

The NCAER Land Records and Services Index 2021

N-LRSI 2021

National Council of Applied Economic Research

Report	March
20210301	2021

Supported by



OMIDYAR NETWORK INDIA

The NCAER Land Records and Services Index

N-LRSI 2021

March 2021



NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH

NCAER India Centre, 11 Indraprastha Estate, New Delhi 110 002, India

About NCAER

NCAER, the National Council of Applied Economic Research, is India's oldest and largest independent economic think tank, set up in 1956 to inform policy choices for both governments and industry. For more than six decades, NCAER has served the nation with its rich offering of applied policy research, unique datasets, evaluations and policy inputs to central and state governments, corporate India, the media and informed citizens. It is one of a few think-tanks worldwide that combine rigorous analysis and policy outreach with deep data collection capabilities, especially for large-scale household surveys. For more, go to www.ncaer.org

©National Council of Applied Economic Research, 2021

NCAER is grateful to the Omidyar Network India for generous financial support for this research.



About Omidyar Network India

Omidyar Network India invests in bold entrepreneurs who help create a meaningful life for every Indian, especially the hundreds of millions of Indians in low-income and lower-middle-income populations, ranging from the poorest among us to the existing middle class. To drive empowerment and social impact at scale, we work with entrepreneurs in the private, non-profit and public sectors, who are tackling India's hardest and most chronic problems. ONI makes equity investments in early stage enterprises and provide grants to non-profits in the areas of Digital Identity, Education, Emerging Tech, Financial Inclusion, Governance & Citizen Engagement, and Property Rights. Omidyar Network India is part of The Omidyar Group, a diverse collection of companies, organizations, and initiatives, supported by philanthropists Pam and Pierre Omidyar, founders of eBay.

While this report and its underlying research has been supported by Omidyar Network India, the contents and opinions are those of authors alone and do not reflect the views of Omidyar Network India.

This report was first published in March 2021.

This report is the product of the research staff of NCAER. The findings, interpretations and conclusions expressed herein do not necessarily represent the views of the Governing Body or Management of NCAER.

All rights reserved. The material in this publication is copyrighted. NCAER encourages the dissemination of its work and will normally grant permission to reproduce portions of the work promptly. For permission to reprint any part of this work, please send a request with complete information to the publisher below.

Published by

Professor Anil K. Sharma

Secretary and Operations Director

The National Council of Applied Economic Research

NCAER India Centre

11, Indraprastha Estate, New Delhi-110 002

Tel: +91-11-2345 2657, 6120 2698

Email: aksharma@ncaer.org; www.ncaer.org

Publications Coordinator

Jagbir Singh Punia

Design & data visualisation by

HowINDIALives

www.howindialives.com

FOREWORD

The *NCAER Land Records and Services Index* (N-LRSI) covering all Indian States and UTs has entered its second year. It has been a tumultuous year that saw the COVID-19 pandemic ravage the world and India and deeply impact society and the economy. In the aftermath, the world will change in many ways, but the critical role that land plays in economic activity will surely continue to be important. I am happy that the Land Policy Initiative (LPI) Team at NCAER not only completed this exercise despite these trying times but delighted to note the interest taken by the States and Union Territories in improving their records and services following the launch of N-LRSI 2019-20 in February 2020.

N-LRSI 2019-20 has seen acceptance by many stakeholders and appears to have caught the attention of policy makers at both central and state levels. The N-LRSI's 2020-21 edition has therefore adopted exactly the same components and weights as the first round in order to ensure both a focused improvement effort by States and ease in evaluating these efforts.

N-LRSI 2020-21 has two broad components—(a) the extent of digitisation of land records and the registration process and (b) the quality of land records. The first component looks at three components— textual records (the record of rights), spatial records (cadastral maps) and the registration process. The assessment of land records quality is based on five identified elements that should be ideally captured in a comprehensive record: (i) updated ownership, (ii) extent of joint ownership, (iii) land use, (iv) land area or extent, and (v) recording of encumbrances. All these elements bear a relationship with the incidence of dispute and the ease with which transactions in land are effected. Instead of direct investigation of the on-ground situation, a number of proxy indicators were devised to gauge the quality of the digitised land records.

The N-LRSI 2020-21 national average improved by 16.6% between the two rounds, showing the considerable progress across States/UTs in digitising records and their registration processes. Madhya Pradesh has topped the list once again with over 80 points on the Index. West Bengal jumped up to second rank this year from sixth last year, its 2020-21 Index even surpassing MP's 2019-20 Index. Despite significant improvement and recording a score of over 70 points, Odisha and Maharashtra have dropped to third and fourth places, whereas Tamil Nadu retained fifth place. Bihar entered the ranks of the ten best performing states from 23rd position last year. Andhra Pradesh, Karnataka, Bihar, Himachal Pradesh and Tripura are the other States that showed significant improvement over the previous year.

Even as N-LRSI appears to have delivered on its promise of encouraging state efforts to improve digitisation of records and processes, it has brought out the importance of focusing on user access to the records. N-LRSI 2020-21 included a comprehensive exercise to gauge the quality of access offered to the user by state land websites and portals. Revealing the gaps between quality and access, high scores on the Index are not necessarily matched by high scores on accessibility. This will certainly be an area that States and UTs will need to focus on in the future.

We had expected to use household surveys in this round to collect feedback on the value users place on the digitised record. Unfortunately, the pandemic prevented any surveys requiring household visits. We expect this to happen later in 2021 along with an exciting new initiative that NCAER will be launching as the India node of the global Prindex property rights index. An expanded version of the N-LRSI 2020-21 will be issued at that

time, enabling us to see both the supply of good land records and, on the demand side, the value that users place on utility of such records in each State.

The Government of India and the States are increasingly focusing on the importance of improving titling systems and land markets functioning. The *Pradhan Mantri Svamitva Yojana* is an important landmark in these efforts. The focus must shift from mere digitisation to the creation of more accurate and comprehensive land record data bases that also provide the ease of fair, transparent, and efficient land transactions with good price discovery for both sellers and buyers. Future work on the N-LRSI will need to engage with and incorporate these developments in adjusting its components and the weights assigned to them. This will serve to keep the NCAER Land Records and Services Index relevant, and enhance its attractiveness as a marker of progress in India's journey to more secure property rights and better functioning land markets.

At NCAER, I am grateful to Dr Shashanka Bhide and Dr Devendra Gupta for ably leading the NLPI Team and to our Senior Adviser, Mr Deepak Sanan for being the driving force behind this work. None of this would have been possible without the dedicated NLPI team consisting of Mr Somnath Sen, Dr Charu Jain, Mr Aswani Kumar Munnangi, Dr Prerna Prabhakar, Ms Disha Saxena, Mr Vijay Singh Bangari, Ms Apoorva, Ms Chandni Mishra, Ms Falak Naz, Ms Rupal Taneja, and Ms Arundhati Sharma. Ms Anika Kapoor, program coordinator for the NLPI Team, made sure the wheels kept turning. I am grateful to all of them for their intense, time-consuming efforts in collecting the data and constructing this second edition of the NCAER Land Records and Services Index.

Generous support from the Omidyar Network India has made possible the construction of the N-LRSI for a second year. I am grateful to Shilpa Kumar, Shreya Deb, and Shalmoli Halder at ONI for their enlightened and extremely helpful intellectual and programming support throughout this work. Support from The Quantum Hub as the service provider for the Property Rights Research Consortium set up by ONI is also gratefully acknowledged.

The NLPI Team and I hope that the value of this work and the way it has nudged states to accelerate progress on improving their land records will also continue to attract the attention of government policymakers at the centre, researchers, the media, and donors interested in this field.

New Delhi
March 01, 2021

Dr Shekhar Shah
Director General, NCAER

ACKNOWLEDGEMENTS

The N-LRSI 2020-21 has been made possible only due to the support received from a host of well-wishers who also helped with the exercise! These included both retired and serving civil servants in various States as well as those connected with research and ground level activity in the land sector. Needless to say, we take full responsibility for any mistakes that may remain in the report, and all those who assisted us are in no way responsible for these.

Our heartfelt thanks are due to friends who helped us in bringing the report to its present state. Our special thanks are due to:

Bibhu Acharya	Sandeep Kumar Singh
B Ramasamy	Phigu T Bhutia
S Chokalingam	R K Verma
Tanushree Debbarma	Rajesh Tripathi
Sashadhar Nayak	Usharani Sahoo
Lalit Gogoi	Sandeep Sood
Vishwajit Khanna	Sanjay Kumar
Dnyaneshwar Patil	Dr Shailesh
Manoj Pant	Sonam Lepcha
Nallasivam	Sunita Thakur
Durgesh Singh	Tshering Das

We would also like to express our gratitude to Omidyar Network India for their financial support to this study. We would like to place on record our deep appreciation to Ms Shreya Deb and Ms Shalmoli Halder for their abiding interest and involvement in the study. Also, we would like to thank Ms Shilpa Kumar for her deep interest in the project.

We are grateful to the advisory committee, chaired by *Shekhar Shah*, comprising of *T. Haque, Pranab Ranjan Choudhury, Jagdeesh Rao Puppala, Namita Wahi, Ram Singh, G. C. Manna, Peter Rabley, Amitabh Kundu, Gregory K. Ingram, Shreya Deb* and *Shalmoli Halder* for guiding us at various stages of our work. Their constant advice and guidance has added immense value to the report. We are extremely grateful to them.

One of the main challenges in this work was in regard to the translation of land records and related information from various Indian languages to English. We would also like to extend our sincere thanks to all these friends—*Ajaya K Sabu, Salam Singh Dennis, Navasmitha Das, T Venkatesh, Sameer Kumar Mondal*, who helped us with the translation of Record of Rights (RoRs)/Cadastral Maps (CMs)/ Circle Rates (CRs).

We would also like to place on record our deep appreciation to a number of young interns who contributed immensely to the computation of the index—*B. S. Neeraj, Manshi Priyadarshi, Subhash Kumar, Mandeep Singh, Nidhi Jha, Jiya Midha, K R Gopikrishna, Behra Vamsi Krishna.*

Our heartfelt thanks to Anupma Mehta for readily agreeing to provide editorial support at such a short notice. Sadhna Singh and Praveen Sachdeva provided the technical and secretarial support respectively. We would like to acknowledge J.S Punia's support in the production of this report.

We would like to extend our sincere thanks to the team of How India Lives, led by Avinash Singh and Rangoli Agrawal for competently designing this report.

We are particularly grateful to Dr Shekhar Shah, Director General, Dr Anil Kumar Sharma, Professor and Secretary and Operations Director, Mr Rabi N Panda, Controller and Head of Finance, for their continued support and encouragement at various stages of the study.

A sincere thanks to NCAER's IT team and the Director General Office for providing the technical and logistical assistance respectively during the project meetings, Advisory Committee meetings that were held during the course of the study.

In the end, the successful completion of the work would have not been possible without the invaluable support of Anika Kapoor, Program Manager. She efficiently coordinated and managed the project activities. Her contribution is gratefully acknowledged.

Deepak Sanan, Shashanka Bhide,
Devendra B Gupta, Somnath Sen, Charu Jain,
Aswani K Munnangi and Prerna Prabhakar

THE NLPI TEAM

PROJECT LEAD

Deepak Sanan, Devendra B. Gupta and Shashanka Bhide

SENIOR ADVISOR

Somnath Sen

RESEARCH TEAM

Charu Jain
Aswani K. Munnangi
Prerna Prabhakar
Anika Kapoor

SUPPORT RESEARCH TEAM

Apoorva, Arundhati Sharma, Chandni Mishra,
Disha Saxena, Falak Naz, Rupal Taneja, Vijay Singh Bangari

PROJECT COORDINATOR: Anika Kapoor

EDITOR: Anupma Mehta

TEAM SUPPORT: Sadhna Singh

IT SUPPORT: Praveen Sachdeva

Charu Jain and Aswani K. Munnangi have anchored the research leading to the development of the Index. Deepak Sanan has led the study as the Senior Advisor and Project Lead. Devendra B. Gupta, Co-Lead and Shashanka Bhide, Somnath Sen and G. C. Manna, Senior Advisors provided guidance and support throughout the study period. The NLPI Advisory Committee listed in the Acknowledgements provided intellectual guidance and encouragement for this work.

CONTENTS

Foreword.....	iii
Acknowledgements	iv
NLPI Team	vii
List of Tables	x
List of Figures	xi
List of Boxes.....	xiii
Abbreviations	1
 Executive Summary.....	 2
 Chapter 1: Introduction.....	 14
1.1. Importance of Improving Property Record Systems	15
1.2. Digitisation of Land Records Efforts: and Achievements.....	17
1.3. Rationale for the N-LRSI	17
1.4. Developments since N-LRSI 2020	20
1.5. Engagement with the N-LRSI: States and the India Land Forum.....	22
 Chapter 2: Methodology and Process	 24
2.1 Methodology for Constructing the N-LRSI	25
2.2. Sample Design and Methods	29
2.3 Process of Online Test Checks.....	33
2.4. Challenges and Issues Faced in the Sampling and Test Checks.....	34
2.5. Limitations and Mitigation Measures Undertaken	34
 Chapter 3: Extent of Digitisation of Textual Records	 36
3.1. Digitisation of Textual Record as reported by States / UTs	37
3.2. Proportion of Area with Land Records and Digitised Land Records	39
3.3. Test-Check Results	39
3.4. Reasons for Failure in the RoR Test-Checks	42
3.5. Availability of Legally Usable Digitised Textual Records.....	44
3.6. Scores for Extent of Digitisation of RORs.....	44
 Chapter 4: Extent of Digitisation of Spatial Record	 48
4.1. Digitisation of Spatial Record as reported by States / UTs	49
4.2. Extent of Digitisation of Spatial Records as a Proportion of Area with Land Records.....	52
4.3. Test-Check Results	52

4.4. Reasons for Failure in the CM Test-Checks	54
4.5. Availability of Legally Usable Digitised Spatial Records	54
4.6. Scores for Extent of Digitisation of CMs	55
Chapter 5: Digitisation of the Registration Process.....	58
5.1. Public Data Entry	59
5.2. Circle Rate Availability	59
5.3. Stamp Duty Payment.....	63
5.4. Digital Attestation of the Document being Registered.....	63
5.5. Online Delivery of the Registered Document.....	65
5.6. Summary of the Digitisation of the Registration Process	65
5.7. Scores for the Extent of Digitisation of the Registration Process	69
Chapter 6: Quality of Land Records.....	70
6.1. Updating Ownership.....	71
6.2. Extent of Joint Ownership	73
6.3. Land Use.....	76
6.4. Land Area	80
6.5. Recording Encumbrances.....	82
Chapter 7: The N-LRSI 2020-21–Final Rankings	84
7.1. Components of N-LRSI 2020-21: Scores & Ranking.....	85
7.2. Overall N-LRSI 2020-21: Scores and Ranking	87
7.3. Sensitivity Analysis	88
Chapter 8: Accessibility Index 2020-21	92
8.1. Accessibility Index for Land Records and Related Services.....	95
8.2. All India Accessibility Index Scores and Ranks	105
8.3. Correlation between N-LRSI 2020-21 and Accessibility Index 2020-21 ..	106
Chapter 9 Progress and Prospects	108
9.1. Progress	109
9.2. Prospects	111
Annexures	114
Select Bibliography	152

LIST OF TABLES

Table E.1: N-LRSI 2020-21 Parameters, Weights and Mode of Evaluation	3
Table 1.1: Difference in Percentages of States/UTs in the Physical Progress of Various Components under DILRMP between December 2019 and December 2020.....	21
Table 2.1: N-LRSI 2020-21 Parameters, Weights and Mode of Evaluation	26
Table 7.1: Sensitivity Analysis	91
Table 8.1: Accessibility Indicators and Proxies	94
Table 8.2: State-wise Scores on the Accessibility Index	104

LIST OF FIGURES

Figure E.1: N-LRSI Scores 2020-21 and 2019-20	4
Figure E.2: N-LRSI 2020-21 by its 4 Components.....	5
Figure E.3: Integration between Land Records and Registration	8
Figure E.4: Extent of Joint Ownership	8
Figure E.5: Land Use Congruence	9
Figure E.6: Land Area/Extent	9
Figure E.7: Recording Encumbrances	10
Figure E.8: Scores for Accessibility Index.....	11
Figure 1.1: Historical Efforts towards Digitisation of Land Records	17
Figure 3.1: Digitisation of Record of Rights (RoRs) across States/UTs of India (as per the DoLR website).....	38
Figure 3.2: Area with Land Records	40
Figure 3.3: Extent of Digitised Textual Records after Verification by Test Checks: Comparison between N-LRSI 2020-21 and 2019-20	41
Figure 3.4: Availability of Legally Usable Copies of RoRs.....	43
Figure 3.5: State / UTs Scores for the Extent of Digitised Textual Records after Verification by Test Checks	45
Figure 3.6: Scores for Extent of RoR Digitisation and Availability of Legally Useable Copies (out of 20)	46
Figure 4.1: Digitisation of CMs across States/UTs of India (as per the DoLR website).....	50
Figure 4.2: Status of States/UTs with Digitised Spatial Records Not Amenable to Test Checks.....	51
Figure 4.3: Extent of Digitised Spatial Records after Verification by Test Checks-Comparison between N-LRSI 2020-21 and N-LRSI 2019-20	53
Figure 4.4: Availability of Legally Usable Copies of CMs.....	55
Figure 4.5: State / UTs Scores for Extent of Digitised Spatial Records after Verification by Test Checks	56
Figure 4.6: Scores for Extent of Digitisation of CMs and Availability of Legally Useable Copies	57
Figure 5.1: States/UTs with Web Portals for Public Data Entry	60
Figure 5.2: Success Rates in Accessing Circle Rates Online in N-LRSI 2020-21 and N-LRSI 2019-20	62
Figure 5.3: Systems for Online Stamp Duty Payment.....	64

