CHAPTER-I

PERFORMANCE REVIEW

REVENUE DEPARTMENT

1.1 COMPUTERISATION OF LAND RECORDS (CLR) SCHEME

Highlights

Fully funded by the Government of India (GOI) and technically supported by National Informatics Centre (NIC), the CLR project has been implemented in the State as *Dev-bhoomi*. A performance review of the CLR project with focus on Information Technology (IT) issues was carried out to examine the efficiency and effectiveness in achieving project objectives and deliverables. The main findings are highlighted below:

- ***Only 48 per cent of total land area has been computerised; besides, the khasra is yet to be computerised.***

[Paragraph 1.1.8.1]

- ***Delays were noticed in updation of khataunis; also automatic updation of land records through online mutation was not found to be in vogue.***

[Paragraph 1.1.9.1]

- ***Except in Dehradun tehsil, Touch Screen Computer Kiosks were lying idle for want of installation/proper connectivity/repairs.***

[Paragraph 1.1.9.6]

- ***Certain inadequacies in the software coupled with absence of appropriate input controls resulted in defective and incomplete information.***

[Paragraph 1.1.10.2]

- ***Because of weak access controls, revenue officials below the rank of Registrar Kanoongo and even private operators were found working as 'administrator' having access to 'System Management Module' of the software.***

[Paragraph 1.1.10.4 (a)]

- ***Bio-metric devices though purchased in December 2005, were not found to be installed in any of the test checked tehsils.***

[Paragraph 1.1.10.4 (d)]

- ***Despite funds to the tune of Rs.12.08 crore having been provided, the Department could not initiate scanning and digitization of cadastral maps.***

[Paragraph 1.1.11.1]

- ***The District Societies were able to utilize only 33 per cent of the receipts generated from distribution of RORs; the TDCs suffered from day-to-day problems relating to operation and maintenance.***

[Paragraph 1.1.11.4]

- ***The State Monitoring Cell at Dehradun and District Data Centres in all the five test checked districts were non-functional in spite of installation of hardware costing Rs.44.27 lakh.***

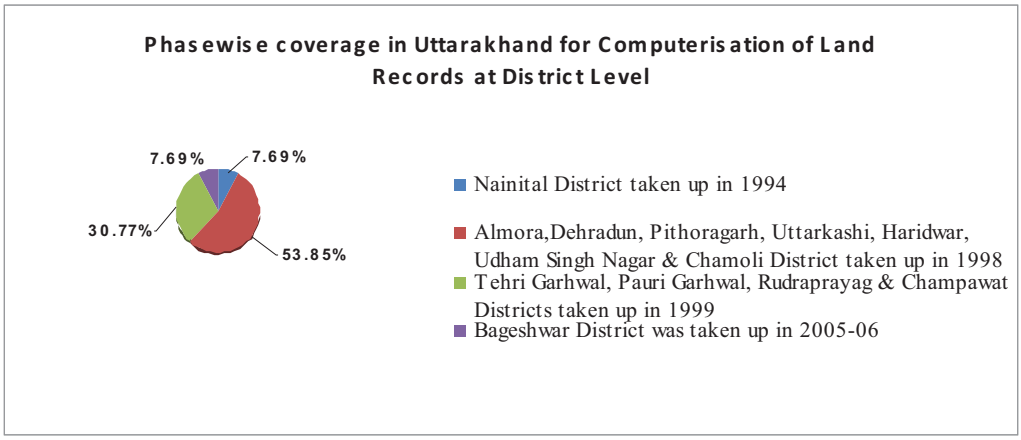
[Paragraph 1.1.13]

1.1.1 Introduction

Ministry of Rural Development, Government of India (GOI) initiated CLR project in 1988-89, as a centrally sponsored scheme for which 100 *per cent* financial assistance was provided to the States. As land records are a State subject, implementation of the project was to be done by the States. The central aim of the project was to remove the flaws inherent in the manual maintenance of land records. The project also aimed at making the maintenance of land records efficient and transparent and improving access to land records.

The year wise implementation of the CLR project at the district level in Uttarakhand is shown with the help of the following pie chart:

Chart: 1.1



After the implementation of the CLR project at district level, it was planned to computerize land records at the Tehsil level. However, concerted efforts in this direction were made only after the creation of Uttarakhand. The computerisation of ZA land[1] records of 84 tehsils was completed in September 2006. The present status of computerisation is depicted in the table below:

Table- 1.1

Name of District	Number of Tehsils	Number of Villages[2]	Villages Covered under CLR	Computerised Khatas/Accounts
Almora	09	2248	2248	179225

[1] Land where Uttar Pradesh Zamindari Abolition Act, 1950 was in force.

[2] A village may have ZA and non-ZA land; however, the CLR scheme has captured the data pertaining to only ZA land.

Bageshwar	05	910	910	41661
Chamoli	07	1256	1256	49222
Champawat	05	691	686	37298
Dehradun	06	788	764	146118
Haridwar	03	639	390	122468
Nainital	08	1093	1062	98861
Pauri Garhwal	09	3477	3477	132733
Pithoragarh	08	1638	1635	85785
Rudraprayag	03	681	681	37894
Tehri Garhwal	08	1848	1835	127502
Utterkashi	06	681	679	55263
U S Nagar	07	684	582	122575
Total	**84**	**16634**	**16205**	**1236605**

Source: Information collected from CRC, Dehradun

There are 429 villages[3] remaining to be computerised, which are under *chakbandi*[4] or *bandobasti*[5].

1.1.2 Organizational Set-up

The State Revenue Department has been designated as the nodal department for implementation of CLR scheme. The organizational setup is given below:

Ministry of Rural Development, Department of Land Resources, Government of India
(Launched the CLR Scheme in State and provided 100 *per cent* financial assistance)

↓

Principle Secretary, Revenue Department, Government of Uttarakhand
(Responsible for planning, implementation and monitoring of the Scheme at Government level)

↓

Chief Revenue Commissioner (CRC)
(Nodal officer for planning, implementation and monitoring of the Scheme at State level)

↓

District Magistrate (DM) assisted by Additional District Magistrate (ADM)
(Responsible for implementation, monitoring and supervision of the Scheme at District level)

↓

Sub Divisional Magistrate (SDM) assisted by Tehsildar
(Responsible for implementation at Tehsil level and smooth running of the Scheme within their jurisdiction)

↓

Registrar Kanoongo (RK) assisted by Patwari (Lekhpal)
{Responsible for field work to feed basic information in computer regarding land records and also issue Record of Rights (RORs)}

[3] 399 villages are under *chakbandi* or *bandobasti* and 30 villages have only non-ZA land.
[4] *Chakbandi* or Consolidation of land holding means amalgamation and redistribution of land in a revenue estate.
[5] Re-survey of land.

National Informatics Centre (NIC) provides IT infrastructure and network facilities. NIC also provides training to the Revenue Officials on the use of the application software.

