time-consuming.
4. In MP most of the components are executed by vendors so that the understanding of the programme is lesser amongst the internal staff of the department.

Recommendations

Since last decades, Madhya Pradesh State has put a tremendous effort to modernize and develop authentic land records and has provided good services in land administration to the citizens, but they need miles to go with such effective effort:

1. Survey and resurvey through modern technologies for all the districts of the state should be completed at the earliest point in time. Citizen awareness programmes for building confidence of private land is also necessary. Delayed execution of this component hampers the entire process of updation records and maps.
2. State Level Data Centre (SLDC) should be constructing the Office of Settlement Commissioner and Land Records Office in Gwalior and all the Taluka, Block and District level data centre should be connected with that. All the up gradation has been done by the tehsil or in district level. All kinds of land related documents like ownership, legal status, registration or mutation should also be available in the State Level Data Centre.
3. Online mutation should be instantaneous by which non-litigated property should mutate easily.
4. Capacity Building and training from the lower to upper staff need to be maximized. Department should identify officers and Staffs who should be responsible for the modernization of land

records programme. The persons who understand the programme and policies very well must put their effort only in this work, not in any other works of the by which the trained manpower would be utilized properly in this programme. On different aspects of modernization like the quality of digitization process for both textual and maps data, retrieval mechanism of records from modern records room, online updation of records, handle GPS, ETS for survey operations etc. are need to be trained to the internal staff by the experts.

5. Interconnectivity and good relations with the other departments who worked hard to make this programme successful are much needed. Taluka, District, land records department, Revenue department and NIC should jointly work for the better execution of this Programme.
6. The state should construct a monitoring and evolution team consists of both administrators and technical experts who can advise the nodal department on each and every aspect of land record modernization. Madhya Pradesh is lagging behind because there has no such monitoring team, all the components have been executed by the vendors, the department only checks the outputs in their offices which do not reflect the ground reality and fail to understand the local and regional problems.
7. As the programme is based on district, so the department should start the process to use its own staff to complete each and every component for at least one district, it would be helpful for the department to understand that the staffs are really trained on this issue or not.

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Glossary

Zamindari: Zamindari System was introduced by Cornwallis in 1793 through Permanent Settlement Act. Zamindars were recognized as owner of the lands. Zamindars were given the rights to collect the rent from the peasants

Mahalwari: Mahalwari system was introduced in 1833, in this system, the land was divided into Mahals. Each Mahal comprises one or more villages. Ownership rights were vested with the peasants. The villages committee was held responsible for collection of the taxes.

Izardari: Farming or contracting for revenue; a cess formerly levied on lands or districts let out in farm for the benefit of the farmer. (DLRTI, p. 98)

Ryotwari: Ryotwari System was introduced in 1820. In Ryotwari System the ownership rights were handed over to the peasants.

Jagirdari: During Kingship, land divided into Jagirs and Jagirdar were responsible to collect land tax from peasants.

Malguzari: The system was prevailed in Madhya Pradesh where the malguzar being an intermediary between the State and the tiller

Patta: a legal document issued by Government to the actual owner of a parcel of land.

Bataidar: Share cropper or holder of a share or part.

Charnoi Land: Common grazing land in a village.

Nazul: Property escheated or lapsed to the state; commonly applied to any land or house property belonging to the government as an escheat or as having belonged to former govt. (DLRTI, p. 162)

Bigha: The standard unit of area; its actual sized varied sharply from place to place during different periods and different states.