Figure 5.4: States/UTs with Facility of Online Attestation of the Registered Document.....	65
Figure 5.5: States/UTs with Facility of Online Delivery of the Registered Document.....	66
Figure 5.6: Changes in States/UTs Status on Digitisation of the Registration Process: N-LRSI 2020-21 and 2019-20	66
Figure 5.7: Summary of Status of Digitisation of the Registration Process	67
Figure 5.8: Scores for Extent of Digitisation of the Registration Process: N-LRSI 2020-21 and 2019-20	68
Figure 6.1: States/UTs with Different Categories of "Integration" and "Instant Mutation"	71
Figure 6.2: Possession in the RoR	72
Figure 6.3a: Extent of Joint Ownership, 2020-21.....	74
Figure 6.3b: Extent of Joint Ownership-Comparison between N-LRSI 2020-21 and N-LRSI 2019-20	75
Figure 6.4: Availability of Cadastral Maps as Mosaics.....	76
Figure 6.5: Scores of Joint Ownership Extent (out of 10)	77
Figure 6.6: Land Use Congruence: Percentage of Success	78
Figure 6.7: States/UTs with Digitised CMs and FMBs	79
Figure 6.8 Percentage of Plots by Range of Variation between the Area in the RoR and CMs and Scores of States/UTs for Land Area Congruence.....	80
Figure 6.9: Status of Recording Encumbrances.....	81
Figure 7.1: Scores for Extent of Digitisation and Registration Process	86
Figure 7.2: Scores for Quality of Land Records and Services (out of 40)	89
Figure 7.3: N-LRSI Scores 2020-21 and 2019-20	90
Figure 8.1: Scores for Website Accessibility	96
Figure 8.2: Scores for Number of Attempts to Access the Website.....	97
Figure 8.3: Scores for Content Loading Time.....	98
Figure 8.4: Scores for Accessibility on Different Mobile Bandwidths (2G, 3G, 4G).....	99
Figure 8.5: Scores for Accessibility on the Mobile Phone	100
Figure 8.6: Scores for Functional Links for Accessing Information on Other Land Record-related Activities	101
Figure 8.7: Scores for Accessibility of Information with Basic Details	102
Figure 8.8: Scores for Customer Care.....	103
Figure 8.9: Scores of N-LRSI 2021 versus the Accessibility Index 2021	106

LIST OF BOXES

Box 2.1: Sampling Framework for N-LRSI 2020-21	33
Box 5.1: State-wise Patterns of Availability of Circle Rates	61

ABBREVIATIONS AND ACRONYMS

CAPTCHA	Completely Automated Public Turing test to tell Computers and Humans Apart
CBDT	Central Board of Direct Taxation
CLR	Computerisation of Land Records
CM	Cadastral Map
CR	Circle Rates
DI-LRMP	Digital India-Land Records Modernisation Programme
DoLR	Department of Land Resources
E-GRAS	Electronic-Government Revenue Accounting System
EoDB	Ease of Doing Business
FAQ	Frequently Asked Questions
GIGW	Guidelines for Indian Government Websites
GIS	Geographical Information System
GoI	Government of India
KC	Knowledge Correspondent
LPI	Land Policy Initiative
MeitY	Ministry of Electronics and Information Technology
MIS	Management Information System
NCAER	National Council of Applied Economic Research
NIC	National Informatics Centre
NLRMP	National Land Records Modernisation Programme
N-LRSI	NCAER-Land Records and Services Index
ONI	Omidyar Network India
PDF	Portable Document Format
PPS	Probability Proportional to Size
RoR	Records of Rights
SRA & ULR	Strengthening of Revenue Administration and Updating of Land Records
SRO	Sub-Registrar Office
UT	Union Territory

EXECUTIVE SUMMARY

N-LRSI 2019-20 was formulated by the NCAER Land Policy Initiative (LPI) to gauge: i) the extent of digitisation of land records and services, and ii) the improvement in the quality of the record as a result of the digitisation process. The first edition of the Index, released on 27 February 2020, laid out the background and rationale for the subsequent rounds of the Index.

This second round of the N-LRSI 2020-21, conducted a year later, is an opportunity to measure the progress made by the various States/UTs on the parameters that formed the basis of N-LRSI 2019-20. It also facilitates assessment of the extent to which the recommendations made to various States/UTs in N-LRSI 2019-20 were considered for implementation. The results of N-LRSI 2020-21 also posit reflection on next steps for the Index.

N-LRSI 2020-21 used the same components and weights as those used in the first round for ease of comparison:

- a) It allocates a 60 per cent weightage to the extent of computerisation of land records (including improvement in the delivery of frequently used services) and the registration process; and
- b) A 40 per cent weightage has been accorded to the extent to which the

record possesses features that are likely to reflect an improved quality of land records with timely updating of ownership, the extent of joint ownership, actual land use, area, and noting of encumbrances.

The components comprising the Index, their weightage in the Index, and the method of evaluation are presented in Table E.1.

N-LRSI Scores and Ranking of States/UTs—2020-21 and 2019-20

The mean N-LRSI score across 32 States/UTs has increased by 16.6 per cent in 2020-21 from 38.7 in 2019-20 to 45.1 (out of the maximum score of 100 points). Madhya Pradesh has emerged as the top performer for the second year in a row. Five States have scored more than 70 points in N-LRSI 2020-21, up from only one State with more than 70 points in N-LRSI 2019-20. The N-LRSI scores for 2020-21 and 2019-20 across the States/UTs of India are presented in Figure E.1.

The other striking features of N-LRSI 2020-21 in comparison with N-LRSI 2019-20 are as follows:

- i) Out of 32 States/UTs that have been ranked in the two editions of

(Maximum points =100)

Source: N-LRSI 2020-21 and 2019-20. NCAER.

Note: KCs=Knowledge Correspondents [KCs were contacted under this exercise to seek their advice on specific questions about the status and process of the land records in the States/UTs; and they variously comprised senior officers, other retired and serving revenue officers, and/or experts with knowledge of land matters in the relevant State/UTs.]

ii) In percentage terms, the improvement in mean scores across the two rounds

iii) The most significant jump in percentage terms is in the case of Bihar at 125 per cent that enabled the

Figure E.1: N-LRSI Scores 2020-21 and 2019-20

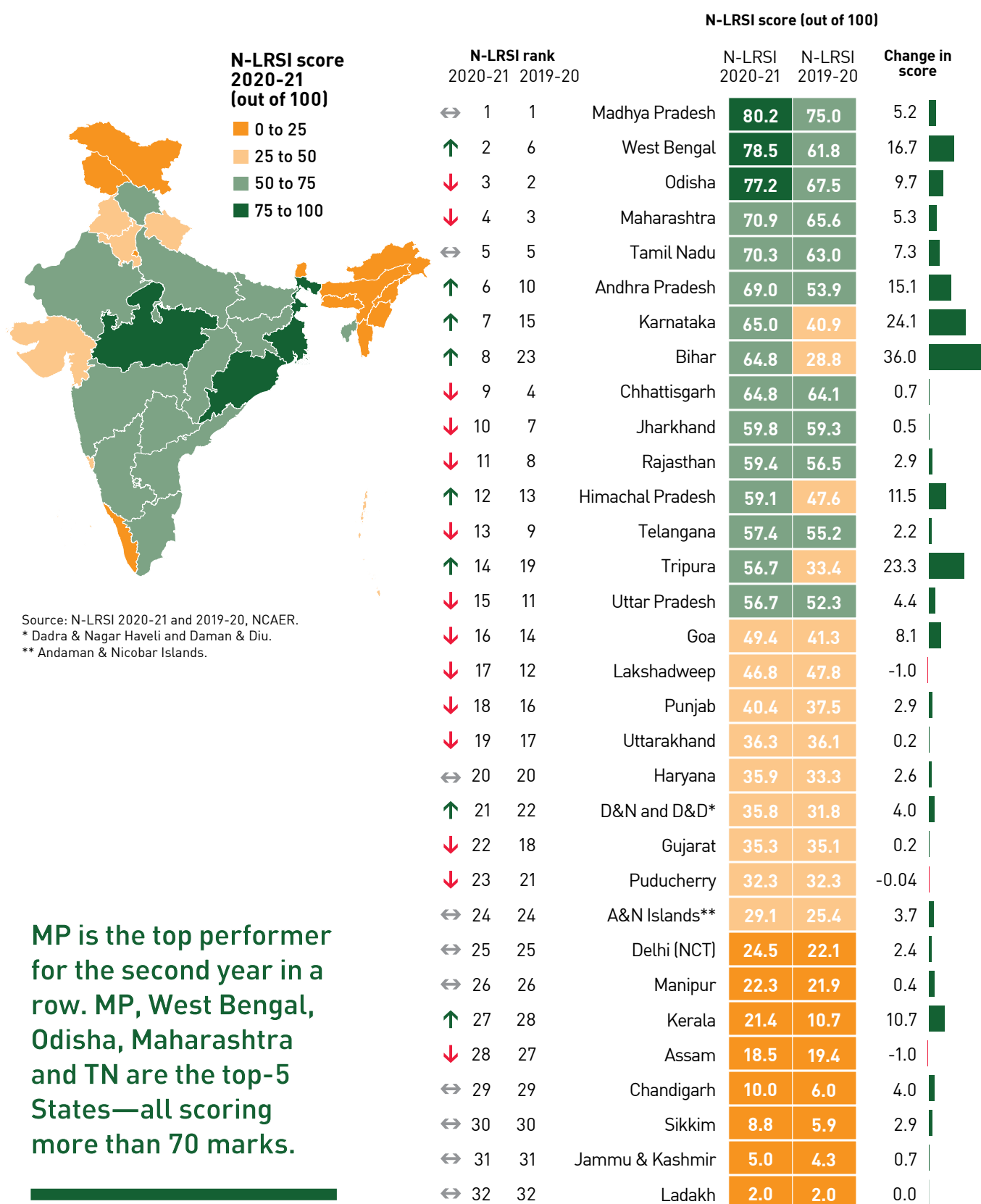


Figure E.2: N-LRSI 2020-21 by its 4 Components

0 to 25 25 to 50 50 to 75 75 to 100

Note for color coding: All values in a component were rebased to 100, and colors were assigned in four scoring bands: 0-25, 26-50, 51-75 and 76-100.

	N-LRSI Rank	N-LRSI Score (out of 100)	Textual Record (out of 20)	Spatial Record (out of 20)	Registration (out of 20)	Quality of Land Records (out of 40)	Change over N-LRSI 2019-20			
Madhya Pradesh	1	80.2	19.0	17.4	15.9	27.9	↓	↑	↑	↑
West Bengal	2	78.5	19.7	18.8	18.9	21.1	↑	↑	↑	↓
Odisha	3	77.2	17.5	15.0	15.8	28.9	↑	↓	↑	↑
Maharashtra	4	70.9	19.3	8.0	15.9	27.7	↑	↑	↑	↑
Tamil Nadu	5	70.3	19.9	19.3	14.0	17.2	↑	↑	↑	↓
Andhra Pradesh	6	69.0	16.6	0.0	13.9	22.9	↑	↔	↑	↑
Karnataka	7	65.0	16.5	13.0	11.7	23.7	↑	↑	↑	↑
Bihar	8	64.8	14.6	13.5	15.6	21.1	↑	↑	↑	↑
Chhattisgarh	9	64.8	17.4	15.8	4.9	26.7	↓	↑	↑	↑
Jharkhand	10	59.8	10.9	12.2	9.3	27.4	↑	↑	↑	↓
Rajasthan	11	59.4	16.2	7.4	11.7	24.1	↓	↑	↑	↓
Himachal Pradesh	12	59.1	14.9	10.5	7.4	26.3	↓	↑	↑	↑
Telangana	13	57.4	15.0	11.1	9.4	21.9	↑	↑	↑	↑
Tripura	14	56.7	17.4	14.5	4.0	20.8	↑	↑	↔	↑
Uttar Pradesh	15	56.7	18.8	4.4	11.7	21.8	↑	↑	↑	↑
Goa	16	49.4	19.6	0.0	7.9	21.9	↑	↔	↑	↑
Lakshadweep	17	46.8	0.0	0.0	0.0	0.0	↔	↔	↔	↔
Punjab	18	40.4	15.5	0.0	12.7	12.1	↑	↔	↑	↑
Uttarakhand	19	36.3	13.9	0.0	13.8	8.7	↑	↔	↑	↓
Haryana	20	35.9	11.5	0.0	11.8	12.6	↑	↔	↓	↑
D&N and D&D*	21	35.8	17.9	0.0	5.9	12.1	↔	↔	↑	↑
Gujarat	22	35.3	16.2	0.0	5.7	13.4	↓	↔	↑	↓
Puducherry	23	32.3	15.7	0.0	5.7	10.9	↓	↔	↑	↑
A & N Islands**	24	29.1	13.1	0.0	5.7	10.4	↑	↔	↑	↓
Delhi (NCT)	25	24.5	8.5	0.0	4.0	12.0	↓	↔	↑	↑
Manipur	26	22.3	1.8	0.0	10.0	10.5	↓	↔	↔	↑
Kerala	27	21.4	0.0	10.9	6.0	4.5	↔	↑	↑	↔
Assam	28	18.5	6.6	0.0	2.0	9.9	↓	↔	↔	↑
Chandigarh	29	10.0	0.0	0.0	8.0	2.0	↔	↔	↑	↔
Sikkim	30	8.8	0.0	0.0	4.0	4.8	↔	↔	↑	↑
Jammu & Kashmir	31	5.0	0.0	0.0	3.0	2.0	↔	↔	↑	↔
Ladakh	32	2.0	0.0	0.0	0.0	0.0	↔	↔	↔	↔

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

* Dadra & Nagar Haveli and Daman & Diu. ** Andaman & Nicobar Islands.

**Bihar,
Tripura,
Karnataka,
West Bengal,
and AP are
among the
States/UTs
reporting
maximum
improvement
in N-LRSI
2020-21.**

State to jump from rank 23rd to 8th in N-LRSI 2020-21. The next best improvement in percentage terms has been shown by Kerala (99.7 per cent). However, this improvement is on a very low base and did not enable Kerala to make a significant change in its position (with its rank improving only by one place, to 27 from 28 earlier). Tripura, Karnataka, West Bengal, and Andhra Pradesh are the other States/UTs which exhibited significant improvement in both percentage terms and in their ranking in N-LRSI 2020-21 as compared to N-LRSI 2019-20.

- iv) The mean score of all States/UTs for all aspects of digitisation has increased to 29.6 points out of 60 in N-LRSI 2020-21 from the 24.6 points recorded in N-LRSI 2019-20. The mean score for the quality of land records, on the other hand, has increased to 16.4 points in N-LRSI 2020-21 out of a maximum score of 40 from the 15.1 reported by N-LRSI 2019-20. The comparative assessment of N-LRSI scores for 2020-21 and 2019-20 on its two broad components for all the States/UTs is presented in Chapter 7 of this report.

Digitisation of Textual and Spatial Records

The extent of digitisation of land records was measured for both the textual records (RoRs or Record of Rights) and spatial records (Cadastral Maps or CMs). The Department of Land Resources (DoLR) portal figures do not provide details of the actual area for which land records are in existence, nor do they offer information on whether the records that are being

reported as digitised, and are available on the web or not. Therefore, understanding the position in this regard was the first step before computing the actual scores.

The DoLR website showed that 33 States and UTs have digitised their textual records to varying degrees. However, like last year, test checks were possible for only 27 States/UTs. In the remaining six States/UTs, that is, Kerala, Sikkim, Ladakh, Mizoram, Nagaland, and Chandigarh, the textual records reported to have been digitised are not available on online portals. Following are the key findings of this exercise:

- At the all-India level, test checks verified the reported achievement to the extent of 92.1 per cent in N-LRSI 2020-21 as compared to 91.8 per cent in N-LRSI 2019-20.
- The mean score for all States/UTs for the extent of RoR digitisation as well as legal usability, has improved from 14.4 out of the maximum of 20 in N-LRSI 2019-20 to 15.1 in N-LRSI 2020-21, for 27 States/UTs.
- The top five States/UTs are Tamil Nadu, West Bengal, Goa, Maharashtra, and Madhya Pradesh.
- The number of States/UTs where digitally signed copies of RoRs are available from the website has gone up to 10 in the current round as compared to 9 in 2019-20, with the addition of West Bengal. Odisha has joined the list of States/UTs where digitally signed copies of RoRs are available from the CSCs in 2020-21.
- As compared to the previous round, an improvement in scores is seen in 15 States/UTs, 7 show a similar

position whereas the balance 5 States/UTs show a marginal decline.

The DoLR website showed varying degrees of digitisation of CMs in 32 States and UTs. However, test checks were possible only in the case of 17 States/UTs that make these records available on the web. There is an addition of three new States, viz., Tripura, Karnataka, and Bihar in the current round to the 14 that were tested in the last round. The key findings of this exercise are as follows:

- The all-India (17 States/UTs) test checks verified the achievement reported by States/UTs to the extent of 87.8 per cent in 2020-21 as compared to 63.9 per cent in 2019-20.
- The mean score for all States/UTs for the extent of CM digitisation as well as legal usability has improved from 9.1, out of the maximum of 20, in N-LRSI 2019-20 to 13.2 in N-LRSI 2020-21.
- The top five States/UTs are Tamil Nadu, West Bengal, Madhya Pradesh, Lakshadweep Islands, and Chhattisgarh.
- In the case of CMs also, the three States/UTs where digitally signed copies are available from the website has seen the addition of West Bengal this time.
- In the extent of digitisation of CMs, all States/UTs have improved their scores as compared to the previous round.

The scores for the extent of digitisation of RoRs and CMs with legally usable copies

for 2020-21 and 2019-20 across the States and UTs of India, are presented in Figures E.2.