1.1.3 Scheme Objectives

i) Computerisation of the mutation/updation process of land records and distribution of updated copies of ownership rights and details relating to tenancy, crops, land revenue, irrigation sources etc.

ii) Distribution of computerised copies of Records of Rights along with details of plot boundaries to the landowners on demand at reasonable charges.

iii) Abandoning the manual system of issuance of records of rights once the computerised system is stabilized and according legal sanctity to computer generated certificates.

iv) Levying suitable user charges for the services being offered by the computer centre for sustainability of the scheme in terms of AMC[6], hardware upgradation etc.

v) Integrating land records data with cadastral maps to create a comprehensive Land Information System (LIS).

1.1.4 Software development

Prior to the formation of Uttarakhand, during the period 1997-2000, land record data of all the tehsils was fed into computers at the district level in a Fox-base/UNIX environment. This data was, however, never updated till 2004-05. The old data was later ported onto a Windows based environment and then updated. For this purpose, the '*BHU-LEKH'* application developed by NIC UP was used in the State. In November 2005 the *BHU-LEKH* application was replaced by a newly developed application of NIC Uttarakhand called *Dev-bhoomi*.

Dev-bhoomi is a browser based application which uses three-tier technology to disseminate land records information through internet. The basic features of the software are as follows:

- 3-tier browser-based technology.
- The platform used is Microsoft Windows 2003 on servers and Win-2000/XP on clients.
- Language: ASP.NET/VB.NET
- Framework: .NET 2003
- SQL-Server-2000 is used for the back-end data base.
- Unicode Hindi-compliant (Mangal font).
- Indic Ver-5.0 and Crystal Report are used as third-party tools.

[6] Annual Maintenance Contract

1.1.5 Audit Objectives

The main objectives of the IT performance audit were to assess and evaluate:

- The extent of computerisation of land records in the State.
- Realization of service deliverables envisaged in the scheme in course of implementation of the scheme.
- Compliance with technical parameters during execution.
- Efficacy of data capture, updation, maintenance, security and validation.
- Use of available funds.
- Training imparted to revenue personnel.
- Effectiveness of the existing monitoring mechanism.
- Impact on the beneficiaries of the CLR scheme.

1.1.6 Audit Criteria

The Audit findings were benchmarked against the following criteria:

- Scheme guidelines issued by GOI;
- Provisions of the U.P. Zamindari Abolition & Land Reforms Act as adopted, adapted and modified in Uttarakhand;
- UP Land Revenue Act as adopted, adapted and modified in Uttarakhand;
- Various Government orders and directives issued from time to time;
- Good practices of IT governance.

1.1.7 Scope of Audit and Methodology

This performance review was conducted from May 2009 to July 2009 and covered the period from 2004-05 to 2008-09.

A pilot study of the functioning of the scheme was first undertaken in the office of the Chief Revenue Commissioner (CRC), Dehradun, District Data Centre (DDC), Haridwar and its three Tehsils[7] Data Centres (TDC). Thereafter, an entry conference was held (April 2009) with the Principal Secretary and other officers of the Revenue Department wherein the audit objectives, criteria and scope of audit were discussed.

[7] TDCs at Haridwar, Roorkee and Laksar Tehsil.

Four[8] DDCs out of 13 were selected using PPSWR (Probability Proportional to Size With Replacement) sampling method and eight TDCs[9] out of 84 were selected using SRSWOR (Simple Random Sampling Without Replacement) sampling method for conducting the review. Records at these centers relevant to the CLR scheme were scrutinized in course of the review. Besides, data and information made available by these centres in response to Audit memos and questionnaires were analyzed. Databases of seven tehsils[10] were also examined using Computer Assisted Audit Techniques namely SQL (Structured Query Language) with the help of NIC officials. Audit findings were discussed with the Principal Secretary and other officers of the Revenue Department in the exit conference (September 2009). The replies of the Government have been incorporated in the review at appropriate places.

Audit findings

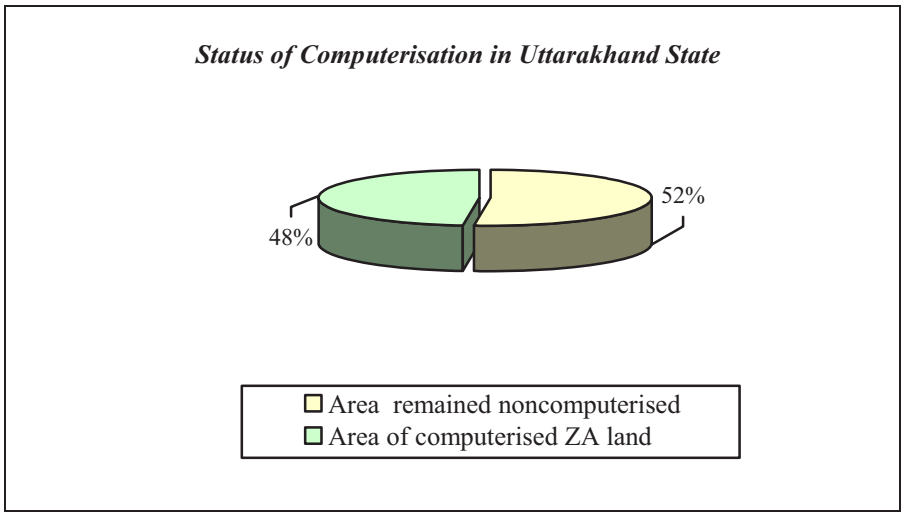
Audit findings from the IT Performance Review are enumerated below:

1.1.8 Extent of Computerisation

1.1.8.1 Partial Coverage

The scheme was implemented to cover only ZA land where the Uttar Pradesh Zamindari Abolition and Land Management Act, 1950 was in force. This constituted 52 *per cent* (1125065.782 hectare) of the total land area (2173982.60 hectare) in the state, which was not covered under the CLR scheme as there was no provision in the software to capture details of such land.

Chart-1.2



[8] DDCs Dehradun, Pauri, Pithoragarh and Udham Singh Nagar.
[9] TDCs at Dehradun, Tyuni, Kotdwar, Pauri, Dharchula, Pithoragarh, Kashipur and Kichcha.
[10] Haridwar, Dehradun, Pithoragarh, Kashipur, Kichcha, Kotdwar and Pauri.

On this being pointed out, it was intimated by department that suggestions have been invited from field offices regarding computerisation of non-ZA land and that required software would soon be developed with the help of NIC.

On being pointed out, the CRC replied that the computerisation of land records pertaining to non-ZA land will be taken under the new reorganized scheme of 'National Land Records Modernization Programme' (NLRMP).

As such, even after 16 years of implementation of the CLR scheme (7 years in Uttar Pradesh and 9 years in Uttarakhand) and an expenditure of Rs.6.60 crore[11], more than half of the land area in the state was still outside the purview of computerisation.

1.1.8.2 Limited Computerisation

Computerisation of land records envisages computerisation of both spatial and non-spatial data. Non-spatial data includes Record of Rights (ROR) or *khatauni*, cultivation data, crop details, and data on soil classification and irrigation. Spatial data includes digitization of cadastral maps, village maps etc.