Computerisation of Registration

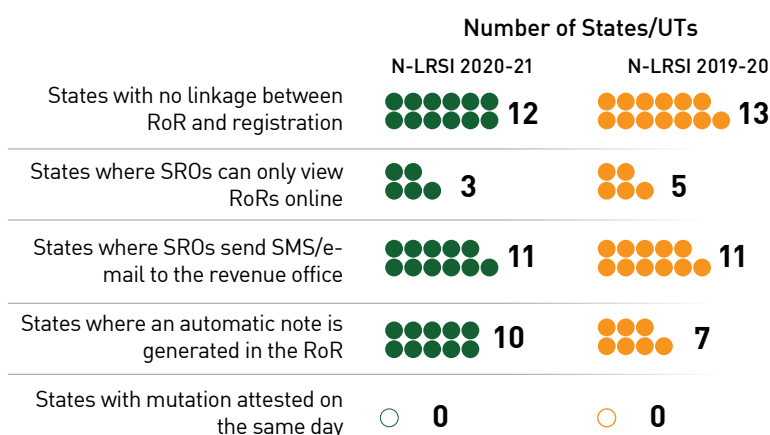
The N-LRSI measures the computerisation of the registration process with respect to digital availability of the following five stages:

- i) Facility for online entry of data with regard to the proposed registration;
- ii) Online updated circle rates;
- iii) Facility for online payment of stamp duty/registration fee/e-stamp;
- iv) Online verification of payment/scrutiny of requisite details and completion of the registration process with digital signature; and
- v) Immediate delivery of the digitally signed.

For registration, circle rates were test checked for 26 States/UTs with an addition of the following three UTs in the present round: Andaman and Nicobar Islands, Chandigarh and Dadra & Nagar Haveli and Daman & Diu. Six States/UTs reported no provision for digitisation of any stage of the registration process. The assessment yielded the following results:

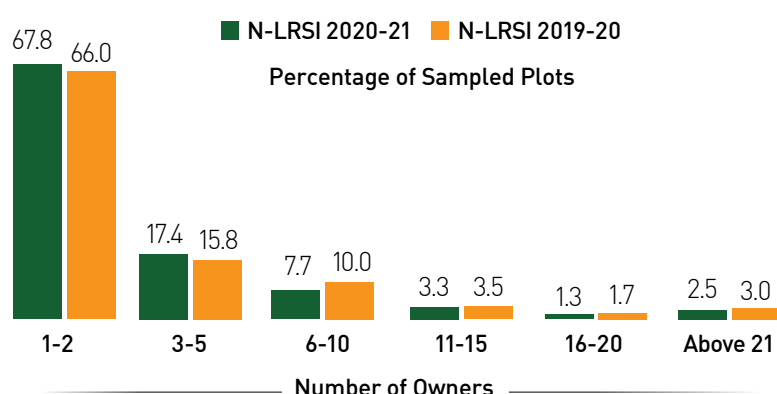
- The mean score for extent of digitisation of registration process across these 30 States/UTs is 9.5 points (out of 20) in N-LRSI 2020-21, compared to 8.2 in N-LRSI 2019-20.

Figure E.3: Integration between Land Records and Registration



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Figure E.4: Extent of Joint Ownership



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

- The top five States in terms of performance are West Bengal, Maharashtra, Madhya Pradesh, Odisha and Bihar.
- None of the States/UTs has regressed this time as compared to the points scored in N-LRSI 2019-20.
- Compared to the last round, 26 States/UTs have shown varying levels of improvement.

The scores for extent of digitisation for the registration process for 2020-21 and 2019-20 across States and UTs of India are presented in Figure E.2.

Quality of Land Records

As in N-LRSI 2019-20, the following five elements were analysed for assessing the quality of land records in the current round: updating ownership, extent of joint ownership, land use, land area or extent, and recording encumbrances. These elements bear a relationship with the incidence of disputes and the ease with which transactions in land are effected. All of them are detailed below.

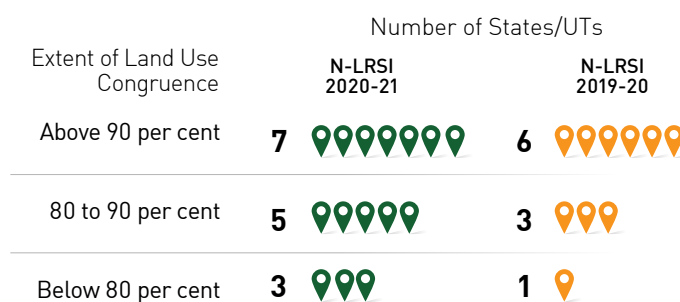
- Updating ownership:** This exercise assessed how quickly a mutation is effected in the land records to reflect a change of ownership following the registration of a transaction. N-LRSI 2020-21 points to some improvement in the number of States integrating the registration process and the RoRs. While there is still no State/UT with a provision for same-day mutation, in ten States/UTs, a note appears in the RoR automatically upon registration as compared to seven States/UTs in N-LRSI 2019-20. Figure E.3 presents a comparative summary of the status of “integration” between land records and registration for States/UTs in N-LRSI 2020-21 and N-LRSI 2019-20.
- Extent of joint ownership:** As compared to N-LRSI 2019-20, the average score related to the extent of joint ownership has marginally increased by 1.6 per cent in N-LRSI 2020-21. Out of 27 States/UTs for

which this analysis was carried out, 16 have shown an increase in their scores while in 10, the scores have declined, and in one case there is no change. The comparative picture of the overall summary that emerged from the samples checked, with respect to the differing percentages of owners, in the two rounds, is presented in Figure E.4.

(iii) **Land use:** For gauging the consistency between the land use reflected in the RoR and the on-ground situation, N-LRSI compares the land use recorded in RoRs with the Google Earth pro-map-images of the plots. This exercise was possible only for 15 States/UTs where the digitised land record is exhibited in mosaic form, as compared to 10 States/UTs covered in the last round. Overall, the 15 States/UTs exhibited an average land use consistency of 87.9 per cent as compared to 76 per cent for the 10 States/UTs in N-LRSI 2019-20. A summary of the results obtained from this test check is presented in Figure E.5.

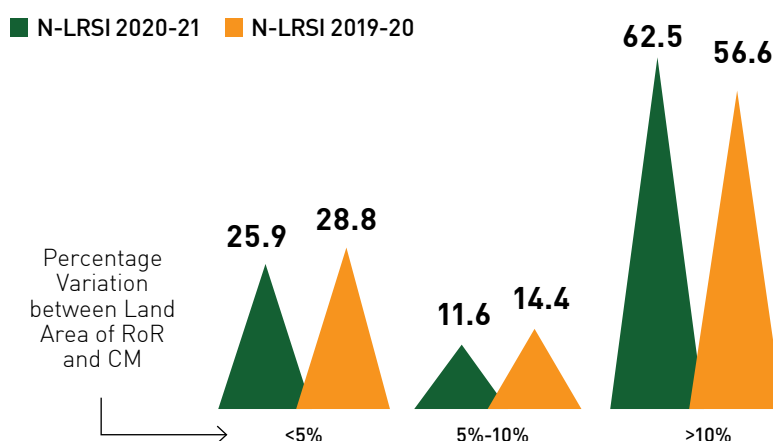
(iv) **Land area or extent:** For assessing the correspondence between the area or extent shown in the RoR and the on-ground situation, the proxy used was the area of the same plot in a digitised CM. This check is only possible where the digitised CMs are vectorised, and computed area values are reflected on the CMs, or at least the line lengths are available for computation. This situation was manifested in 11 States/UTs in the current round as compared to 9 States/UTs in N-LRSI 2019-20. The results show relatively low congruence in the area

Figure E.5: Land Use Congruence



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Figure E.6: Land Area/Extent



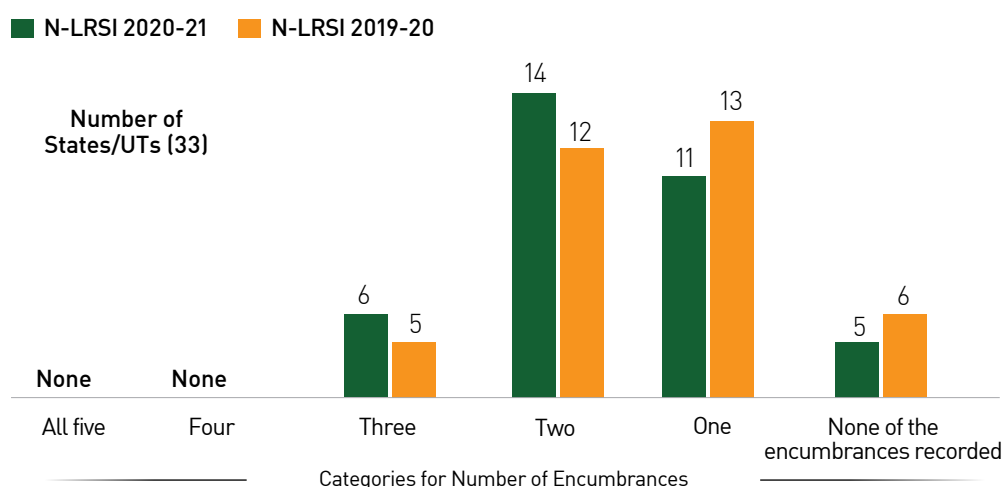
Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

of plots between the RoRs and CMs, and a worse situation compared to that shown by the checks in N-LRSI 2019-20. A comparative summary of the percentage variation between the land area in RoR and CMs in N-LRSI 2020-21 and N-LRSI 2019-20 is presented in Figure E.6.

(v) **Recording encumbrances:** The following five types of encumbrances were identified with a significant incidence: mortgages, land acquisition proceedings, institution of revenue

There is a strong correlation between the N-LRSI 2020-21 scores and the Accessibility Index 2020-21 scores but AP, MP, Maharashtra and Rajasthan score low on accessibility despite their impressive N-LRSI 2020-21 scores.

Figure E.7: Recording Encumbrances



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

court cases, institution of civil court cases, and any statutory land use restrictions applicable to a particular plot. The States of Bihar, Tripura, Sikkim, and West Bengal have now reported that they record less encumbrances than were mentioned in N-LRSI 2019-20. The number of States/UTs reporting a recording of encumbrances in N-LRSI 2020-21 and N-LRSI 2019-20 is presented in Figure E.7.

The five States with the best scores for the quality of records and services are Odisha, Madhya Pradesh, Maharashtra, Jharkhand, and Chhattisgarh. As compared to the last round, 24 States/UTs have improved or retained their positions on this component in the present round. The scores for quality of land records and services for N-LRSI 2020-21 and N-LRSI 2019-20 across the States and UTs of India are presented in Figure E.1.

Accessibility Index 2020-21

While N-LRSI 2019-20 had presented a preliminary analysis of accessibility issues with State portals, in N-LRSI 2020-21, an

Accessibility Index has been constructed based on the Guidelines for Indian Government Websites 2.0 (GIGW 2.0), prepared by the Ministry of Electronics and Information Technology (MeitY). The Index has been constructed for 31 States/UTs (out of 36) that have designed and hosted websites for land records. The Accessibility Index highlights the fact that despite the progress made by some of the States/UTs in overall digitisation, they offer a relatively less commendable user experience of this digitisation. It highlights that mere digitisation cannot assure better services and that States/UTs also need to enhance ease of access and navigation for users of websites. Figure E.8 presents the Accessibility Index scores for the States/UTs.

Future Directions

The N-LRSI study is expected to credibly capture both the supply-side and demand-side dimensions of land record-related services in each State/UT, and thereby spur individual States/UTs to improve their respective goals of effective land record management and provision of services. The N-LRSI 2019-20 study was

focused on the supply-side indicators. The N-LRSI 2020-21, on the other hand, intends to integrate the supply-side dimension with a demand-side survey, envisioned to be carried out in the middle of 2020-21 (which was delayed due to the COVID-19 pandemic). This report presents the progress made by States/UTs in the supply-side dimension since the launch of N-LRSI 2020, that is, over the one-year period between December 2020 and December 2021. After the completion of the demand-side survey, the findings therefrom will be integrated with those of this study.

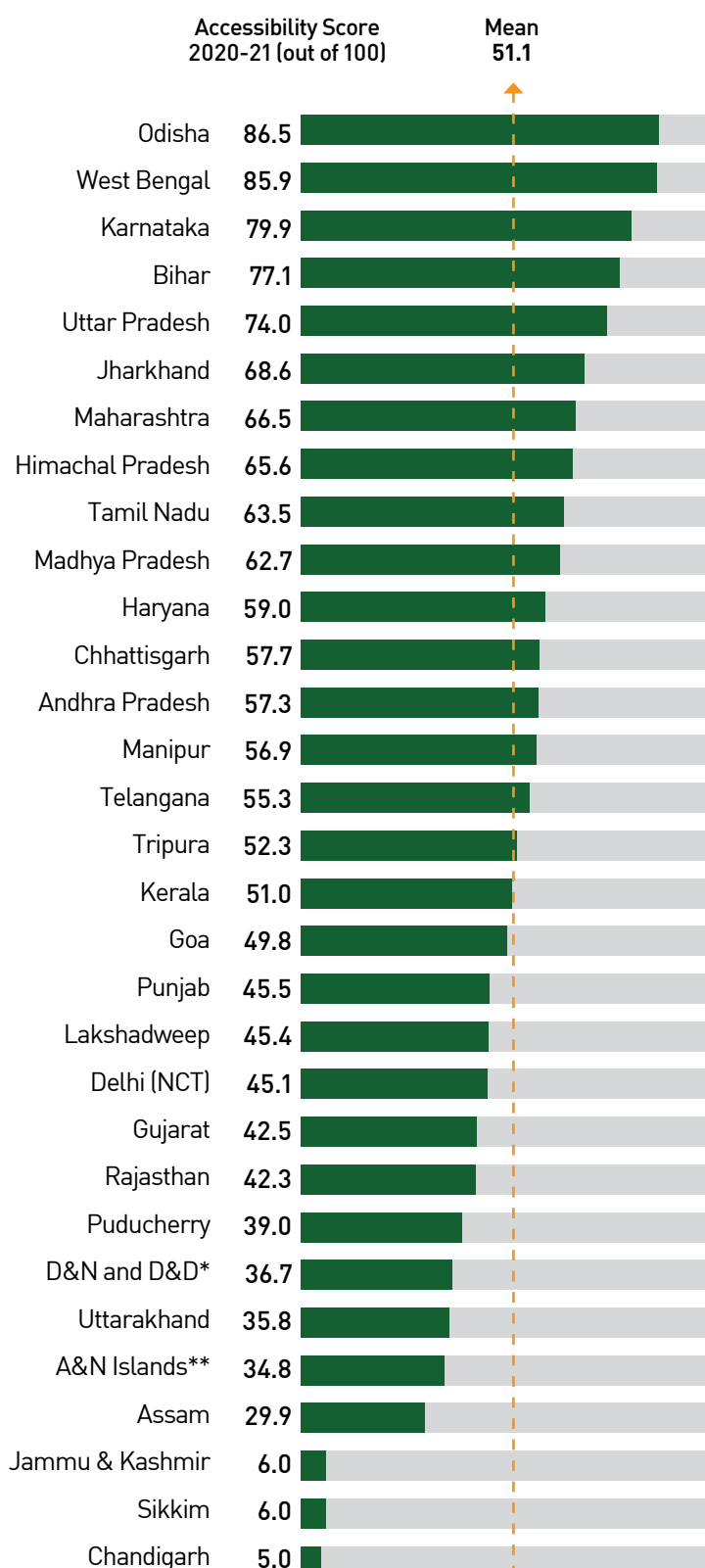
The two rounds of constructing the N-LRSI have highlighted the promise of this exercise and also brought out some limitations that will need to be addressed, if the Index is to be of value in the long run.

The States/UTs have exhibited significant interest in making improvements from one round to the next. At the very least, reporting by States on the DoLR website is a far more accurate reflection of the actual status of the digitisation effort. On the Index, the improvement has been most visible in the measurement of the extent of digitisation of the records and registration process, that is, areas which can be achieved relatively swiftly but have finite limits.

Another issue emerging from the current year's exercise pertains to shortcomings in ease of access and navigability on websites, for users. These gaps can also be addressed relatively quickly and enable improved user experience.

The pandemic has delayed the addition of a third dimension in the Index: client surveys to understand the value and utility of digitised records and processes for the public. It is likely that when this survey is done, it will underscore the importance

Figure E.8: Scores for Accessibility Index



Source: N-LRSI 2020-21, NCAER.

* Dadra & Nagar Haveli and Daman & Diu. ** Andaman & Nicobar Islands.

of progress on the most difficult area of improvement in relation to the Index: increasing the real-time accuracy and comprehensiveness of land records.

A comparison of the results of two rounds of the N-LRSI, on parameters related to the quality of the records, shows both the extent of the territory still to be covered in this regard and the examples that are worth emulating for the States/UTs lagging behind, as follows:

- i) Real-time attestation of mutations for property-related transactions is still to be achieved by any State/UT.
- ii) Linking databases like birth and death registers and genealogical tables (attached to RoRs in some States/UTs) in order to bring the requirement for inheritance-related mutations into real-time notice, is still in the realm of ideas only.
- iii) The issue of recording tenant possession of rented built-up properties is still pending discussion.
- iv) Building plan approvals need to be linked to land records so that the latter reflect changes in land use as well as the extent of the proposed built-up properties.
- v) Databases such as the Official Gazettes that record the start of land acquisition proceedings or the introduction of town planning-related land use, need to be linked to the land records database so that these restrictions can be recorded in real time.
- vi) Recording all ownership in built-up vertical spaces, like apartment blocks, as is being attempted in Maharashtra,

is still awaiting action in most States/UTs. Linking records of cooperative societies or drawing on municipal property tax records can make this task easier.

- vii) The excellent initiative to create a record for inhabited rural areas under the Pradhan Mantri Swamitva Yojana needs to be properly planned and monitored.
- viii) The States/UTs need to consider ways to accord legal legitimacy to the area actually recorded in the digitised CMs, where it shows greater congruence with the on-ground situation as compared to the area noted in the RoR.
- ix) Some States and UTs appear to have made progress in linking the institution of court cases with the textual records. These actions are worth emulating by other States/UTs at the earliest.
- x) For the Government of India, the N-LRSI offers a great opportunity in many aspects. At the minimum, it can help the Government seek better quality while attempting to update information from the States/UTs on the DoLR websites. The States/UTs can be requested to make updating a real-time exercise by standardising the links to the relevant databases. The States/UTs can also be requested to carry out more quality checks of their records. Most important, the Government of India can explore approaches for rewarding and recognising States/UTs that perform better on this Index so that the others are incentivised to improve and race beyond the front-runners.

Going forward, it is evident that there is reason to continue bringing out the N-LRSI even while considering ways to amend its composition in order to obtain even more meaningful results in the future. The areas of change in the N-LRSI have been discussed in detail here.

According weightage to accessibility parameters will increase attention towards improving the digital experience for the

user. The client survey will act as a reality check on the value of the digitisation efforts for the public and further highlight matters requiring greater attention. A progressive reduction in the weight attached to the extent of digitisation (as States and UTs reach close to a 100 per cent achievement on this parameter) while maintaining the emphasis on quality parameters, may also merit consideration.



CHAPTER 1

INTRODUCTION

The COVID-19 pandemic served a second blow to economic growth in India, after the dramatic slowdown in the economy that had already set in through 2018 and 2019. With the Union and state governments being pre-occupied in dealing with the pandemic for the better part of the calendar year 2020, reforms to address critical bottlenecks were also delayed. However, during the lockdown and the gradual re-opening of the economy, the resurgence in agricultural activities and outputs was a positive exception amidst contraction in all the other sectors.

The Government of India launched the Survey of Villages and Mapping with Improved Technology in Village Areas (SVAMITVA) scheme in April 2020. This scheme seeks to confer land titles in hitherto unmapped and inhabited parts of rural India. This move has generally been welcomed with guarded optimism amidst suggestions to ensure its sustained benefits.

As has been noted in N-LRSI 2019-20 too, the major impediments that inhibit both investment and poverty reduction include constraints to the acquisition and holding of land, and transactions in land and property.

The NCAER Land Policy Initiative (LPI) Team carried out the second 2020-21 round of the N-LRSI digitally during and after the COVID-19 induced national lockdown. The present report on the N-LRSI 2020-21 measures the progress made in digitisation and improvement of land records and registration processes across all the states and UTs of India. The first edition of the Index was released on 27 February 2020. The introduction to that report, which laid out the background

and rationale for preparation of the Index, is briefly recapitulated below.

India's spectacular jump in the overall ranking on the World Bank of Ease of Doing Business (EoDB) index from the 142nd position in 2014 to 63rd in 2020, was in marked contrast to the dismal showing on the component of the Index that relates directly to land (World Bank, 2020). Efforts at improving land governance have not yet shown substantial results. India's position in terms of the ease of registering property has moved up only marginally from 166 in 2019 to 154 in 2020. However, there are substantial differences in the results achieved by different States in terms of improving processes for those transacting in land. Highlighting these differences in State-level outcomes could significantly help in fostering performance-based competition between the States and UTs.

1.1 Importance of Improving Property Record Systems

Since land is the most important income-earning asset for many people around the world, the importance of reforming property rights cannot be over-emphasised, especially in developing countries. Globally, India is among the world's most land-scarce countries relative to population. By 2050, India is expected to witness a four-fold decline in land per capita in India, whereas China and Brazil are slated to have correspondingly four times and 20 times more land per capita, respectively (NCAER, 2017). Land-related disputes in India account for about 60 to 70 per cent of all civil litigation. About 25 per cent of all cases decided by the Supreme

Land-related disputes in India account for about 60 to 70 per cent of all civil litigation.

Maintenance of proper land records ensures security of tenure for small farmers, poor and vulnerable; efficient functioning of land markets and robust economic activity.

Court involve land disputes, of which 30 per cent concern disputes relating to land acquisition (Wahi, 2019). The fact that a large number of land parcels are subject to legal disputes and unclear titles makes tenure insecure for the rising poor and vulnerable people, thereby creating a sense of insecurity in the business climate, discouraging new investment, and posing a challenge for governance.

The real estate sector, which accounts for about 11 per cent of India's GDP, is characterised by an extremely inefficient property market and is a commonly used means of parking unaccounted-for money (CBDT, 2012). The Standing Committee on Finance (2015) also suggested that the challenge of generation of black money through benami transactions could possibly be addressed by digitisation of land records and their regular updation. Recent surveys have found that land and property departments in a number of States/UTs are centres of bribes and corruption (India Corruption Survey, 2019).

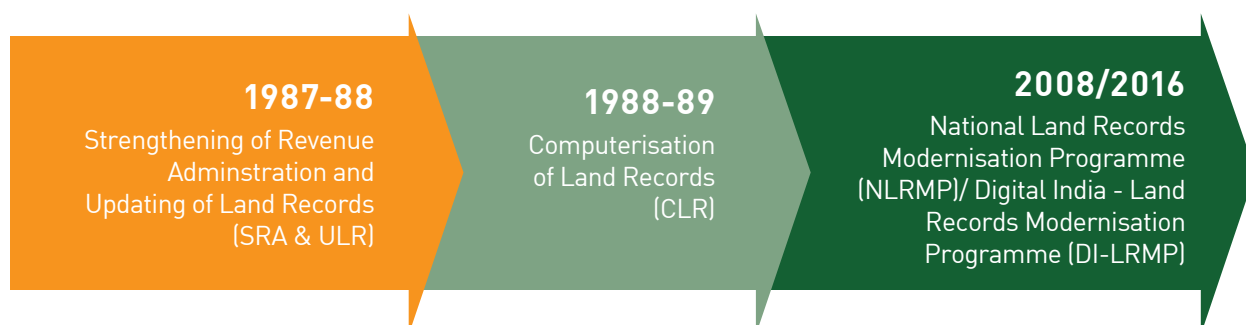
Protecting property rights is important because it helps the economy deal with the resource scarcity by ensuring regulated use of land through ownership. The pendency of several million cases relating to land disputes in courts across is partly due to the lack of comprehensive and up-to-date land records. Maintenance of proper land records ensures security of tenure for small farmers, and for the poor and vulnerable in both rural as well as urban areas. The promotion of secure property rights and land titles is a fundamental requirement not only for efficient functioning of land markets but also for achieving robust economic activity by enabling access to much-needed credit in agriculture, and facilitating access to land and associated infrastructure in the manufacturing and services sectors. Improved functioning

of land markets is bound to help in streamlining compensation during land acquisition, which in turn, will boost the ease-of-doing-business, as land is a significant resource for industrial activity.

Digitisation is the key to improving land records and services in India, as it eliminates redundant labour and human error while simplifying the task of updating records. It allows for better servicing of clients by enhancing access to records and connected services, while also enabling analysis to guide policy for achieving real-time accuracy. A web-enabled "anytime-anywhere" access to records saves citizens time and effort in obtaining hard copies of the records. Automatic and automated mutations can also significantly reduce the scope of fraudulent property deals. Computerisation of registration is essential not only for ensuring efficient and hassle-free property registration but also for integrating land records management with the registration process. The application of digitised processes for entry of registration data, calculation of the taxes due, and for making payments, and use of online systems to approve registration and deliver final documents, further reduce client interface with the registration machinery and the latter's discretion in the entire process.

Apart from being digitised, land records need to accurately reflect the on-ground reality. In many cases, land (and property) records are maintained across different departments and agencies, and may, therefore, contain inconsistencies or may not have been updated to reflect the current picture (Mishra and Suhag, 2017). In such a situation, discrepancies are often noted between property documents in several records and the actual position on the ground. Such a process, besides being inefficient and time-consuming,

Figure 1.1: Historical Efforts towards Digitisation of Land Records



Source: NCAER Report on 'Pilot Impact Assessment of the Digital-India Land Records Modernisation Programme', 2017.

also adversely affects future property transactions, thereby reiterating the need for accuracy in land records.

1.2 Digitisation of Land Records: Efforts and Achievements

Historical Efforts towards Computerisation of Land Records in India

The Government of India (GoI) introduced two programmes focusing on computerisation of the land records in the 1980s. These included: (i) strengthening of Revenue Administration and Updating of Land Records (SRA and ULR) in 1987-88, and (ii) Computerisation of Land Records (CLR), in 1988-89. In 2008, the Department of Land Resources in the Ministry of Rural Development merged the two schemes into the flagship National Land Records Modernisation Programme (NLRMP). Although it began as a Centrally Sponsored Scheme (with joint Central and State funding), the programme has since been recast as a Central Sector Scheme with the GoI providing 100 per cent funding for it.

The immediate objective of the programme was to establish a modern,

efficient land records management system in the country with real-time updation of land records, leading to a system of conclusive titling for ensuring conclusive proof of ownership of a property. The components of the programme include funding for digitisation of textual and spatial records as well as registration systems. The programme was brought under the ambit of the 'Digital India' programmes in 2016, and has since been re-designated as the 'Digital India Land Records Modernisation Programme (DI-LRMP)'. Figure 1.1 depicts the evolution of the Government of India's efforts to promote computerisation of land records (NCAER, 2017).

Despite the passage of three decades of implementation of successive programmes for digitising land records and registration processes, studies point to a mixed impact of these programmes across various States/UTs.

1.3 Rationale for the N-LRSI

The N-LRSI is the first comprehensive exercise undertaken to assess the reality about the status of land records across the States/UTs, to determine where the progress has been significant, to identify

The NLRMP programme has been re-designated as the 'Digital India Land Records Modernisation Programme (DILRMP)' in 2016.

The N-LRSI aims at credibly capturing various dimensions of land record-related services in each State/UT, and promote a race to the top among Indian States/UTs.

gaps, and to flag solutions for addressing these gaps. Presenting a comparative picture across States/UTs on an annual basis through such an Index may incentivise the States/UTs to improve their performance by instilling a sense of positive competition among them, besides also enabling them to take specific remedial actions. The NCAER Land Records and Services Index (N-LRSI) hopes to achieve these fundamental objectives.

The N-LRSI seeks to answer the following questions for all the States and UTs in India:

- What is the actual extent of digitisation of land records and the registration process?
- What is the level of improvement in land record services brought about by the digitisation process?
- What is the improvement in the quality of land records brought about by the digitisation process?

The Index emerged from the recommendations made in the DI-LRMP Impact Assessment undertaken by NCAER and its partner institutions in 2017 (NCAER, 2017). The pilot Impact Assessment yielded lessons that have informed the design of the N-LRSI. The study established that it is possible to test-check the status of digitisation reported by each State/UT based on the records available on the Internet. The extent of ease of accessing a basic service like obtaining a copy of the record can be established by verifying the mode that enables citizens to access legally useable copies of the record. Similarly, the extent of improvement in the registration process can be understood by

verifying the progress in computerisation of various stages needed to complete the process of registering a transaction.

The challenges in preparation of the Index lay in checking for the quality of the land record. For checking accuracy, it was not practical to undertake physical verification on the ground across the country in every State and UT. Both the time and cost implications of such an endeavour, entailing the use of a sample large enough to command credibility, would be prohibitive. There was thus a need to develop indicators for examining the core qualities of an inherently good land/property record, viz., timely updating of ownership details, reduced extent of joint ownership, accurate reflection of the area or extent of the land/property, precise recording of the land use classification of the property, and identification of all encumbrances affecting it. Therefore, the primary challenge was to design an assessment system that could provide details pertaining to the quality of the land records based on the available digital databases and information sources.

The Index that was consequently created grouped the weighted indicators in a ratio of 60: 40 to measure:

- a) The extent of computerisation of land records and registration, as well as improvement in delivery of frequently used services; and
- b) The extent to which the record possesses features likely to reflect an improved quality of land records, with timely updation of ownership data; extent of joint ownership; actual land use and area; and record of encumbrances.

The N-LRSI aims at credibly capturing various dimensions of land record-related services in each State/UT, and thereby spur individual States/UTs to improve their respective standings in the N-LRSI rankings. The goal is to promote a race to the top among Indian States/UTs in land record modernisation. The positive spirit of participation in such a race can help improve the business climate, reduce litigation, unlock the rural and urban value in land, and better protect vulnerable groups. It is hoped that the N-LRSI will motivate States/UTs to improve their land record systems and thereafter continue to sustain these improvements. The ranking of States/UTs on the N-LRSI can be used to reward better-performing States/UTs, thereby driving more outcome-based funding.

Following were the highlights of N-LRSI 2019-20:

- a) Data on the website of the Department of Land Resources (DoLR) showed that 28 States and UTs had achieved a 90.6 per cent success rate in digitisation of RoRs whereas 14 States and UTs had achieved a 78.1 per cent success rate in digitising Cadastral Maps (CMs).
- b) The overall average score of all 37 States/UTs in N-LRSI 2019-20 was 34.4. The top six States with scores ranging between 60 and 75 included Madhya Pradesh, Odisha, Maharashtra, Chhattisgarh, Tamil Nadu, and West Bengal, with Madhya Pradesh ranking first with a score of 74.9. The States that are yet to start creating digitized records and registration processes, including Arunachal Pradesh, Meghalaya, Mizoram, and Nagaland, did not score at all on the index. While 19 States/UTs achieved a score above the mean, the remaining 18 scored below the mean.
- c) The N-LRSI 2019-20 accorded 60 per cent weightage to the extent of digitisation covering RoRs, CMs, and the registration process. This included the ease of obtaining digitised records for the public. The States of Madhya Pradesh, Tamil Nadu, Maharashtra, Odisha, and West Bengal achieved the best scores in this segment. The Index accorded a 40 per cent weight for the quality of land records. The State of Jharkhand obtained the highest score in this, followed by Odisha, Rajasthan, Chhattisgarh, Madhya Pradesh, Maharashtra, and Himachal Pradesh.
- d) Overall, N-LRSI 2019-20 revealed a huge variation in the range of performance amongst all the States and UTs. However, there was considerable scope for a dramatic improvement amongst States that had exhibited a reasonable performance on digitisation of land records. Ironing out glitches that prevented availability of data on websites and upgrading public access to legally useable copies could also help the States/UTs to record better scores. Similarly, in the case of registration, the early adoption of the nationally developed generic software could make a considerable difference for many States and UTs. Improving the quality of land records entailed more intensive efforts, but it was achievable where States displayed a will to implement records rigorously. The N-LRSI 2019-20 exercise comprised a compendium of steps and action plans that could be

An increase of 14 per cent increase in the extent of digitised spatial records has been observed at the all-India level .

adopted by each State/UT to enhance its performance on all the parameters on which it had been lagging.

1.4 New Developments since the Release of N-LRSI 2019-20

During the preceding one year since the test check exercise was undertaken to compute N-LRSI 2019-20 in December 2019, the DILRMP website shows the following change in achievements exhibited by the States/UTs (see Table 1.1 for details.). Two UTs that is, Daman and Diu, and Dadra and Nagar Haveli were merged into one unit with effect from 26 January 2020.

Digitisation of textual records: Since most States/UTs had already made considerable progress in digitising their textual land records prior to the launch of N-LRSI 2019-20, only slender overall progress of 0.7 percent points has been observed in digitisation of textual records in the current N-LRSI. The States of Assam and Bihar have made considerable strides in this regard, exhibiting an increase of 9.7 percent points and 11.6 percent points of villages, respectively, in the digitisation of RoRs. The latest status indicates that Arunachal Pradesh, Jammu & Kashmir, and Meghalaya are the only States/UTs that exhibit no change. While Kerala, Ladakh, Manipur, Mizoram, Chandigarh, and Nagaland are still lagging in computerising their textual records with less than 45 per cent of their village RoRs digitised, Jammu & Kashmir, Gujarat, Kerala, Odisha, Rajasthan, and Tamil Nadu States even show a decline in the number of villages with computerised RoRs since December 2019. However, the percentage change is very small in

these cases and could possibly represent reporting errors.

Digitisation of spatial records: A14.34 percent points increase in the extent of digitised spatial records has been observed at the all-India level for all the 36 States/UTs). While Goa, Manipur, Mizoram, Nagaland, Delhi (NCT), Odisha, and Puducherry have achieved 100 per cent digitisation of spatial records, Karnataka and Lakshadweep also show 100 per cent digitisation of spatial records since N-LRSI 2019-20. Significant progress has also been reported by Gujarat and Jammu & Kashmir, which have achieved a corresponding increase of 87.4 percent points and 96.2 percent points, respectively, in digitisation of spatial records. Andhra Pradesh, Rajasthan, Maharashtra, Uttarakhand, and Uttar Pradesh are the other States that have also reported a slight increase in digitised spatial records. However, certain States/UTs have also reported a decline in the digitisation of spatial records. Among them, Punjab, Himachal Pradesh, and Assam have reported corresponding declines of 20 percent points, 10 percent points, and 5.6 percent points, fall respectively, whereas Bihar, Chhattisgarh, Haryana, Kerala, Madhya Pradesh, and Telangana have shown a decline of less than one percent points.

Integration of RoRs and CMs: The States/UTs of Gujarat, Jharkhand, Lakshadweep, Rajasthan, and Uttar Pradesh reported significant progress in integrating their RoRs and CMs, with the increase in this regard varying between 19 and 55 percent points. The States/UTs of Assam, Dadra & Nagar Haveli, Himachal Pradesh, and Maharashtra have also shown some progress in integrating their RoRs and CMs.