At present, under the CLR scheme only *khatauni* data is being captured electronically and copies of RORs are being distributed by computer centres. Computerisation of second generation of land record information such as crop and cultivation details, type of soil, irrigation status, land revenue and other rights and liabilities is yet to be taken up.

Besides, no initiatives have been taken for digitization and computerisation of spatial records. This is despite the advantages that digitization of spatial records offers. Digitization allows preservation of old and worn out village and cadastral maps; makes updation fast and efficient; provides composite land records information and allows incorporation of data generated by modern survey equipment.

The Department, despite funds being made available to it as mentioned in *para 1.1.11.1*, failed to take initiatives for computerizing remaining textual land record data and spatial land record data.

NIC has successfully developed Field Measurement Book (FMB) Map plotting software for Tamil Nadu called 'Collabland', which enables translation of measurement data into map forms[12]. It can be adapted to fit the system prevalent in Uttarakhand.

1.1.9 Scheme Implementation

Agricultural land in Uttarakhand is administered under the provisions of the Uttar Pradesh Land Revenue Act, 1901 (as adapted, adopted and modified in 2001 for application in the State of Uttarakhand). A number of revenue functionaries are involved in matters relating to ownership of land and

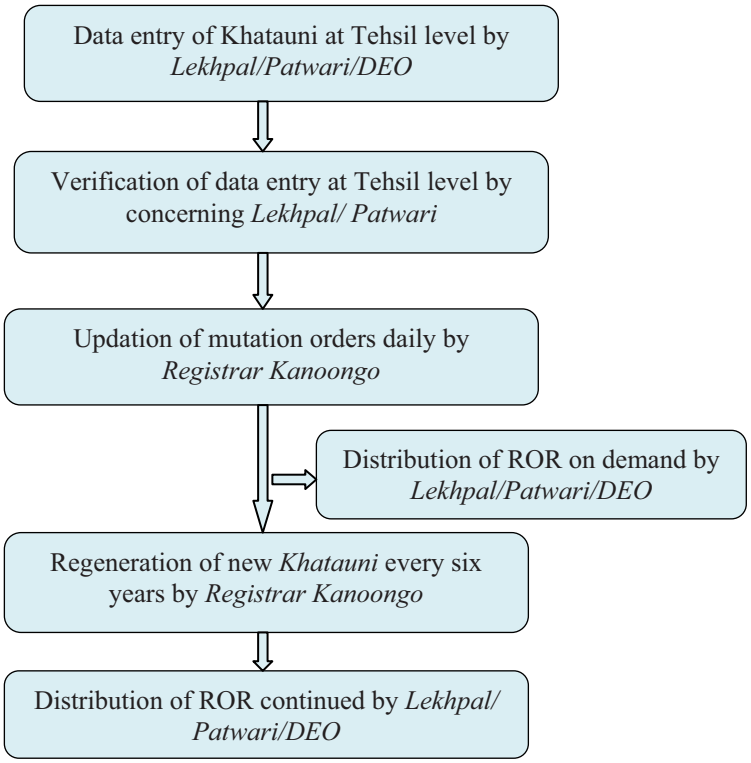
[11] Out of release Rs.85.48 lakh, expenditure of Rs.82.76 lakh incurred when it was part of U.P. and Rs.576.97lakh after formation of new State.

[12] Evaluation of Computerisation of Land Records in TamilNadu by Centre for Rural Studies, Lal Bahadur Shastri National Academy of Administration, Mussoorie.

collection of land revenue. After the computerisation of land records, the basic duties and responsibilities of these functionaries have only undergone minor changes.

Each village is assigned to a particular *patwari*[13] who maintains the record of ownership of land (*khatauni*[14]), record of cultivation of the land (*khasra*[15]), map of the village (*Sazra*) and other records of the village. The work of *patwari* is supervised by *Registrar kanoongo*, who is also responsible for checking village records and statistics. The work of the *patwari* and the *kanoongo* is further supervised by the Naib Tehsildar and Tehsildar. It is their duty to ensure timely and correct preparation of *Khatauni* and other land records.

Computerisation of village *khataunis* has been taken up using the application software, following the basic steps as depicted in the flow chart below:



Once the mutation[16] orders are passed, necessary entries are made in the Mutation Register (R-6) and thereafter the details are entered in the relevant columns of concerned *khataunis* in the computer. The process needs to be

[13] Village level revenue official.

[14] Khatauni is the register of all persons cultivating or otherwise occupying land in a village. There is a separate *khatauni* for each village.

[15] It is a register of harvest inspections wherein *patwari* records facts regarding crop grown, soil classification, cultivable capacity of the cultivators.

[16] Mutation indicates the changes that have to be brought about in ownership and title of the land on the basis of sale deed, inheritance, gift deed, will etc.

carried out on a daily basis. Every six years, these *khataunis* are re-generated after incorporating all the changes on account of mutation orders passed over the period of 6 years. Eventually, the names of those who have died or have sold their entire land are removed and new *Khata* numbers are assigned to all landholders.

On being pointed out, the CRC stated that responsibilities of verification and updation of *khatauni* and other revenue records is well defined in revenue laws and manuals. However, necessary instructions will be re-issued to the concerned field authorities on the same.

An authorized copy of *khatauni* or ROR can be obtained by paying a nominal fee of Rs.15 for a single sheet and for every subsequent sheet Rs.5 per additional sheet.

Audit scrutiny of computerisation process and associated registers revealed:

1.1.9.1 Delayed incorporation of mutation orders

All the mutation orders are required to be entered in the R-6 and thereafter fed into the computers on the same day. Scrutiny of the R-6 registers and related computer databases disclosed that 39291 mutation orders were entered with delays, as tabulated below:

Table-1.2

Name of Tehsil	Delays in days	Number of mutation orders
Kashipur	5-10	11901
Pithoragarh		2815
Pauri	10-15	5520
Kichcha		9018
Dharchula	5-30	451
Kotdwar	30-135	9490
Tyuni	1-537	96
	Total	**39291**

Source: Information collected from tehsils

On being pointed out, the CRC replied that timely feeding of records will be ensured in future.

In Karnataka, the *Bhoomi* software contains an online Mutation Module. As soon as the mutation is approved the data base gets updated and reflects the actual current position[17].

1.1.9.2 Non-generation of New Khataunis

Khataunis are required to be generated every six years after modifying ownership details such as owner's name, father's name, plot number, area etc. in existing *khataunis*. As the *khataunis* are maintained on the basis of *fasli varsh,* the updation exercise is required to be completed by 30th June for ensuing crop year starting from 1st of July.

[17]Evaluation of Computerisation of Land Records in Karnataka by Centre for Rural Studies, Lal Bahadur Shastri National Academy of Administration, Mussoorie.