Table 1.1: Difference in Percentages of States/UTs in the Physical Progress of Various Components under DILRMP between December 2019 and December 2020

Differences in percentage ■ Increase above 10 percent points ■ Below 10 percent points ■ No change ■ Decrease

	Digitised Textual records	Digitised CMs	CMs link to RoR	Computerised SRO	Integration of registration with land records
A&N Islands**	0.01	0.01	0	0	0
Andhra Pradesh	0	30.61	-1.81	0	0
Arunachal Pradesh	0	0	0	0	0
Assam	9.68	-5.58	1.48	0.03	0.03
Bihar	11.61	-0.03	-0.02	0.03	0.84
Chandigarh	0	0	0	0	0
Chhattisgarh	1.35	-0.22	0.04	94.9	82.9
D&N and D&D*	0	0	5.52	0	0
Goa	0.2	0	-0.04	0	0
Gujarat	-1.67	87.4	39.18	0	0
Haryana	0	-0.23	0	0	0
Himachal Pradesh	0	-10	1.79	25.76	0.61
Jammu & Kashmir	-9.29	96.22	0	0	0
Jharkhand	0.43	10.91	25.54	0	0
Karnataka	0	100	0	100	93.23
Kerala	-0.14	-0.05	0	0	-0.04
Ladakh	0	0	0	0	0
Lakshadweep	0	100	54.17	0	0
Madhya Pradesh	0.22	-0.03	-0.01	0	0
Maharashtra	0	7.33	4.35	1.2	1.2
Manipur	0	0	0.04	-0.47	0
Meghalaya	0	0	0	-0.01	0
Mizoram	0	0	-0.54	6.67	0
Nagaland	0	0	0.02	0	0
Delhi (NCT)	0	0	-0.03	0	0
Odisha	-0.01	0	-0.01	0	0
Pondicherry	1.54	0	0	0	100
Punjab	-0.6	-19.99	0	0.02	-0.02
Rajasthan	-3.02	29.73	35.97	-0.02	-0.21
Sikkim	0	0	0	0.02	0.02
Tamil Nadu	-0.07	0.43	-0.12	-0.04	0.03
Telangana	0	-0.02	-0.01	0	0
Tripura	0	0	0.09	8.7	8.7
Uttarakhand	0.24	15.37	0.25	2.19	81.44
Uttar Pradesh	0.06	2.07	19.37	9.02	0.84
West Bengal	0.58	0.57	0.23	0	1.16
All India	0.71	14.34	8.64	8.34	7.41

* Includes Daman & Diu, Source: NCAER Calculations based on DOLR data as accessed on December 2019 and 2020.

Computerisation of the registration process: Among the States that had not reported digitisation at the level of the Sub Registrar's Office (SRO) in December 2019, Karnataka now shows 100 per cent coverage and Chhattisgarh shows a 95 per cent increase in computerised SROs. Himachal Pradesh has also made considerable progress while five other States, viz., Maharashtra, Mizoram, Tripura, Uttarakhand, and Uttar Pradesh exhibit some positive change.

Integration of Land Records and Property Registration: Puducherry has accomplished 100 per cent integration of its land records and registration process while substantial progress has been seen to be made in this area by Karnataka and Chhattisgarh. Some improvement has also been reported by the States of Bihar, Himachal Pradesh, Maharashtra, Tripura, West Bengal, and Uttar Pradesh (see Table 1.1 for details).

Interestingly, while many States and UTs reported a higher level of physical achievement, there was no change in the financial achievements shown on the DI-LRMP website in December 2020, as these figures were the same as those displayed on the website in December 2019.

The focus of DI-LRMP has been on obtaining a clean and up-to-date cadastre for all the lands except the inhabited areas. Most States/UTs have made considerable progress under this programme. Under the current land records management mechanism, most States and UTs record the village's inhabited area as a single land parcel.

On 24 April 2020, the Government of India launched the SVAMITVA scheme to create a cadastre of all such inhabited

areas. The main objectives of the scheme are to:

- Ensure clarity in rights over land and built-up property in the inhabited areas and create an up-to-date cadastre for these areas—this will reduce property-related disputes and legal cases;
- Achieve clear and up-to-date property titles that will enable the rights-holders to access loans and other financial benefits;
- Streamline tax collection by rural local bodies; and
- Enable better planning for spatial development using Geographic Information System (GIS) maps at the Gram Panchayat Level.

The implementation of SVAMITVA comprises three phases at the village level. In the initial phase, spatial data is acquired through a drone survey, followed by validation of ownership and dispute/conflict resolution, and finally, distribution of property cards. The scheme is currently being implemented in the States of Haryana, Karnataka, Madhya Pradesh, Maharashtra, Uttarakhand, and Uttar Pradesh, before being extended to the entire country. Once the records are constituted, it would represent a considerable improvement in coverage across the country.

1.5 Engagement with the N-LRSI: States and the India Land Forum

The N-LRSI 2019-20 generated awareness amongst States about both the relative status of digitisation and actions that could

help them improve their rankings in future editions of the N-LRSI. In order to give a fillip to these efforts, the Land Policy Initiative (LPI) at the NCAER shared with all the States and UTs the N-LRSI 2019-20 and compendium report detailing possible actions plans that each State could take to improve its performance on various parameters measured by the index. The LPI Team also requested meetings with the States in this regard, to which several States responded positively. A virtual round table discussion was held with the States of Goa, Karnataka, Himachal Pradesh, and Bihar. The data showed that many States have undertaken measures to improving their rankings.

On the basis of data generated during the preparation of N-LRSI 2020, NCAER organised its first India Land Forum

2020 (ILF 2020) during November 24-27, 2020. The event titled, “Data-driven Research and Evidence for Land Policy in India”, was a four-day, virtual Forum featuring original papers on India by land researchers and NCAER’s own research based on N-LRSI 2019-20. The various sessions at the Forum covered diverse topics, including “Modernizing India’s Land Records”, “Evaluating Title Records and Property Valuation Systems in India”, “India’s Land Records Data Shows Women Are Far behind”, “Land as Collateral for Access to Credit in India”, and “Urban Housing and Land”. The ILF 2020 also featured two panel discussions on “Making Land Leasing Work for Transforming Indian Agriculture” and “Experience with Innovative Technology including drones for Cadastral Mapping and Titling Programmes”.

The N-LRSI 2020-21 shows that many States have undertaken measures to improving their rankings.



CHAPTER 2

METHODOLOGY AND PROCESS

The N-LRSI 2019-20 was constructed using a nationally representative sample. In order to evaluate the extent of digitisation of land records in terms of the Record of Rights (RoRs) and Cadastral Maps (CMs), and the registration process, all the districts reporting digitisation of land records were included in the sampling frame. A three-stage stratified random sampling approach was adopted wherein, in the first stage, *tehsils* were selected, followed by selection of villages in the second stage, and *khasra*/plot numbers in the final third stage.

In order to test the five elements selected for measuring the quality of land records and services, the same sampling frame of districts and *tehsils* was used as that used for the extent of digitisation. One headquarter village was selected from each sample *tehsil* presuming that, other things being equal, in a given region (within a district), the headquarter villages are likely to reflect the maximum changes in land transfer and land use over time. The sample *khasra*/plot numbers were randomly selected from each headquarter village.

Following the above sampling methodology adopted for N-LRSI 2019-20, the N-LRSI 2020-21 used a sampling approach that would not only widen the nationally representative sample but would also remain consistent with the sampling undertaken in the first round, to permit measurement of the incremental changes across the two rounds. Further, to enable a meaningful comparison between the two rounds of N-LRSI and to take into account the progress made by various States over a period of one year, it was important to use the same components and weights in scoring.

Optimising the experience of the first round, N-LRSI 2020-21 offered greater

clarity in terms of sampling, methods of test-checks, and collection of other data that needed to be analysed. However, the current round also witnessed difficulties arising out of outages, improper functioning, and lack of updated data in the State websites and servers (please see Section 2.4 and Annex Table A2.7 for details). This chapter delineates the methodology and process adopted for constructing the N-LRSI 2020-21.

2.1 Methodology for Constructing the N-LRSI

Using the same methodology as that adopted in N-LRSI 2019-20, N-LRSI 2020-21 has been constructed to award a maximum of 100 points to measure the performance of each State/UT on the parameters being measured. In N-LRSI 2020-21, the scope of the digitisation of land records has been extended to include not just the records that are available online and can be accessed using computers and other devices, but also those that are accessible through mobile phone applications (Apps).

The parameters, their assigned weights, and the mode of securing information for evaluating performance, are presented in Table 2.1.

A. Assessing the Extent of Digitisation

I. Digitisation of Textual Records:

- a) The land area of the State/UT for which detailed land records ought to exist is assumed as the total area of the State/UT minus the area classified as forest land. The data has been obtained from the relevant State/UT websites and the Knowledge Correspondents (KCs).

N-LRSI 2020-21 has been constructed to award a maximum of 100 points to measure the performance of each State/UT on the same parameters as in N-LRSI 2019-20.

(Maximum points =100)

- b) Out of the net area calculated in item a) above, the proportion of land area for which no record of rights (textual record) is said to exist, was calculated from the data obtained from the State/UT websites/KCs; and deducted from the maximum of 15 points set aside for the digitisation of land records.
- c) The proportion of revenue villages for which the textual records are not digitised was calculated from the data on the Department of Land Resources (DoLR) website/State/UT websites/KCs (taking the highest figure reported by all sources), and further deducted from the 15 points set aside for the digitisation of land records.

d) Finally, the proportionate figure of villages failing the dipstick test check (of one random *khasra* number showing up in the village record) out of the total number of villages that were selected for the dipstick test check, was subtracted from the 15 points set aside for the digitisation of land records.

e) For assessing the availability of legally useable copies of the textual record, the KC was the principal source of information. If the KC reported that for a State/UT, the record was available in a legally useable form, either free or by making a payment through an Internet-based gateway, then no deduction was made out of the 5 points allocated for this purpose. If copies of the record were available through a network of e-service centres, then 2.5 points were deducted. If the record was available only through a department office, then no points (zero) were awarded under this item.

II) Digitisation of the Spatial Record: The same methodology described above for the textual record has been adopted for the spatial record too.

III) Digitisation of the Registration Process:

The construction of the N-LRSI necessitated measurement of computerisation of the registration process with respect to digital availability for the following five stages:

a) **Facility for online entry of data with regard to the proposed registration:** If desk research showed or the KC reported the availability of a data entry portal for filing details of the proposed registration, then the State/

UT was awarded the maximum 4 points allocated for this purpose. If no such facility was available, no points were awarded to the State/UT.

b) **Online updated circle rates:** The percentage of towns and villages in the State/UT for which circle rates are not notified was calculated and deducted from the maximum of 4 points. Thereafter, the proportionate failure rate in test checks was deducted.

c) **Facility for online payment of stamp duty/registration fee/e-stamp:** If desk research or information provided by the KCs showed that no online payment system or any other mechanism was available for online payment or the purchase of e-stamps and the traditional mechanism of stamp paper to be purchased from stamp vendors or the government treasury was in use, then no points were awarded under this head. If there was an e-stamp purchase mechanism, then 2 marks were awarded to the State/UT; whereas if there was an online system (for example, E-Gras), then the maximum of 4 points were awarded to the State/UT.

d) **Online verification of payment/scrutiny of requisite details and completion of registration process with digital signature:** If the facility existed and was compulsory for the SRO, then the maximum of 4 points were awarded, subject to a deduction for the proportion of SROs in the State/UT not covered by this facility. If the facility was optional, then only half the points were awarded, again subject to a deduction for the proportion of SROs in the State/UT not covered by this facility. In case no

To take into account the progress made by various States and UTs over a period of one year, same components and weights in scoring have been used.

such facility was available, then no (zero) points were awarded.

- e) **Immediate delivery of the digitally signed registered document:** If the facility existed and was compulsory for the SRO, then the maximum of 4 points were awarded, subject to a deduction for the proportion of SROs in the State/UT not covered by this facility. If the facility is optional, then only half the points were awarded, again subject to a deduction for the proportion of SROs in the State/UT not covered by this facility. In case no such facility was available, then no (zero) points were awarded.

B. Assessing the Quality of the Land Records

In order to evaluate the second part of the N-LRSI, that is, the quality of the land records, the following five elements have been considered:

- a. **Updating ownership:** The updating of ownership in the land records has been assessed on the basis of the information provided by KCs on the real-time linkage between the digitised textual records and the registration of transactions. Points have been awarded with respect to the following four stages: (i) if the Sub Registrar's Offices (SROs) can only check the RoR online while carrying out registration (for which 1.25 points were awarded); (ii) if information is automatically sent by SMS/e-mail to the revenue office responsible for entering the mutation (for which 2.5 points were awarded); (iii) on registration, an automatic notation appears in the RoR (for which 3.75 points were awarded); and (iv) if mutation is attested on the same day (for which 5 points were awarded).

b. **Extent of joint ownership:** Ideally, an accurate record should capture actual possession over property. However, securing an accurate reflection of possession without actual surveys is difficult. One possible proxy indicator for this is the incidence of joint ownership, assuming that fewer owners are more likely to reflect possession accurately. Therefore, the textual records of States have been checked for the incidence of joint ownership. Assuming that fewer owners reflect a better situation for a proportion of up to two owners, no deduction has been made from the allocated 10 points. The proportion of 3–5 owners implied a 20 per cent penalty; 6–10 owners, a 40 per cent penalty; 11–15 owners, a 60 per cent penalty; 16–20 owners, an 80 per cent penalty; and the proportion with over 21 owners was penalised to the extent of 100 per cent.

c. **Land use:** The accuracy of recorded land use was assessed by taking the use shown in the RoR and comparing this with the satellite image of the concerned plot. This is possible only if the CMs are digitised and available in a mosaic form, thereby permitting identification of the prominent physical features in order to fix the location of the plot for viewing on the satellite imagery. The States/UTs where the CMs were not digitised or available in a mosaic form were given a score of nil for this parameter. It may be noted that digitising CMs in a mosaic format is an important objective of the Digital India Land Records Modernisation Programme (DI-LRMP). For the other States/UTs, the score for proportionate failure in the tests was deducted from the 10 points allocated for this purpose.

d. **Land Area/Extent:** The accuracy of the area shown in the RoR was assessed by comparing the figure for the sample

plot numbers with the area shown for the same plot numbers in the digitised CM. However, in the States/UTs, where the digitised CMs do not reflect the actual measurement but reproduce the area given in the RoR, this data was used but the line lengths of the vectorised maps were recorded to compute the actual area as per the digitised CM. In the case of States/UTs, where the area cannot be computed and is shown to be the same as in the RoR, they have been treated on the same plane as the States/UTs without digitised CMs and did not score on this parameter (were awarded a score of zero). Where the sample check was actually possible, proportions in the sample with a variation within a range of 5 per cent were not subjected to any penalty. Proportions of variations of above 5 and up to 10 per cent attracted a penalty of 20 per cent, of above 10 and up to 15 per cent were given a penalty of 40 per cent, those showing a 15–20 per cent variation were awarded a penalty of 60 per cent, those with a variation of 20–25 per cent were penalised to the extent of 80 per cent, and those with 25 per cent or more variations attracted 100 per cent penalty.

e. Encumbrances or restrictions/conditions attached to the property: It is generally understood that encumbrances/restrictions or conditions that may be attached to land are of five prominent types: mortgages, ongoing land acquisition proceedings, town planning-related restrictions on land use or buildings, proceedings in revenue courts, and proceedings in civil courts. In the case of mortgages, there is an established practice of entering this encumbrance in the record in most States/UTs. However, the practice of enabling this entry on a real-time basis is relatively recent. This is enabled by either allowing the banks/financial institutions (extending the loans), a facility to make an entry in the record, or where mortgages

have to be compulsorily registered, the automatic noting of the registration event can take place in the record (if the registration process is linked to the land record). The software linkage to enable real-time notation in the land record in the case of the other four types of restrictions mentioned above, is still in its infancy. Given this status, one point was awarded for each of the five encumbrances, if the KC reported that instructions had been issued in the State/UT for the encumbrance to be reflected in the RoR either through the linkage of relevant databases or by manual entry.

2.2 Sample Design and Methods

The construction of N-LRSI 2020-21 required not only a nationally representative sample that would adequately capture the information on various components of the index but also a sample that could at the same time facilitate a meaningful comparison between the two rounds. Considering these objectives, the following three options for sample selection were considered: a) using the same sub-sample as taken for N-LRSI 2019-20, b) drawing an entirely new sample from the sampling frame, and c) a combination sample (that is, a combination of the sub-sample of N-LRSI 2019-20 along with new updated sampling units).

A major limitation in case of the first option, which entailed redoing the same sub-sample taken from N-LRSI 2019-20, was that it would exclude the progress made in digitisation of records by States/UTs (as reported on the DoLR website) that might have taken place over the one-year period between the two rounds of N-LRSI. The second option, which involved selection of an entirely new

The construction of N-LRSI 2020-21 required not only a nationally representative sample that would adequately capture the information on various components of the index but could also facilitate a meaningful comparison between the two rounds.

For testing the three indicators under Component 1 viz. RoRs, CMs and Circle Rates, the combination sample comprised a sub-sample from last year's sample and additional sampling units.

sample, may have covered the progress made but it would present difficulties in measuring the changes in performance of the States/UTs over the first round. This is because changes in performance may get mixed up with the impact of changes in the sample composition. Moreover, the entire sample selection process in case of a totally new sample was also likely to be hindered by constraints such as non-sampling errors, non-availability of complete data on the websites, and mismatch or duplication of village names, among other things.

Given the above considerations, the third option, which included a combination sampling strategy, was found to be more suitable than the others as it offered the following advantages: (i) better coverage, as this included sampling units with updated digitisation status; (ii) viability of measuring real incremental changes in the digitisation process since the sample composition changes with the extent of the change being reported; and (iii) reduced errors (both sampling and non-sampling), and economy and time-saving in sampling and carrying out the test-checks. Hence, a combination sampling strategy was adopted for N-LRSI 2020-21 rather than the approach of selecting an entirely new sample or working with the same sample as that used in N-LRSI 2019-20.

In N-LRSI 2019-20, the sample plots were selected through a three-stage stratified random sampling approach. A sub-sample for the present round of N-LRSI has been derived using the same sample base of the previous round. Separate approaches were adopted for deriving samples for Component 1 of the Index, that is, testing the extent of digitisation of land records and the registration process, and Component 2, that is, testing the quality of the land records and services. The sample selection methodology for both

these components is presented below.