Scrutiny of records in 11 tehsils, which were part of the audit sample, revealed that 64260 *khataunis* pertaining to 597 villages, representing 22.4 *per cent* of total *khataunis* were not re-generated. The details are tabulated below:

Table-1.3

Name of Tehsil	No of villages	Total no. of *khatas*	No. of *khatas* not updated	In percentage
Dehradun	31	62087	14307	23.04 %
Dharchula	52	7879	5490	69.68 %
Haridwar	02	27641	1065	03.85 %
Kashipur	06	20840	3404	16.33 %
Kotdwar	176	19686	10899	55.36 %
Lakshar	11	22240	4171	18.75 %
Pauri	57	37961	5171	13.62 %
Pithoragarh	259	25772	18619	72.25 %
Roorkee	03	62415	1134	1.82 %
Total	**597**	**286521**	**64260**	**22.4 %**

Source: Information collected from 09 test checked tehsils

As a result, a large number of old *khataunis* were being distributed on demand and were in circulation, defeating the basic objective of the scheme of providing copies of accurate and up to date *khataunis* to the landowners.

Two tehsils – Kichcha (Udham Singh Nagar) and Tyuni (Dehradun) reported 100 *per cent* generation of new khataunis for *fasli* 1411-1416.

On the above being pointed out to the department, It was replied that because of heavy work load timely updation of *khataunis* was getting adversely affected. However, it was found that duplication of work was continuing pointing to inefficiencies in the management of the computerisation process and a failure to properly redefine roles and responsibilities in the changed scenario.

1.1.9.3 Duplication of work

Despite computerizing the process of updation of land records, work was also being carried out manually. After entering details of mutation orders in the computer, print-outs were being taken and pasted in the *khatauni* register, on one side of the related *khata*. Every 6 years, these manual registers were being renewed by the *Patwari/Lekhpal*. The continued maintenance of manual records and registers added to the work load and delayed work relating to electronic updation and regeneration of *khataunis.*

On being pointed out, the Government stated that manual and computer work will be reassessed and the decision will be taken accordingly.

1.1.9.4 Inconsistency between manual and computerised records of land area

Major disparities were noticed in the ZA land area of tehsils as per manual register (R-57) and the area-reports generated through the software application. Inconsistencies were observed in all the sampled 11 tehsils with considerable variations existing in three tehsils as detailed in the table below:

Table-1.4

(Area in hectare)

Tehsil	Area as per Manual Record (R-57)	Area as per software report	Difference	Percentage inconsistency Excess(+) /Less(-)
(1)	(2)	(3)	(4)	(4 as % of 2)
Dehradun	29992.914	31142.590	1149.676	3.83
Dharchula	6271.144	12645.078	6373.934	101.61
Haridwar	35273.00	32073.616	-3199.384	(-) 9.07
Kashipur	16451.141	17767.0095	1315.869	8.00
Kichcha	28323.550	35036.819	6713.269	23.70
Kotdwar/Yamkeshwar	22114.654	28908.367	6793.713	30.72
Laksar	20093.00	20589.540	496.540	2.47
Pauri	28521.892	82067.948	53546.056	187.74
Pithoragarh	11749.709	41734.880	29985.171	255.20
Roorkee	38658.00	44455.590	5797.590	15.00
Tyuni	25685.796	28546.461	2860.665	11.14

Source: Information collected from 11 test checked tehsils

The reports generated through the software application should be complete, accurate and reliable. Variations, between computerised reports and the manual records, as detailed above, raises doubts on the authenticity of computerised data and reliability of the computerised system.

On being pointed out, the CRC replied that the problem pertains to computer software, which will be solved after discussions with the NIC.

1.1.9.5 Non-operational Tehsil Data Centres

Full computerisation of land records was required to be achieved in all tehsils by September 2005. Further, distribution of computerised *khataunis* was to be ensured on demand.

Audit scrutiny of the eleven sampled tehsils across five districts revealed that data entry of all village *khataunis* had been completed. However, two tehsil centres -Yamkeshwar (Pauri) and Khatima (Udham Singh Nagar) - could not put in operation and hence distribution of RORs from these centres was not taking place.

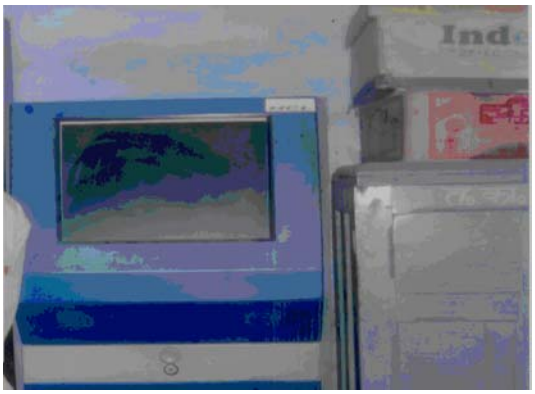
On being pointed out, it was replied that the operationalisation work in Yamkeshwar and Khateema is underway.

1.1.9.6 Touch Screen Computer Kiosks

As an e-governance initiative, 13 touch screen kiosks were purchased (March 2007) at a cost of Rs.13.32 lakh for installation at *sadar* tehsils[18] of all 13 districts.

A review of the functioning of these kiosks in five sampled districts, revealed that except for Dehradun tehsil , the kiosk machines in other test checked *sadar* tehsils had either not been installed or were idling in the absence of proper connectivity or repairs.

[18] Tehsil at district Headquarter.



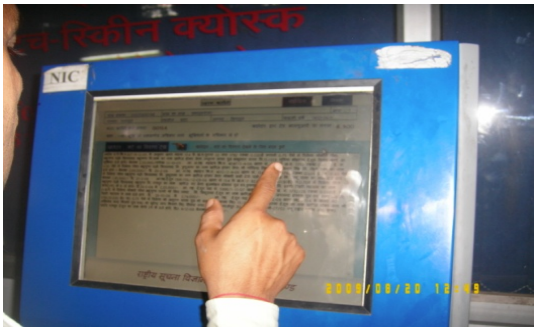
Picture 1: Kiosk touch screen at TDC, Kashipur lying idle for want of installation

Picture 2: Kiosk touch screen at TDC, Haridwar lying idle for want of repair

Thus the objective of providing easy electronic access to land record information was defeated resulting in the avoidable rush for getting printed RORs.

On being pointed out, the Government stated that necessary instructions are being issued to each tehsil data centre to get the Kiosk machine operationalised.

Touch screen kiosk at Dehradun Tehsil has introduced transparency and user-friendliness; ever increasing use by public is apparent from the photographs below:



Picture 3 and 4:People using Touch Screen Kiosk at Sadar Tehsil, Dehradun

1.1.9.7 Non-application of Holograms on RORs

In order to avoid manipulation/ fraudulent use of computerised *khataunis*, the State Government decided (February 2007) to apply holograms on computer generated *khataunis*.

Scrutiny of records of the five test checked districts revealed that holograms were being used only in Dehradun district. In the other districts[19], holograms were purchased (worth Rs.0.48 lakh) but were lying unused.

The need for use of holograms becomes acute if viewed in the context of a fraud which was unearthed (October 2007) in Haridwar district, wherein a copy of a computerised *khatauni* was manipulated for getting a bank loan.