Component 1—Extent of Digitisation of Land Rights and Registration

For testing three indicators under Component 1, that is, RoRs, CMs and Circle Rates, the combination sample comprising the sub-sample from last year's sample and new updated sampling units was considered. Initially, a preliminary exercise was conducted to identify updation in the digitisation status of States/UTs on the DoLR website. Thereafter, samples were selected in three steps as follows:

First, of the total sample villages that were selected in N-LRSI 2019-20, the digital copies for some of the sample villages/*khasra* numbers were not available on the respective State/UT websites during the dipstick test. All such cases were included with probability one in the N-LRSI 2020-21 sample, and were referred to as '*Not available cases*'.

Second, from the remaining sample villages of N-LRSI 2019-20 for which the digital copies were available on the State website as found during the test-check exercise in the last round, a sub-sample was selected for N-LRSI 2020-21, which was referred to as '*Available Cases*'. The main objective of this exercise was to re-test the availability of these samples in the present round to verify if any changes or deterioration had taken place in their digitisation status since 2020. These cases were selected from the previous sample using a systematic random sampling approach, and the proportion of sub-samples varied between 15 and 30 per cent for the States, and between 30 and 55 per cent for the UTs due to small size of the sample.

The third step involved selection of the sample of '*New cases*', that is, those

sampling units that were not digitised during the last round and were, therefore, not a part of the N-LRSI 2019-20 sample, but had thereafter been updated during the past year. These cases were considered in the present round of sample selection, and were selected from the DoLR website if they met the following conditions:

- a. If any *district* that was not digitised in the N-LRSI 2019-20 and was, therefore, not considered in that sample but in the present round, had become “digitised” as reported by the DoLR website, then the newly digitised district was considered in the sample for selection of a maximum of five digitised *tehsils* using the Probability Proportional to Size (PPS) sampling approach covering a maximum of 12 sample villages per *tehsil* as a new sample; or
- b. If in N-LRSI 2019-20, the number of sample *tehsils* already selected from within the digitised districts was less than five, but at present a few more *tehsils* had been updated in the respective district, then the new digitised *tehsils* were selected to make up for the shortfall in the last round (ideally, comprising a maximum sample of five *tehsils* per district), covering a maximum of 12 villages each as a new sample; or
- c. If in N-LRSI 2019-20, the number of *sample villages* already selected within the digitised sample *tehsils* was less than 12 and at present, more villages have been updated in that *tehsil*, then more sample villages were selected

to match it up for a maximum of 12 sample villages in that *tehsil*.

Under the newly digitised category (step 3 above), if a whole new district was added, then *tehsils* were selected using the same PPS approach whereas if within an already-digitised district, a few new *tehsils* were added in the sample, the approach adopted was either PPS or purposive, depending upon the number of newly-digitised *tehsils* selected.

The sample villages under the second and third steps listed above were selected using the systematic random sampling approach. The plots tested using the dipstick method were selected randomly from the State websites for the ‘Not Available’ and ‘New Cases’ categories, whereas for the ‘Available Cases’ category, the same plots that had been tested during N-LRSI 2019-20 were re-tested.

Another major change in N-LRSI 2020-21 is that the UTs of Daman and Diu, and Dadar and Nagar Haveli has been clubbed as one UT following the concerned orders of the Government of India.¹

For RoRs, in the N-LRSI 2020-21, the sample comprised 9,683 villages/plots in 27 States/UTs. For CMs, the sample comprised 11,552 villages/plots in 17 States/UTs with the addition of 3 new states, viz., Tripura, Karnataka, and Bihar.

For the second stage of registration, the circle rates were test-checked for a sample covering 12,258 villages from 26 States/UTs.

The N-LRSI 2019-20 sample for RoRs

¹ “In exercise of the powers conferred by Clause (a) of Section 2 of the Dadra and Nagar Haveli and Daman and Diu (Merger of Union Territories) Act, 2019 (44 of 2019), the Central Government appoints the 26th day of January, 2020, as the appointed day for the purposes of the said Act,” according to a Home Ministry notification issued by Additional Secretary Govind Mohan.

For measuring quality of land records, the combination sample design was adopted in such a way that it could widen the scope of coverage by including villages adjacent to the headquarter villages.

comprised 32,576 villages/plots in 27 States/UTs. For CMs, the N-LRSI 2019-20 sample comprised 14,227 villages/plots in 14 States/UTs.

For registration, circle rates were test-checked for sample covering 31,258 villages from 23 States/UTs, in N-LRSI 2019-20.

For circle rates, three additional UTs have been covered in the present round, viz., Andaman and Nicobar Islands, Chandigarh, and Dadra & Nagar Haveli and Daman & Diu. For the other four stages of registration, the process followed was largely a combination of desk-based research and obtaining information from the KCs.

(Please see Box 2.1 for the detailed sampling framework and Annexures for details of the samples).

Component 2—Quality of Land Records and Services

The quality test checks were conducted on the following five indicators: updating ownership, extent of joint ownership, land use, land area, and encumbrances or restrictions/conditions attached to the property. While the first and last indicators of this component were verified through KCs, three indicators, that is, the extent of joint ownership, land use, and land area were test-checked using a representative sample. For testing the quality of land records and services in the present round, there was need for a sample that could reflect the level of improvements or additions in the land records and its services within the States/UTs.

Considering that the qualitative aspects of the sample plots are unlikely to have changed over a year, the combination

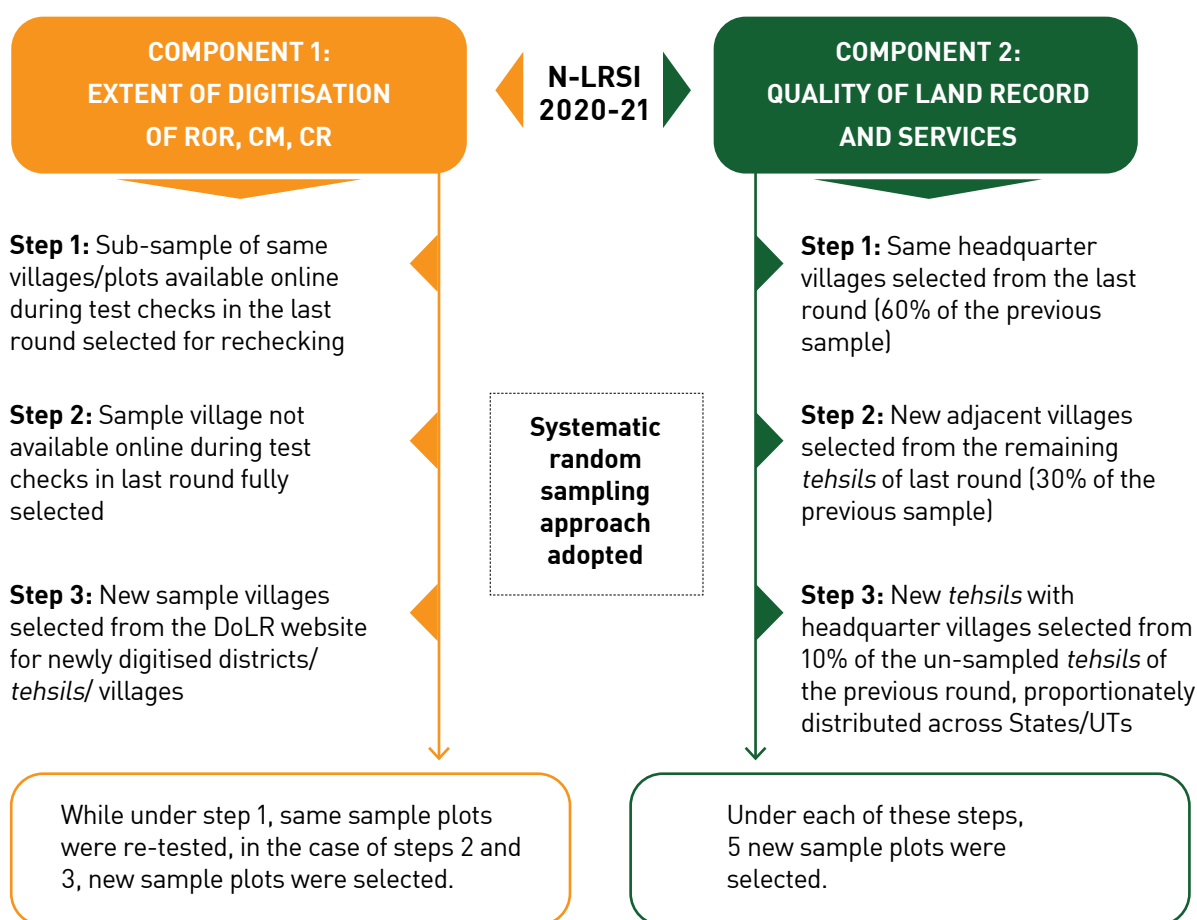
sample design was adopted in such a way that it could widen the scope of coverage by including not just the headquarter villages already covered earlier but also by selecting villages adjacent to the headquarter villages; new sample *tehsils* that were not covered earlier; and by selecting entirely new sample plots even in the villages covered earlier. Following this approach, the sample selection was carried out by sequentially following three steps as delineated below:

As a *first step*, 60 per cent of the sub-sample of the headquarter villages from N-LRSI 2019-20 was drawn. The sample selection was done using a systematic random sampling approach. From each of these sample headquarter villages, five new plots were selected randomly from the State websites. This was required to measure the changes that may have taken place in the quality of land records for the present N-LRSI 2020-21 in the places covered in the last round.

The *second step* entailed the selection of another 30 per cent of the *tehsils* from the remaining sample of N-LRSI 2019-20. For each of these sample *tehsils*, rather than taking the same headquarter village, the villages adjacent to the headquarter villages were selected aided by Google maps, with an assumption that these villages were also likely to witness a relatively higher number of transactions in land but might represent some difference by being more distant from the headquarter location. From each such new sample village, five plots were selected randomly for testing.

In the *third step*, new *tehsils* were sampled from the sub-set, which though digitised according to the DoLR in the previous round, was left out in the sampling exercise in N-LRSI 2019-20. For this, 10 per cent of such un-sampled *tehsils* of N-LRSI

Box 2.1: Sampling Framework for N-LRSI 2020-21



Source: N-LRSI 2020-21, NCAER.

2019-20, were proportionately distributed across the States/UTs, and were selected using a PPS approach. From these sample tehsils, headquarter villages were identified using Google maps and five plots from each of the villages were selected randomly for further test-checks.

For the extent of joint ownership, 12,315 plots in 2,761 villages (including one in each tehsil) from 27 States/UTs (with the two UTs of Daman & Diu and Dadra and Nagar Haveli having been clubbed as one) were test-checked. For land use, test checks were conducted in 15 States/UTs, in 5,324 plots; and land area was tested in 11 States/UTs in 3,605 plots.

The total sample for N-LRSI 2019-20 for joint ownership was 12,405 in 27 States/UTs. For land use, test checks were conducted in 3,282 plots in 10 States/UTs; and land area was tested in 2,689 plots in 9 States/UTs.

(Please see Box 2.1 for the detailed sampling framework and Annexures for details of the samples).

2.3 Process of Online Test Checks

The samples drawn on the basis of the strategies described above were subjected

to random test checks online. The process adopted for performing online test checks to assess the extent of digitisation of land records and the registration process and quality of the record is presented below.

Test Checks for Assessing the Extent of Digitisation of Land Records: To gauge the extent of digitisation of land records in a State/UT, village-wise dipstick tests² were conducted for checking the online availability of RoRs and CMs.

Test Checks for the Registration Process: Under five stages of the registration process, the test checks were undertaken for the online availability of circle rates in the sampled villages of a particular State/UT. However, for the other four stages of data entry, online payment of stamp duties, completion of the registration process with digital signatures, and immediate delivery of the registered documents, verification was done on the basis of either desk research or information gathered from the KCs.

Test Checks for Examining the Quality of the Land Records: In order to assess the quality of the land records pertaining to the five elements identified, test checks were conducted on the appropriate proxy indicators to be drawn from the digitised record (not on the actual physical verification). For this, the KCs were asked to collect and report the level to which the practices and status in various States/UTs had been updated (for details, refer Section 2.1B of this chapter).

Role of KCs: The KCs played a crucial role in providing and verifying the required information related to updating/changes that have taken place in their respective

States/UTs regarding the parameters used for computing N-LRSI 2020-21 over N-LRSI 2019-20 (as detailed in Table 2.1). In addition, there were cases wherein though information was available online, there were major accessibility and comparability issues, such as server time-outs or down-time, excessive time taken for document appearance/downloading, and user interface problems, among others. KCs had to be approached for providing clarity to help address these issues. (Chapter 8 provides an overview of the accessibility of the State/UT land portals).

2.4 Challenges and Issues Faced in the Sampling and Test Checks

During the course of sample selection and online test checks, a number of challenges were encountered pertaining to updating of the digitisation status of States/UTs on the DoLR website, data discrepancy issues, problems related to incomplete/inaccessible data, and mismatch in the data and server issues. In addition to these, there were also problems with regard to identification of adjacent villages and drop-down lists for *khasra*/plot numbers during the process of quality test checks (for details refer to Annexure Table A2.7).

2.5 Limitations and Mitigation Measures Undertaken

(a) **Differences in data and organisation of data between the DoLR and the State/UT websites:** There were cases of inconsistency between the aggregate data at the level of the districts/*tehsils* and the actual village-

2 The dipstick test is a 'one-time' or "one-point" test exercise undertaken to answer a specific question, for example, in this case it was whether digitisation was completed in respect of land records in the village. This test made the assumption that if a random plot selected was digitised, all the other plots are also likely to have been digitised, as the digitisation effort would at least cover a complete revenue village.

level data, as reported on the DoLR website and the State/UT website. For example, in the case of Telangana circle rates, there were many cases of mismatch in the village/*tehsil* names between both websites.

- (b) **Updating of data in the State/UT and DoLR websites:** In the case of a few States/UTs, inconsistency was also observed between the information available on the DoLR and the State/UT portals. For example, according to the DoLR, the CM website is not available for Delhi (NCT) but on the State website, it was reported to be available. In the case of Assam, DoLR reports the digitisation of CMs and a portal also exists for CMs, but this portal remained inaccessible during this exercise.

- (c) **Difficulties in tracking transactions over time:** Following were some of the difficulties faced while transactions were being tracked over time: slow server speed, non-availability of portals for the dipstick test, and changes in portals in some States/UTs for test checks, among others (for details, please refer to Annex Table A2.7).

- (d) **Measuring citizen/user satisfaction:** Both N-LRSI 2020-21 and N-LRSI 2019-20 have been constructed using key dimensions of the supply of land record services by each State/UT. While the findings of the study focus on the supply side factors, NCAER proposes to club the supply-side N-LRSI 2020-21 with the proposed demand-side Prindex India Survey to include user perceptions of the

access, quality, reliability, and utility of land record services. The N-LRSI will then more credibly capture both the demand and the supply-side dimensions of land record-related services in each State/UT, thereby spurring individual States/UTs to improve their respective standings in the N-LRSI rankings.

Constructing an Accessibility Index in N-LRSI 2020-21

Accessibility problems were noted as major but solvable barriers to accessing land records and related services in N-LRSI 2019-20. The State portals were assessed in N-LRSI 2019-20 using indicators of access to servers, time taken, simplicity, and user interface features.

In N-LRSI 2020-21, accessibility was measured using a rigorous set of indicators provided in the *Guidelines for Indian Government Websites 2.0* (GIGW 2.0), prepared by the Ministry of Electronics and Information Technology (MeitY). The GIGW 2.0 focuses on standardisation and uniformity in all Government websites and is based on ISO 23026 Standard, international Web Content Accessibility Guidelines 2.0, India's Information Technology Act, 2000, and Rights of Persons with Disabilities Act 2016. The 2020-21 Accessibility Index used the following four indicators: ease of access, comprehensive information, website design and navigation, and help/assistance features. The details of the Accessibility Index are presented in Chapter 8.

In N-LRSI 2020-21, accessibility was measured using a rigorous set of indicators provided in the *Gol Guidelines for Indian Government Websites 2.0* (GIGW 2.0, 2019).

CHAPTER 3

EXTENT OF DIGITISATION OF TEXTUAL RECORDS

This chapter discusses findings pertaining to the extent of digitisation of the Record of Rights (RoRs) in India's States and UTs. The achievements reported on the Department of Land Resources (DoLR) website and the State/UT websites, wherever there are additions, have also been listed. This is followed by an estimation of the area under digitised, publicly available land records in the States/UTs in India. The chapter also contains results of the test checks carried out as part of this exercise. Each sub-section in the chapter presents a comparison with the position reported in N-LRSI 2019-20.

3.1 Digitisation of Textual Records as Reported by the States/UTs

The DoLR website is regularly updated with regard to the extent of digitisation of the land records reported by States and UTs. Details of the digitisation are reported down to the village level. The country-wide position, as reflected on the DoLR website, in both rounds of N-LRSI is presented in Figure 3.1.

It may be noted that the DoLR figures do not show the actual area for which land records are in existence. This has been computed separately in this exercise and discussed in the next section. The DoLR website also does not show whether the records, which are being reported as digitised, are available on the web. This has also been verified separately and the concomitant position is mentioned in the next section.

As compared to the information available for N-LRSI 2019-20, the DoLR website shows that the number of States/UTs reporting at least some digitisation of their textual records has decreased from 34 to 33. Arunachal Pradesh and Meghalaya were the only two States/UTs which showed no digitised records in 2019-20. Jammu & Kashmir had claimed digitisation of some of its records. However, N-LRSI 2019-20 brought out the fact that there was no web portal displaying Jammu & Kashmir land records and the UT has since withdrawn its claim.