[19] Haridwar, Pauri, Pithoragarh and U S Nagar.

On this being pointed out, it was stated that the holograms could not be applied for want of preprinted stationary. The CRC, on the issue replied that the matter will be investigated and appropriate action will be taken.

1.1.9.8 Networking

The guidelines given by GOI stressed the need for establishing network connectivity between district headquarters, sub-divisions and tehsils for integration of the computerised system and databases. The State Government had also planned to establish a State Wide Area Network (SWAN) by 2007.

Under SWAN, it was envisaged that a central server will be deployed in each district headquarter and there would be no need for keeping distributed databases in the tehsils. From the district central server, data would be automatically updated on the state's central server and disseminated over the Internet. As of August 2009, the system is yet to be established and the application is being run in a LAN environment in the tehsils.

On being pointed out, the Government stated that the work of SWAN is under progress and once the SWAN is implemented, the network connectivity between State Monitoring Cell, District Data Centre and TDCs will become effective.

Land-records data of all 84 tehsils is available on citizen-centric Web site http://gov.ua.nic.in/devbhoomi.

1.1.9.9 Infrastructure

a. According to guidelines issued by GOI, a minimum space of 200-250 sq. ft. was to be provided for Tehsil Computer Centres. However it was noticed that in four tehsils[20] out of the sample of 11 tehsils, representing 36 *per cent*, area provided ranging from 117 sq ft to 180 sq ft, which was below the prescribed norms.

b. No fire extinguishers were found installed in the computer rooms in 73 *per cent* of the 11 test checked tehsils. Moreover, it was also seen that none of the officials were trained to operate the extinguishers. Thus, fire safety measures undertaken in the Tehsil computer centres were inadequate.

c. Air-conditioners were not found installed in four out of the 11 test checked tehsils. Computer equipment were thus exposed to risk of damage from dust and humidity.

d. Broken window glasses and lack of door closers were also noticed in a few cases making the computer systems vulnerable to unauthorized access and damage.

On being pointed out, the Government stated that the matter will be reviewed and corrective measures will be initiated.

[20]Tyuni (132.00 sq.ft), Kichcha (180.00 sq.ft.), Kashipur (117.00 sq.ft.) and Kotdwar (120.00 sq.ft.).

1.1.10 System Design

1.1.10.1 Inadequacies of the software

a. In the application software, six columns for six *fasli* years have been provided for entering mutation orders. The space given for one order under each column has been limited to 70 characters. As such, the order going beyond the limit was being captured as a separate mutation order by the system. Because of this, the mutation log showing the number of mutation orders for a particular *khatauni* becomes erroneous.

b. The *Tippani* column meant for entering orders related to mortgage of land and subsequent bank loans was found blank. On being enquired, it was intimated that the *Tippani* column has been restricted to a 20 character space, highly insufficient for capturing the details on bank loans.

c. The *Dev-bhoomi* software has been promoted as a provider of a plethora of information and reports relating to village *khataunis* such as area-wise number of *khatas* in a village, land-category wise report of a village, village summary of the tehsil etc. However, the audit team found that while retrieving such reports, the system was prone to hanging.

d. The software does not provide a facility for storing mutation history so that changes made in each *khatauni,* every six years can be identified. As a result when an ownership change takes place, every six years, the new entry is made by electronically overwriting old entries in the database. Though archiving of earlier records is done in the form of CDs, the system itself is not capable of giving the complete history of land ownership without consulting manual records or information stored in CDs.

Because of the above limitation, manual *khataunis* were being issued for the period prior to the generation of the new *khataunis*. 27,001 manual *khataunis* were found to be issued in the five sampled districts post computerisation.

On being pointed out, the CRC stated that the issues will be discussed with NIC to make necessary changes in the existing software.

1.1.10.2 Input Controls

For ensuring the accuracy and completeness of computer generated *khataunis* and other reports, it is critical that basic data is captured accurately and completely and stored properly in a secure manner. Input controls including validation checks help achieve this objective.

IT enabled analysis of data using SQL and tools available in the *Dev-bhoomi* software, disclosed several inconsistencies and gaps in input data. This places a question mark on the reliability of the database and the reports generated using it. Major deficiencies noticed are enumerated below:

- In 614 instances the name of the account holder and in 55,407 instances the name of the father/husband of the land holder was entered as blank, null or dot.
- In 3,82,519 instances the address of the account holder was left blank or incomplete.

- In 5,62,390 cases caste of the land holders was not entered. Thus, compliance with the provisions of Rule 157 (a) and (b) of the Zamindari Abolition and Land Management Act, 1950 that sale of SC/ST owned land to other community was not being allowed, was not being ensured.
- It was found that the share of the land owner was left blank in case of joint accounts, in the absence of which no check could be exercised through the software to ascertain land availability for each account holder.
- In 4421 instances the same plot number, which has to be unique in a particular village, was entered two to four times under the same village.
- In 60 instances plot areas were found to be negative.
- In 994 instances zero land area was shown against plots.
- In three[21] tehsils, total area of the village land as captured under two tables i.e. details of land holders (K_2 table) and details of plots (K_gata table) showed discrepancies.
- It was also noticed that description of the land type was not being entered in the database.

On being pointed out, the CRC stated that the audit observations have been viewed seriously and steps will be taken to ensure the quality of data fed into the software, in consultation with NIC.

1.1.10.3 Absence of Documentation

There was no mechanism for proper archiving of old electronic documents and computer prints outs. As such, the system was susceptible to risks of adverse impact on data integrity.

In the absence of proper documentation, there was no trail for various modifications/ changes made in the software. As a result it was found during the test check of the 11 selected tehsils that three versions of the *Dev-bhoomi* software were being used during the same period.

Table-1.5

Software Version	Name of Tehsils
Version 1.1	Haridwar, Roorkee, Pauri, Kotdwar and Kashipur
Version 1.2	Dehradun, Tyuni
Version 1.0	Dharchula, Pithoragarh, Kichcha and Laksar

Source: Information collected from 11 test checked tehsils

The officials of the tehsils were found to be unaware about the variations in the different versions of the software. Audit could also not ascertain the variations due to lack of documentation.

1.1.10.4 Access controls

a. Three levels have been associated with the computerisation of land records: Sub-Divisional Magistrate (SDM) as super user, Registrar Kanoongo (RK)

[21] Kotdwar, Kichcha and Pauri.

nominated by the SDM as administrator and other revenue officials (*patwari/ lekhpal*) as normal users.

As a part of logical access controls, the *Dev-bhoomi* software provides for different degrees of access to the aforementioned three levels. Out of total four modules viz. '*Khatauni*', 'Print', 'System Management' and 'Data Recovery' the normal users are given access to only two modules of '*Khatauni*' and 'Print' for enabling performance of the tasks of data entry and distribution of printed RORs.

The Administrator has been given access to the 'System Management' module so as to enable him to perform functions relating to creation of new *khataunis*, updation of mutation orders, correction in land information and crop year modifications etc.

However because of weak organizational control, the revenue officials below the rank of RK and even private operators were found working as administrators.

b. Though the software has in-built features for user authentication through access passwords but control procedures like restriction on number of unsuccessful login attempts, routine password change, alphanumeric passwords or minimum limit of characters for password was not incorporated in the application.

Moreover, user passwords had not been changed since the date of implementation of the scheme, in all the 11 test checked tehsils. Additionally, the system did not generate any log to record back-end access and the number of failed login attempts.

The application also had no provision for removing user accounts following transfer or retirement of a user. As a result the system was open to the risk of unauthorized users gaining access. Besides, there were also a very high number of idle and inactive users.

c. In all the 11 test checked tehsils, it was found that RORs were being distributed directly through the server and not through the client machines, exposing data security to increased risks.

d. Use of biometric systems for providing access through thumb impression of users/officials was envisaged (March 2005) to address security concerns. However, it was found that despite the purchase (December 2005) of bio-metric devices, these were not installed in any of the tehsils.

Bhoomi application software being used for computerisation of land records in Karnataka has been integrated with finger print (bio metrics) technology to ensure fool proof authentication[22].

On being pointed out, the CRC stated that the measures regarding logical security will be enforced in future.

1.1.10.5 Insufficient Protective measures

Operational guidelines specified the periodicity and responsibility for taking back-ups. Accordingly, back-up of entire data on a pen-drive (daily) and CD

[22]Evaluation of Computerisation of Land Records in Karnataka by Centre for Rural Studies, Lal Bahadur Shastri National Academy of Administration, Mussoorie.

(weekly) was supposed to be taken by the RK. Further, monthly back-up was required to be taken on a CD, and copies kept at the TDC, in the locker-room at the sub-division and in the record room at Collectorates. However, it was seen that the guidelines were not being adhered completely. Also, no standard policy for restoring and checking backed up data had been prescribed. No licensed version of anti-virus software was found installed in the TDCs, making the system susceptible to virus attacks.

Since the database is being maintained on a single server, the risk of data loss was high given the potential that existed for unauthorized logical and physical access in all the data centres.

1.1.11 Financial management

1.1.11.1 Central Assistance

The scheme for computerisation of land records was fully financed by the GOI. Year wise details of funds released by the GOI and expenditure during 2004-09 have been tabulated below:

Table-1.6

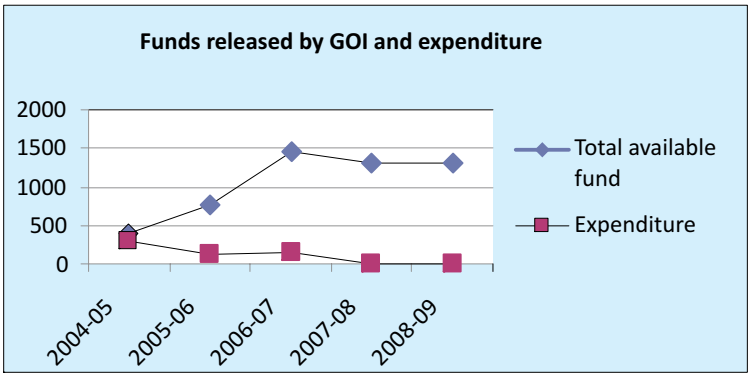
(Rupees in lakh)

Year	Opening balance	Amount released	Total available fund	Expenditure	Closing balance
2004-05	2.72	400.60	403.32	300.00	103.32
2005-06	103.32	653.44	756.76	115.00	641.76
2006-07	641.76	820.51	1462.27	153.82	1308.45
2007-08	1308.45	Nil	1308.45	8.15	1300.30
2008-09	1300.30	Nil	1300.30	Nil	1300.30
Total		**1874.55**		**576.95**	

Source: Information collected from CRC, Dehradun

As is evident from the table above, the State Government was able to utilize only 30.78 *per cent* of the available central grants. A huge gap between availability and application of funds was a common feature of the financial performance achieved under the scheme across all the five years. This is shown in the chart below:

Chart: 1 3



Rs.12.08 crore, representing 93 *per cent* of the unspent balances, was provided by the GOI during 2005-07 for scanning and digitization of cadastral maps in two districts i.e. Almora and Pauri Garhwal which was not taken up. Additionally, a grant of Rs.6.35 crore[23], given for establishing the State Monitoring Cell, DDCs and TDCs could only be partially utilized, leaving an unspent amount of Rs.0.92 crore[24].

The huge unspent balances lying with the Government reflected its inability to use funds for achieving project objectives. However, the GOI permitted the State (June 2009) to utilize the unspent balances available with it, during the year.

On being pointed out, the CRC stated that the funds have been planned to be spent under reorganized NRLMP scheme.

1.1.11.2 Utilization certificates

As against the actual expenditure of Rs.576.97 lakh reported by the State Government under CLR, Utilization Certificates showing financial progress along with scheme outcomes were submitted only for Rs.334.82 lakh.

Despite, the serious concern raised (May 2009) by the GOI on the poor performance (only 18 *percent* progress as per UCs) of the scheme no effort was made to reconcile the difference between the actual and reported expenditure.

On being pointed out, it was stated that the figures will be reconciled to obviate the discrepancies and the status will soon be intimated to audit.

1.1.11.3 Purchase of 'Uttaranchal Information System' software

'Uttaranchal Information System' (UIS), intended for up-gradation of land records, was purchased (March 2006) at a total cost of Rs.40 lakh[25] for use in the CRC, 2 Divisional offices, 64 TDCs and 13 DDCs.

Out of the 11 TDCs and 5 DDCs, test checked during audit the said software was found to be installed in only 4 TDCs and 1 DDC. Besides, at none of the locations where the system was installed was it used for updating or upgrading land records.

A scrutiny of the UIS manual revealed that it is GIS enabled software which maps administrative boundaries within the state[26] and includes information on broad indicators of socio-economic development. The decision to purchase a copy of the UIS for each TDC and DDC was not prudent as the software captured information only on administrative segments while the effectiveness of CLR depended on individual land details needed for updating and upgrading land records.

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[23] Rs.20 lakh for State monitoring Cell, Rs.110.50 lakh for DDCs and Rs.504 lakh for TDC.
[24] State Monitoring Cell (Rs.10.48 lakh), DDCs (Rs.20.42 lakh) and TDCs(Rs.61 lakh).
[25] @ Rs.50,000 per CD of UIS.
[26] State divisions, Districts, Tehsils, Sub-tehsils, Blocks, Kanoongo Circles, Patwari Circles, Nyaya panchayats, Gram sabhas and Revenue villages.

1.1.11.4 District Land Records Management and Maintenance Society

In accordance with the directions given (September 2005) by the State Government, a society under the chairmanship of the District Magistrate was to be constituted in every district. The society was made responsible for:

- Management of funds realized through issuance of RORs
- Operation and maintenance of the CLR scheme.

It was also required to get the accounts of the society audited annually; the report thereon was to be sent to the concerned Divisional Commissioner for onward submission to Chief Revenue Commissioner of the State.