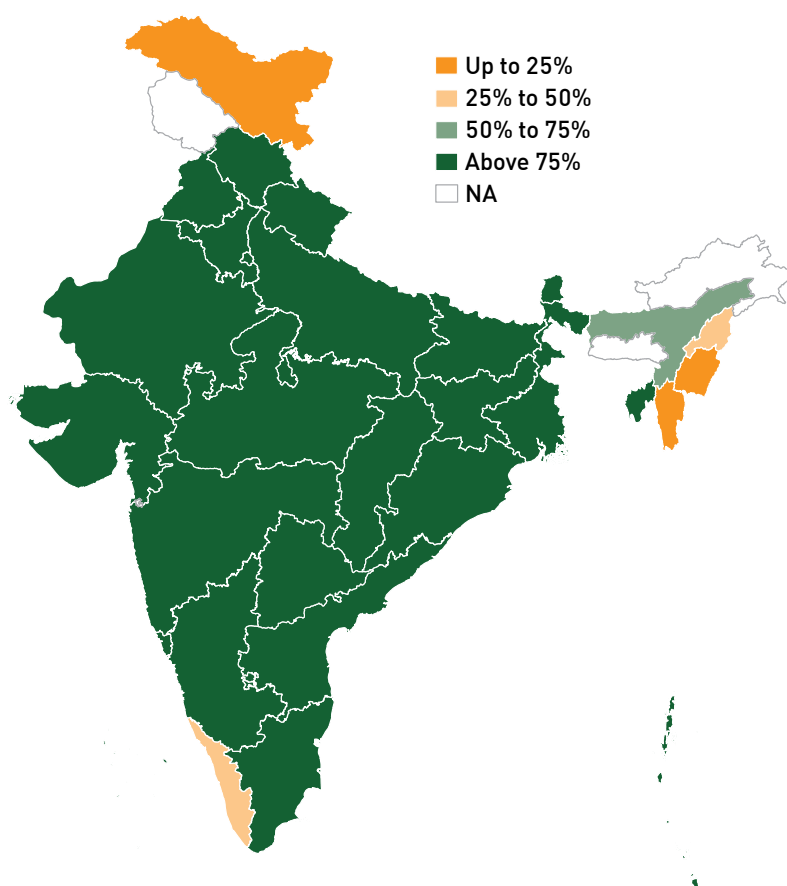
Figure 3.1 shows that seven States/UTs have reported an increased level of digitisation as compared to the last round. Bihar and Assam have reported a considerable increase in the level of digitisation of their textual records. The number of States/UTs reporting full digitisation in N-LRSI 2020-21 has, however, gone down from 9 to 5, with the latter States/UTs being Goa, Odisha, Sikkim, Bihar and Lakshadweep.

In another 20 States/UTs, the reported extent of digitisation of RoRs continues to be in excess of 90 per cent. Many States/UTs have updated their reports to reflect lower levels of achievement (12 States/UTs). Of these, the reduced coverage reported by Chhattisgarh and Puducherry is the most significant. The reason for reduction in the extent of digitisation in the concerned States may be an adjustment to reflect a more accurate position or may also be caused by withdrawing specific records that relate to villages which are the subject of re-surveys. Overall, the DoLR website shows a marginal increase in digitisation of RoRs (at the all-India

The DoLR website reports a marginal increase in digitisation of RoRs at the all-India level - from 90.2% in 2019-20 to 90.9% in 2020-21.

Figure 3.1: Digitisation of Record of Rights (RoRs) across States/UTs of India (as per the DoLR website)

Extent of Digitisation of RoRs, 2020-21 (%)



Source: DoLR website, data accessed on 22 December 2020; State/UT sources and N-LRSI 2020-21 Report, NCAER.
 Note: States arranged in descending order of N-LRSI 2020-21 value.
 * Dadra & Nagar Haveli and Daman & Diu. ** Andaman & Nicobar Islands.

	Extent of Digitisation of RoRs (%)		Difference (Latest-Previous) (percent points)
	N-LRSI 2020-21	N-LRSI 2019-20	
Bihar	100.0	65.3	34.7 ↑
Goa	100.0	97.0	3.0 ↑
Lakshadweep	100.0	100.0	0.0 ↔
Sikkim	100.0	100.0	0.0 ↔
Odisha	100.0	100.0	0.0 ↔
Tripura	99.9	99.9	0.0 ↔
Tamil Nadu	99.7	100.0	-0.3 ↓
Karnataka	99.6	99.6	0.0 ↔
Jharkhand	99.5	99.1	0.4 ↑
A&N Islands**	99.5	98.1	1.4 ↑
Telangana	99.4	99.4	0.0 ↔
Madhya Pradesh	99.4	100.0	-0.6 ↓
Himachal Pradesh	98.9	100.0	-1.1 ↓
Maharashtra	98.8	100.0	-1.2 ↓
West Bengal	98.7	98.1	0.6 ↑
Andhra Pradesh	97.2	97.2	0.0 ↔
Uttar Pradesh	96.3	96.2	0.02 ↑
Gujarat	94.7	96.4	-1.7 ↓
Delhi (NCT)	94.7	94.7	0.0 ↔
Uttarakhand	94.6	94.4	0.3 ↑
D&N and D&D*	94.0	94.0	0.0 ↔
Rajasthan	93.8	96.8	-3.0 ↓
Punjab	93.0	93.6	-0.6 ↓
Haryana	92.8	92.9	-0.1 ↓
Puducherry	91.5	100.0	-8.5 ↓
Chhattisgarh	84.7	100.0	-15.3 ↓
Assam	67.7	58.3	9.4 ↑
Kerala	43.1	43.2	-0.2 ↓
Chandigarh	37.5	37.5	0.0 ↔
Nagaland	32.0	32.0	0.0 ↔
Mizoram	24.9	24.9	0.0 ↔
Manipur	15.6	15.6	0.0 ↔
Ladakh	6.7	6.7	0.0 ↔
Arunachal Pradesh			0.0 ↔
Jammu & Kashmir		9.3	-9.3 ↓
Meghalaya			0.0 ↔
All India	90.9	90.2	0.7 ↑

level) from 90.2 per cent in 2019-20 to 90.9 per cent in 2020-21. However, this does not reflect the claims of actual area with digitised land records. This has been calculated in the next section.

3.2 Proportion of Area with Land Records and Digitised Land Records

Given the limitations of data reported on the DoLR website mentioned in the preceding section, the first step towards verifying the extent of digitisation for N-LRSI 2019-20 was to estimate the proportion of area in a State/UT for which land records exist. The digitisation of the textual record presumes the existence of a written land record. The status that emerged in N-LRSI 2019-20 on this count has been re-examined in N-LRSI 2020-21. The overall situation of States/UTs with land records has not changed as compared to N-LRSI 2019-20 (except that Dadra & Nagar Haveli and Daman & Diu have been combined as one UT now and Bihar where land records for entire area is available now). *The computations are presented in the Annex Table A3.1.*

Figure 3.2 summarises information about the availability of textual records by grouping States/UTs into the following three categories:

- States/UTs with cadastral survey-based land records for their entire areas, except perhaps areas classified as forest lands;
- States/UTs with land records for less than the total area (other than the area under forest lands); typically, these are States/UTs with some portion of rural or urban land without a cadastral

survey-based land record; and

- States/UTs in which written land records or digitised records are not available for most of their area—some of these States/UTs have community-based land tenure systems that are either not recorded or not yet digitised; they do, however, have records for some of their urban areas.

Figure 3.2 shows that out of 36 States/UTs, 9 have either not digitised their textual records (even if these exist) or have not made any digitised records publicly available. For the balance 27 States/UTs, the base data arrived at in Annexure Table A3.1 has been considered in the light of the digitisation percentage for 2020-21, as shown in Figure 3.1, to arrive at the proportion of the land area with digitised textual records that was required to be subjected to test checks for computing N-LRSI 2020-21.

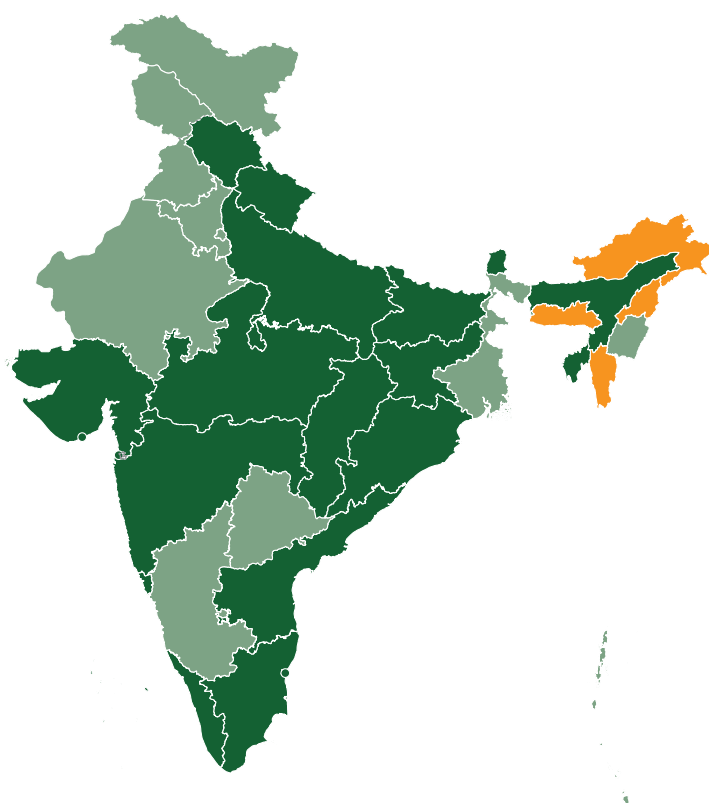
A comparison of this computation of area with digitised textual records in N-LRSI 2020-21, with that in N-LRSI 2019-20, is also presented in Annex Table A3.1. This shows that while 16 States/UTs have improved or retained their positions with regard to the proportionate area with digitised textual records, 11 States/UTs show a reduced proportion of area with digitised textual records in N-LRSI 2020-21. Bihar, Assam and Goa showed the highest improvement; and Chhattisgarh, Puducherry, and Rajasthan reported the maximum decline.

3.3 Test-Check Results

As was done in N-LRSI 2019-20, the test checks carried out in N-LRSI 2020-21 have sought to verify the proportion

16 States/UTs have improved or retained their positions in respect of the proportion of land area with digitised textual records in N-LRSI 2020-21.

Figure 3.2: Area with Land Records



Source: N-LRSI 2020-21, NCAER.

Note: *Chandigarh, Sikkim, J&K, Ladakh, have records but have either not digitised them or have not placed their digitised records on the web. Mizoram and Nagaland have reportedly digitised some records but have not placed them on the web. Kerala reports an unusual situation: it reports both digitisation of textual records and possesses a web portal for the textual records. In practice, however, the information is still to be made available on the web. Kerala is the only State in the country that is without a publicly available digitised textual record, but that makes digitised Cadastral Maps available on the web.

States/UTs with land records for their entire areas (21)

Andhra Pradesh
Assam
Bihar
Chandigarh*
Chhattisgarh
Dadra & Nagar Haveli and Daman & Diu
Goa
Gujarat
Himachal Pradesh
Jharkhand
Kerala*
Lakshadweep
Madhya Pradesh
Maharashtra
Odisha
Puducherry
Sikkim*
Tamil Nadu
Tripura
Uttar Pradesh
Uttarakhand

States/UTs lacking land records for some of their areas, mostly urban (11)

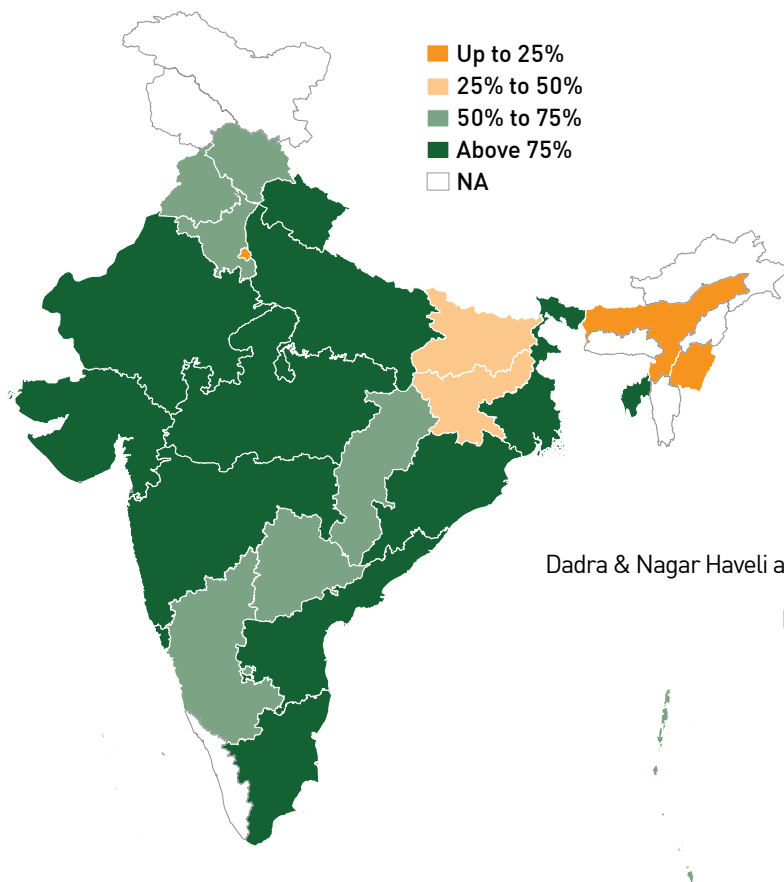
Andaman & Nicobar Islands
Delhi (NCT)
Haryana
Jammu & Kashmir*
Karnataka
Ladakh*
Manipur
Punjab
Rajasthan
Telangana (Hyderabad)
West Bengal (small portion of Kolkata)

States/UTs without either appropriately written or digitised land records for much of their area (4)

Arunachal Pradesh
Meghalaya
Mizoram*
Nagaland*

Figure 3.3: Extent of Digitised Textual Records after Verification by Test Checks: Comparison between N-LRSI 2020-21 and 2019-20

Extent of Digitised Textual Records, 2020-21 (%)



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.
Note: States arranged in descending order of N-LRSI 2020-21 score.

	Extent of Digitisation of RoRs (%)		Difference (Latest-Previous) (percentage points)
	N-LRSI 2020-21	N-LRSI 2019-20	
Odisha	99.9	99.8	0.1 ↑
Tripura	99.7	90.8	8.8 ↑
Tamil Nadu	99.0	92.8	6.2 ↑
West Bengal	98.0	88.9	9.2 ↑
Goa	97.5	94.5	3.0 ↑
Bihar	97.5	45.3	52.2 ↑
Maharashtra	95.4	93.3	2.2 ↑
Andhra Pradesh	94.2	93.3	0.9 ↑
Dadra & Nagar Haveli and Daman & Diu	94.0	94.0	0.0 ↔
Madhya Pradesh	93.3	93.2	0.1 ↑
Uttarakhand	92.4	90.9	1.5 ↑
Uttar Pradesh	91.9	91.1	0.8 ↑
Gujarat	91.6	93.1	-1.5 ↓
Rajasthan	91.2	91.3	-0.2 ↓
Lakshadweep	89.5	84.2	5.3 ↑
Puducherry	87.8	91.8	-4.0 ↓
Andaman & Nicobar Islands	87.1	85.8	1.2 ↑
Punjab	86.9	84.6	2.2 ↑
Telangana	83.6	83.3	0.3 ↑
Himachal Pradesh	82.8	83.0	-0.2 ↓
Chhattisgarh	82.5	95.7	-13.2 ↓
Haryana	76.9	71.1	5.8 ↑
Karnataka	76.8	73.8	3.0 ↑
Jharkhand	72.4	69.8	2.6 ↑
Assam	43.7	52.8	-9.1 ↓
Delhi (NCT)	23.1	23.1	0.0 ↔
Manipur	11.9	11.8	0.1 ↑

Out of the 27 States/UTs subjected to test checks, 21 have improved on or at least retained the same position as last time.

of area that is reported to have a publicly available digitised textual record (as computed in the preceding section). From the above discussion, it is clear that of the 33 States/UTs reporting digitised RoRs on the DoLR website (as accessed in December 2020), test checks were possible for only 27 States/UTs. In 6 States/UTs, that is, Kerala, Sikkim, Ladakh, Mizoram, Nagaland, and Chandigarh, the textual records reported to have been digitised, are not available on online portals. The position that emerged after the test checks is presented in Figure 3.3, as a comparison between N-LRSI 2020-21 and N-LRSI 2019-20.

The details of the proportionate area with digitised records available to the public that has been verified by the test checks carried out in N-LRSI 2020-21, are presented in Annex Table A3.2.

The best performer in N-LRSI 2020-21 is Odisha, which has a digitised record for 99.9 per cent of its area available in the public domain. This is the same as that reported in N-LRSI 2019-20. However, the next best performer in 2021 is Tripura, with 99.7 per cent of its area digitised as compared to 95.7 per cent tabulated for Chhattisgarh in N-LRSI 2019-20. Overall, 14 States/UTs have over 90 per cent of their respective areas with digitised records in N-LRSI 2020-21 same as that recorded in N-LRSI 2019-20.

Out of the 27 States/UTs subjected to test checks, 21 have improved on or at least retained the same position as last time. The highest positive change has been recorded in Bihar, followed by West Bengal, Tripura, and Tamil Nadu.

The States/UTs of Delhi (NCT) and Dadra & Nagar Haveli and Daman & Diu

have shown no change in the extent of area with digitised textual records brought out by the exercise last year, following the test checks in the current round.

The remaining 6 States/UTs recorded a decline in the extent of available digitised textual records in the test checks of N-LRSI 2020-21. The maximum decline was observed in the case of Chhattisgarh, Assam, and Puducherry. In every case, except Assam, the decline has mainly been the result of a lesser extent of digitisation being reported by the States/UTs on the DoLR website currently, as compared to the last time. In the case of Assam, the failure rate of availability during test checks was much higher in N-LRSI 2020-21 and test checks for all the additional digitisation reported on the DoLR website, actually failed.