District Societies were accordingly formed in all the 13 districts. Details of receipts and expenditure of the societies during 2006-09, are as under:

Table-1.7

(Rupees in lakh)

Name of District	Revenue generated	Expenditure	Balance
Almora	25.62	7.17	18.45
Bageshwar	14.77	4.12	10.65
Chamoli	12.48	5.33	7.15
Champawat	11.44	3.31	8.13
Dehradun	89.34	43.79	45.55
Haridwar	55.38	3.91	51.47
Nainital	61.28	19.83	41.45
Pauri Garhwal	22.49	8.90	13.59
Pithoragarh	19.45	6.86	12.59
Rudraprayag	10.22	1.40	8.82
Tehri Garhwal	30.67	13.67	17.00
Uttarkashi	22.99	9.19	13.80
U S Nagar	62.38	15.47	46.91
Total	**438.51**	**142.95**	**295.56**

Source: Information collected from CRC and test checked districts

Scrutiny of relevant records revealed that:

- In all the five sampled districts, despite sizeable receipts and expenditure of Rs.2.49 crore and Rs.0.79 crore respectively, the accounts of the societies were never audited.
- Basic records like cash book, stock register, agenda register etc. were not being maintained in any of the test checked districts.
- The amounts realized through issuance of RORs were required to be deposited in the Society's bank account on a weekly basis. Substantial delays ranging from 54 to 335 days were noticed in depositing the said amounts in five tehsils[27] out of the 11 test checked tehsils.
- Out of five districts societies test checked three societies kept their funds in savings bank accounts and earned an interest of Rs.4.57 lakh during the period 2006-08. The other two district societies i.e Pauri and Dehradun though holding significant receipts of Rs.1.12 crore, kept their funds in current bank accounts on which no interest was earned.

[27] Kichcha, Kashipur, Dharchula, Roorkee and Tyuni.

On being pointed out, the CRC stated that necessary instructions are being issued to field offices for proper maintenance of financial records of the society, for timely deposits of the receipts and for keeping the earned revenues in savings account.

1.1.12 Human Resource Management

1.1.12.1 Work load assessment

Being an e-governance project with public interface at grass root level, the success of the CLR project is critically dependent on timely and quality delivery of various services. The *Patwaris/ Lekhpal*s have key responsibility for performance of several tasks such as maintenance of *khataunis*, *khasra* and *sazra* as also other records of the village. In the computerised set up they have responsibility for data entry of *khataunis* and distribution of authorized RORs. The RKs supervise the work of the patwaris and check village records and statistics. In the computerised system they discharge the role of administrators with specific responsibility for daily updation of mutation orders. The patwaris and the RKs are thus the two most crucial levels in the revenue department and their performance has a significant impact on the effectiveness of the CLR scheme.

The results of a work load analysis done in course of this performance review, in four tehsils, are tabulated below:

Table-1.8

Tehsil	No. of Villages	Total Patwaris	Villages per Patwari	Average RoRs per day
Dehradun	204	32	6.4	18
Haridwar	147	40	3.7	82
Roorkee	326	9	4.1	148
Pauri	830	57	14.5	13
Tehsil	**No. of Villages**	**Total RKs**	**Villages per RK for supervision**	**Average mutation orders per day**
Dehradun	204	02	102	11
Haridwar	147	03	49	5
Roorkee	326	03	109	38
Pauri	830	03	27	05

Source: Information collected from CRC and test checked tehsils

From the above it would be seen that the work load at the level of Patwaris was very high with a *patwari* on an average handling the work relating to four to fourteen villages. The discrepancies between computerised data and actual data, junk and blank entries, variation between different data tables are to an extent attributable to the excessive work load on the patwaris. The demand on patwaris is likely to grow exponentially in the future once work relating to second generation of computerizing land data would begin as this would require greater meticulousness and higher skills.

The table above also reveals the highly inadequate staff strength at the level of RKs. This has the effect of compromising the quality of supervision; the accuracy of updation of *khataunis* and the timeliness of feeding mutation orders and according authorization to the RoRs. An adverse consequence of the high work load on RKs is the fact that staff below the rank of RK and even

private DEOs have unauthorized access to the 'System Management Module' which has serious repercussions for data confidentiality.

Two facility management staff[28] has been appointed for each district to provide technical support for the implementation of Tamil NILAM[29].

On being pointed out, the CRC stated that detailed an assessment of work load on these two levels will be carried out. Also, the option of hiring the services through outsourcing may be considered for the three districts of Dehradun, Haridwar and Udham Singh Nagar, where the work load is on the higher side as compared to the other districts.

1.1.12.2 Training

Operation of computer systems as part of the CLR project requires skilled manpower. This requirement specifically stems from the need to skillfully undertake computerised transactions and comply with the required security standards and policies. In order to equip existing personnel in the field with the requisite computer skills, 840 revenue functionaries of the Department (10 per tehsil) were given one- week training on the tools and technologies being used in the CLR project. It was seen that the scope of training both in terms of coverage and duration was highly inadequate. This limited training had the following adverse implications on the operation of the CLR project:

- Operation of the system in the field remained critically dependent on privately hired DEOs.
- Verification of data fed into the system could not be carried as the revenue officials lacked required technical competence.
- Computer operations did not meet several quality parameters and also suffered from delays.

In Tamil Nadu, basic training has been organized for all staff of revenue department of each taluk. Intensive training has been given to four officials per taluk to empower them as Key Resource Person (KRP)[30].

On being pointed out, the CRC replied that the matter will be taken up with NIC for imparting basic software training to all revenue officials in a phased manner.

1.1.13 Monitoring and evaluation

Non-functional State Monitoring Cell and District Data Centres

Funds amounting to Rs.130.50 lakh[31]were released (February 2006) by GOI for establishing a State Monitoring Cell and District Data Centres in all the 13 district headquarters with the specific objective of monitoring the physical and

[28] Privately hired persons with high technical competence.
[29] Evaluation of Computerisation of Land Records in TamilNadu by Centre for Rural Studies, Lal Bahadur Shastri National Academy of Administration, Mussoorie.
[30] Evaluation of Computerisation of Land Records in TamilNadu by Centre for Rural Studies, Lal Bahadur Shastri National Academy of Administration, Mussoorie.
[31] Rs.110.50 lakh for 13 DDCs @ Rs.8.50 lakh per DDC and Rs.20 lakh for State Monitoring Cell.

financial progress of CLR scheme. Further, hardware and software worth Rs.44.27 lakh[32] was also provided (May 2007) to these centres. However, the centres were found to be non-functional. The photographs below of DDCs in the five test checked districts reveal that despite having been provided with basic infrastructure and hardware these centres remained non-functional.

Picture 5: Non functional State Monitoring Cell at CRC, Dehradun

Picture 6: Non functional DDC, Haridwar

Picture 7 to 9: Non functional DDC at Pauri

On being pointed out, the Government stated that all efforts will be made to make the State Monitoring Cell and District Data Centres functional.

Review and Evaluation

Field inspections form an integral part of ensuring effective implementation of any scheme. However, the State Revenue Department did not prescribe any procedure or time table for undertaking such inspections. As a result only sporadic effort at reviewing and evaluating the implementation of CLR were in evidence.

In Haridwar the DM had drawn out (February 2008) a schedule for surprise field inspection of TDCs falling under his jurisdiction; but no records of the inspections were found during audit.

[32] Rs.9.52 lakh for State Monitoring Cell and Rs.34.75 lakh for 5 DDCs.

No independent evaluation of the implementation of CLR scheme was taken up by the Government at any level. In absence of this no feed back was available on the working of the project which was a major handicap in making plans for dealing with the problems being faced in project implementation and coping with future challenges. The CRC was found to confine itself to merely collecting data from all districts with no recorded evidence being available of any efforts to analyse the same.

TamilNadu Government has ensured periodic review of CLR; monthly review meetings are taken by Commissioner, Survey & Settlement. District Collectors also review the progress of the project in regular periodic meetings[33].

1.1.14 Impact of the Scheme

The CLR project in Uttarakhand has covered more than 78.21 lakh owners of rural land in 16,000 villages spread across 84 tehsils. Together they account for almost 13 lakh records of rights.

To assess the impact of the CLR project, 52 land holders were surveyed across 11 sampled tehsils. As the evaluation shows, computerisation has benefited farmers/land holders in several ways:

- All the persons who had obtained RORs opined that this system was less time consuming than the old manual system. In the manual system only 2 *per cent* applicants were able to get the RORs in time.

- 27 *per cent* of the respondents knew that the TDC has one touch screen computer kiosk at which they can view *khata* details, free of cost.

- All the respondents opined that the system of computerisation of land records had made things easier and records more accessible.

- 88 *per cent* of the respondents were satisfied with the accuracy of the computerised system. 12 *per cent* respondents found that computerised system was not accurate; most of the mistakes were due to wrong data entry.

- In the manual system, 84 *per cent* respondents obtained RORs by paying more than Rs.30. However, computerised RORs were obtained by all the respondents by paying the prescribed fee of Rs.15 (plus Rs.5 per sheet).

- 33 *per cent* of the respondents were of the opinion that the *khasra* needs to be computerised.

Besides the landholders, the State government has also benefited from the computerisation of land records as it has earned significant revenues from issuance of these records.

[33]Evaluation of Computerisation of Land Records in Tamil Nadu by Centre for Rural Studies, Lal Bahadur Shastri National Academy of Administration, Mussoorie.

1.1.15 Conclusion

CLR was designed to promptly provide accurate information to landholders at nominal cost and to enable better use of collected data for meaningful analysis and intelligent decision making.

In Uttarakhand, the scheme has been partially successful as despite technical and man-power constraints, computerised copies of RORs are being distributed timely on demand. However, several concerns relating to implementation of the project still remain.

Non-ZA land which accounts for 52 *per cent* of the land in the state remains out of the coverage of computerisation. Likewise, computerisation of second generation of information relating to land records i.e *khasra* data and spatial data is yet to commence.

The implementation of the scheme at present suffers from several deficiencies such as delays in updating mutation orders; non-generation of new *khataunis* every six years in around 22 *per cent* of the cases; and discrepancies between manual and computerised data. This reflected adversely on the efficiency and accuracy of computer operations.

Though the response to the lone functional Touch Screen Computer Kiosk was found to be overwhelming, these kiosks provided in most other tehsils were idling for want of installation, repairs and proper connectivity.

The system documentation for the *Dev-bhoomi* software was inadequate. Input and access controls were also deficient. As a result both the system and data faced considerable with regard to their integrity, security and accuracy.

The department had been unable to properly and fully utilize funds provided by the GOI for the project. As a result, despite availability of substantial funds, there was no strategy for extending the scope of computerisation to capture several omitted textual data and spatial data related to land.

Though the department collected sizeable amounts through the distribution of computerised RORs, the district societies which had custody of these funds were able to spend only 33 *per cent* of the receipts. This was despite the fact that funds were badly needed for undertaking several operations and maintenance tasks. The district societies also did not maintain any books of accounts for recording financial transactions undertaken with these funds exposing the societies to the risk of fraud and embezzlement.

Field level functionaries of the Department *viz* patwaris and RKs were found to be overloaded with multiple responsibilities which adversely impacted on the quality of CLR project related work performed by them. The training given to them, in the use of computers and in software was found to be very limited and inadequate considering the tasks assigned to them under the project.

The mechanism for monitoring the implementation of the project across the state was almost defunct and no independent evaluation to obtain qualitative feed-back on the project had ever been undertaken.

Impact assessment however, showed a positive response from the users for the computerised land records system as compared to the manual system. People have derived several benefits in the form of easy and timely availability of record of rights. There is also a perception of greater transparency with the system becoming less susceptible to manipulation and delays. It is this positive perception of the project that contains the imperative for increasing the coverage and effectiveness of the project- an exercise that is now long overdue.

In the exit conference, it was stated that the audit observations have been taken seriously and as an important feed back to improve the present system.

1.1.16 Recommendations

- *The time schedule for updation of mutation orders and generation of new khataunis need to be firmly adhered.*
- *Regular quarterly updation of land record data on the internet needs to be ensured as only 25 per cent of tehsil records were found updated as of August 2009.*
- *Necessary steps may be initiated to get the TSCKs installed/repaired at all Tehsil Data Centres.*
- *A mechanism needs to be established for up gradation of hardware in view of technological advancements and also to take care of fresh requirements viz. higher storage capacities, new operating system etc.*
- *State Government may consider appointing permanent Key Resource Person to take care of technical aspects at TDCs.*
- *To avoid fraudulent use of computerised khataunis, the use of holograms should be made mandatory.*
- *Connectivity between TDCs, DDCs, State Monitoring Cell and NIC centres through SWAN needs to be established.*
- *Present system of security through password is prone to breach therefore it is necessary to provide security through biometric identification technology.*
- *Regular training programmes for all the revenue staff should be ensured.*
- *To gear up the monitoring mechanism, periodic review of the scheme by the implementing authorities both at the state and district levels should be*

introduced. Also, the evaluation of the scheme may be entrusted to a reputed research organization for qualitative feed back.

- *Presently, the updation of the database is carried in offline mode. It is necessary to ensure online mutation and workflow automation in the present software for making the database current and to avoid unwarranted human intervention. .*

- *At present, the computerisation of land records is restricted only to khataunis. The benefits of computerisation will become fully visible only after the computerisation of Khasra i.e. records of crops.*

- *It is also necessary to take up scanning of basic land records and digitization of cadastral maps/village maps in the next phase for making computerisation complete.*

- *Since large numbers of mutations are due to sale/purchase transaction, therefore, it is suggested that the registration process should also be computerised and integrated with computerisation of land records.*

During the final discussions in the Exit Conference, the recommendations given by audit were considered as an aid to the Executive. In the next phase of computerisation of land records in the form of NRLMP scheme, the recommendations will be given effect.