3.4 Reasons for Failure in the RoR Test Checks

At the all-India level (covering all the 27 States/UTs), test checks verified the reported achievement to the extent of 92.1 per cent in 2021 as compared to 91.8 per cent in 2020.

The failure of reported digitisation by States/UTs during test checks can be broadly attributed to the following three reasons:

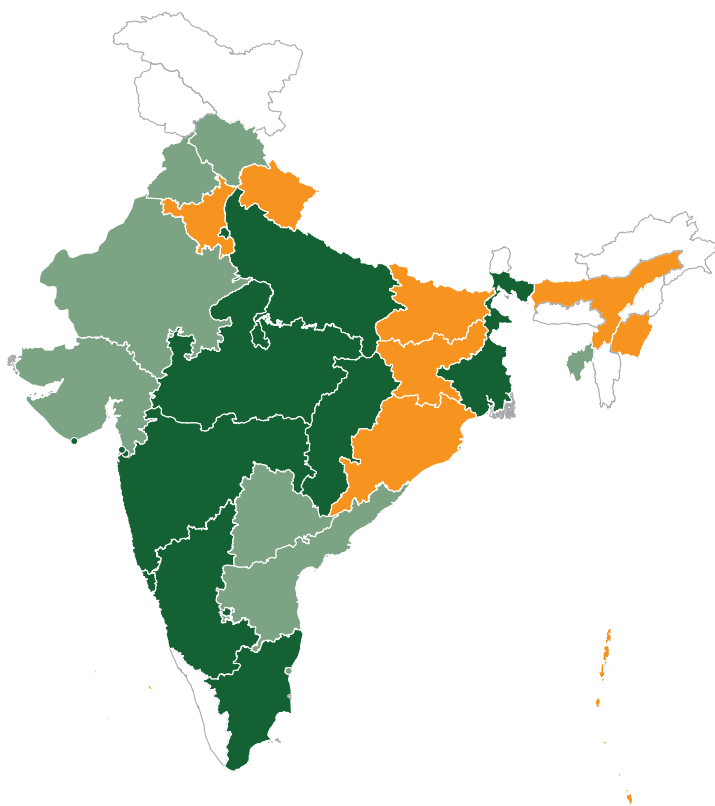
1. Administrative Unit Not Available

This reason is reported in cases where the village or survey/plot (and sometimes even the tehsil) that has been shown to have digitised land records, was not available on the portal.

2. RoR Not Accessible

This reason pertains to cases where even

Figure 3.4: Availability of Legally Usable Copies of RoRs



Source: N-LRSI 2020-21, NCAER.

Note: * New addition. **While legal copies of ROR are available online for Dadra and Nagar Haveli, for Daman & Diu, it is available through Citizen Service Centres.

Digitally Signed from Their Website (10)

Chhattisgarh
Dadra and Nagar Haveli and Daman and Diu**
Delhi (NCT)
Goa
Karnataka
Madhya Pradesh
Maharashtra
Tamil Nadu
Uttar Pradesh
West Bengal*

Citizen Service Centres (9)

Andhra Pradesh
Gujarat
Himachal Pradesh
Puducherry
Odisha*
Punjab
Rajasthan
Telangana
Tripura

Relevant Department (8)

Andaman & Nicobar Islands
Assam
Bihar
Haryana
Jharkhand
Lakshadweep
Manipur
Uttarakhand

after all the necessary details had been provided to access the RoR, the actual RoR did not appear on the screen.

3. Server Failure

This reason is attributed to cases where even after repeated attempts at different periods of time, the server remained unresponsive and/or errors were constantly reported on-screen.

As compared to N-LRSI 2019-20, the overall failure rate has declined in N-LRSI 2020-21 from 8.2 per cent to 7.9 per cent. The number of States/UTs reporting failure rates due to the non-availability of sample tehsils/villages in the DoLR drop-down list has declined in the current round, though non-availability of sample villages on the State/UT portals continues to be the most significant reason for failure during test checks. (For details, please refer to Annex Table A3.3).

3.5 Availability of Legally Usable Digitised Textual Records

A request for obtaining copies of the RoRs is the most frequently-used service from the digitised records. Legally usable copies of the RoRs are relevant for a variety of purposes in relation to the land, including for matters like ascertaining details in legal disputes, for availing of services and benefits from the government, verifying the availability of collateral, and establishing domicile status, among others. Hence, digitisation and the easy availability of legally usable RoRs can be extremely valuable for a variety of stakeholders. States/UTs offering digitally-signed legally usable copies through web portals are clearly ahead of States that offer these

only through a network of designated Citizen Service Centres (e-Seva or CSCs). However, the service offered by the CSCs or e-service centres is clearly superior to cases wherein the access is provided only from government offices.

Data on the availability of legally-usable copies was collected through the Knowledge Correspondents (KCs) in the States/UTs. The States/UTs have been grouped into the following three broad categories, as presented in Figure 3.4:

- 1) States/UTs providing legally usable copies from the websites;
- 2) States/UTs providing legally usable copies from CSCs; and
- 3) States/UTs providing legally usable copies from the relevant department office.

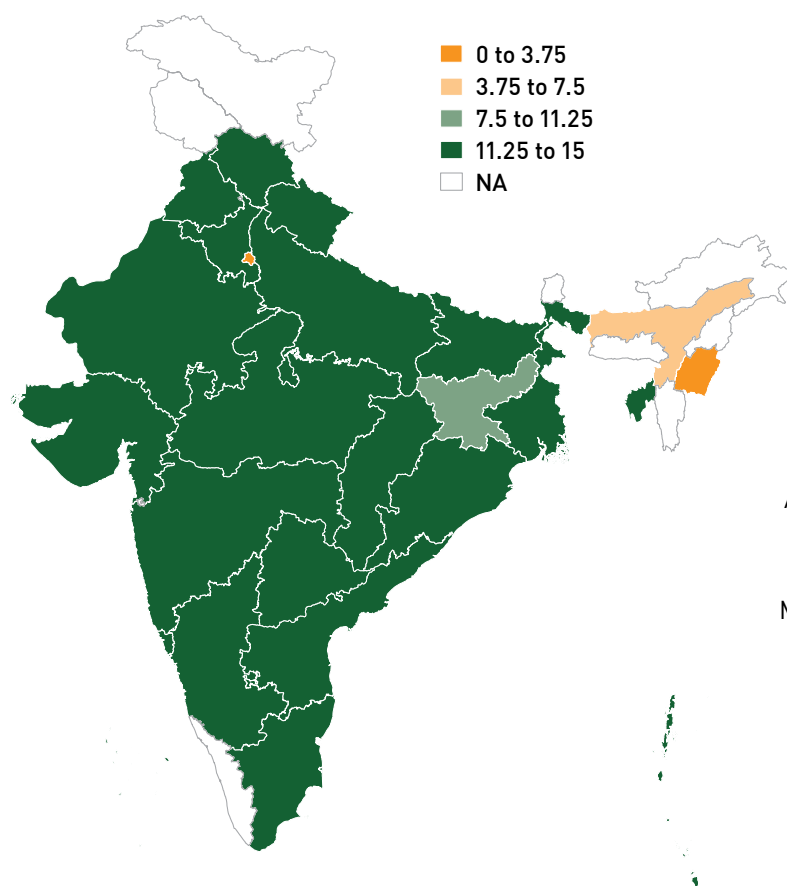
In the first category, where digitally signed copies of RoRs are available from the website, the number of States/UTs has gone up to 10 in N-LRSI 2020-21 as compared to 9 in N-LRSI 2019-20, with the addition of West Bengal. In the second category, the number of States/UTs, where digitally signed copies of RoRs are available from the CSCs has gone up to 9 in N-LRSI 2020-21 from 8 in N-LRSI 2019-20, with the addition of Odisha. The third category had reported 10 states in N-LRSI 2019-20 as compared to 8 in N-LRSI 2020-21.

3.6 Scores for the Extent of Digitisation of RORs

This section presents the index score that each State/UT obtained based

Figure 3.5: State / UTs Scores for the Extent of Digitised Textual Records after Verification by Test Checks

Score for Extent of Digitised Textual Records, 2020-21 (out of 15)



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 score.

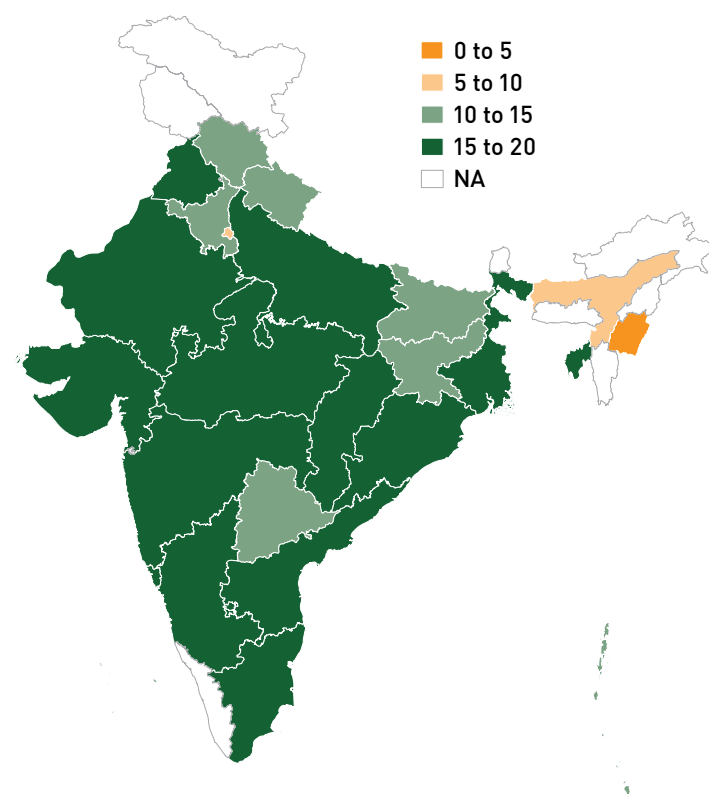
* Dadra & Nagar Haveli and Daman & Diu.

	Score for Extent of Digitised Textual Records (out of 15)		
	N-LRSI 2020-21	N-LRSI 2019-20	Difference
Odisha	15.0	15.0	0.0 ↔
Tripura	14.9	13.6	1.3 ↑
Tamil Nadu	14.9	13.9	1.0 ↑
West Bengal	14.7	13.3	1.4 ↑
Goa	14.6	14.2	0.4 ↑
Bihar	14.6	6.8	7.8 ↑
Maharashtra	14.3	13.9	0.4 ↑
Andhra Pradesh	14.1	14.0	0.1 ↑
D&N and D&D*	14.1	14.1	0.0 ↔
Madhya Pradesh	14.0	14.0	0.0 ↔
Uttarakhand	13.9	13.6	0.3 ↑
Uttar Pradesh	13.8	13.7	0.1 ↑
Gujarat	13.7	14.0	-0.3 ↓
Rajasthan	13.7	13.7	0.0 ↔
Lakshadweep	13.4	12.6	0.8 ↑
Puducherry	13.2	13.8	-0.6 ↓
Andaman & Nicobar Islands	13.1	12.9	0.2 ↑
Punjab	13.0	12.7	0.3 ↑
Telangana	12.5	12.5	0.0 ↔
Himachal Pradesh	12.4	12.5	-0.1 ↓
Chhattisgarh	12.4	14.4	-2.0 ↓
Haryana	11.5	10.7	0.8 ↑
Karnataka	11.5	11.1	0.4 ↑
Jharkhand	10.9	10.5	0.4 ↑
Assam	6.6	7.9	-1.3 ↓
Delhi (NCT)	3.5	3.5	0.0 ↔
Manipur	1.8	1.8	0.0 ↔

Figure 3.6: Scores for Extent of RoR Digitisation and Availability of Legally Useable Copies (out of 20)

Score for Extent of RoR Digitisation and Availability of Legally Useable Copies, 2020-21 (out of 20)

Score for Extent of RoR Digitisation and Availability of Legally Useable Copies (out of 20)



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 score.

* Dadra & Nagar Haveli and Daman & Diu.

** Andaman & Nicobar Islands.

	N-LRSI 2020-21	N-LRSI 2019-20	Difference
Tamil Nadu	19.9	18.9	1.0 ↑
West Bengal	19.7	13.3	6.4 ↑
Goa	19.6	19.2	0.4 ↑
Maharashtra	19.3	18.9	0.4 ↑
Madhya Pradesh	19.0	19.0	0.0 ↔
Uttar Pradesh	18.8	18.7	0.1 ↑
D&N and D&D*	17.9	17.9	0.0 ↔
Odisha	17.5	15.0	2.5 ↑
Tripura	17.4	16.1	1.3 ↑
Chhattisgarh	17.4	19.4	-2.0 ↓
Andhra Pradesh	16.6	16.5	0.1 ↑
Karnataka	16.5	16.1	0.4 ↑
Gujarat	16.2	16.5	-0.3 ↓
Rajasthan	16.2	16.2	0.0 ↔
Puducherry	15.7	16.3	-0.6 ↓
Punjab	15.5	15.2	0.3 ↑
Telangana	15.0	15.0	0.0 ↔
Himachal Pradesh	14.9	15.0	-0.1 ↓
Bihar	14.6	6.8	7.8 ↑
Uttarakhand	13.9	13.6	0.3 ↑
Lakshadweep	13.4	12.6	0.8 ↑
A&N Islands**	13.1	12.9	0.2 ↑
Haryana	11.5	10.7	0.8 ↑
Jharkhand	10.9	10.5	0.4 ↑
Delhi (NCT)	8.5	8.5	0.0 ↔
Assam	6.6	7.9	-1.3 ↓
Manipur	1.8	1.8	0.0 ↔

on its achievements with regard to the digitisation of textual records.

This component has the following two sub-components:

- 1) Extent of digitised textual records computed on the basis of the area with land records, reported RoR digitisation, and the success rate of the test checks, and
- 2) The status of availability of legally usable copies of RoRs.

The points obtained (out of 15), on the first sub-component mentioned above, by each State/UT, are presented in Figure 3.5 (for details refer to Annex Table A3.4). States/UTs scoring the highest in the present round are Odisha, Tamil Nadu, Tripura, West Bengal, and Goa, in that order. Compared to the previous round, improvement in scores for the extent of digitisation of RoRs have been reported in 15 States/UTs, while 7 show a similar position, and the remaining 5 States/UTs show a marginal decline.

For the availability of the legally usable copies of RoRs, points have been awarded

in the same manner detailed in Chapter 2, as follows: (i) 5 points, if such copies are downloadable directly from the web; (ii) 2.5 points, if such copies have to be obtained from the CSCs; and (iii) no points, where neither option is available and the copies have to be secured from the relevant government office. The final scores (out of 20, including 5 points for legally usable copies) in relation to the digitisation of textual records have been presented in Figure 3.6 (details are presented in Annex Table A3.4).

The mean national final score exhibiting the extent of RoR digitisation, combined with its legal usability, has improved from 14.4 out of the maximum of 20 in N-LRSI 2019-20 to 15.1 now, for 27 States/UTs. The five States/UTs scoring the highest in this regard are Tamil Nadu, West Bengal, Goa, Maharashtra, and Madhya Pradesh. Compared to the previous round, improvement in scores has been reported in 16 States UTs, while 6 show a similar position and the remaining 5 States/UTs show a marginal decline.

The mean national final score exhibiting the extent of RoR digitisation, combined with its legal usability, for 27 States/UTs has improved from 14.4 out of the maximum of 20 in N-LRSI 2019-20 to 15.1 now.

CHAPTER 4

EXTENT OF DIGITISATION OF SPATIAL RECORDS

This chapter discusses findings pertaining to the extent of digitisation of Cadastral Maps (CMs) in India's States and UTs. The achievements reported on the DoLR website and the State/UT websites, wherever there are additions, have been listed first. This is followed with an estimation of the area with digitised, publicly available spatial land records in the States/UTs. The results of test checks carried out as part of this exercise have also been discussed. Each of these sub-sections also compares the current position with that exhibited in the erstwhile N-LRSI 2019-20.

4.1 Digitisation of Spatial Records as Reported by the States/UTs

The DoLR website is regularly updated with the extent of digitisation of land records (both textual and spatial) as reported by the States/UTs. The details of digitisation are available down to the level of the revenue villages. The country-wide position, as reflected on the DoLR website, in both rounds of N-LRSI, is presented in Figure 4.1. As in the previous chapter, it may be noted here too that the DoLR figures do not show the actual area for which Cadastral Maps (CMs) are in existence. This has been computed separately in this exercise and discussed in the next section. DoLR also does not show whether the digitised CMs being reported are available on the web. This has also been verified separately and the concomitant position is mentioned in the next section.

As compared to the information available for N-LRSI 2019-20, the DoLR website shows that the number of States/UTs reporting at least some digitisation of their spatial records has increased from 30 to 32,

with the addition of two new States/UTs in the list, that is, Karnataka and Jammu & Kashmir. The latter State had claimed digitisation of some of their textual records last year. However, N-LRSI 2020-21 brought out the fact that there was no web portal to display these records in the case of Jammu & Kashmir.

Figure 4.1 shows that 19 States/UTs have reported an increased level of digitisation as compared to N-LRSI 2019-20. In addition to Karnataka, which has been added in the present round with a report of complete digitisation, Jammu & Kashmir, Kerala, Gujarat, and Andhra Pradesh have reported a considerable increase in the level of digitisation of spatial records.

The number of States/UTs reporting complete digitisation in N-LRSI 2020-21 has increased to 14 from 11 in N-LRSI 2019-20. Bihar, Tripura, Karnataka, Gujarat, and Goa now report full digitisation. However, Chhattisgarh and Madhya Pradesh, which reported a fully digitised status a year ago, now show a lower extent of digitisation on the DoLR website.

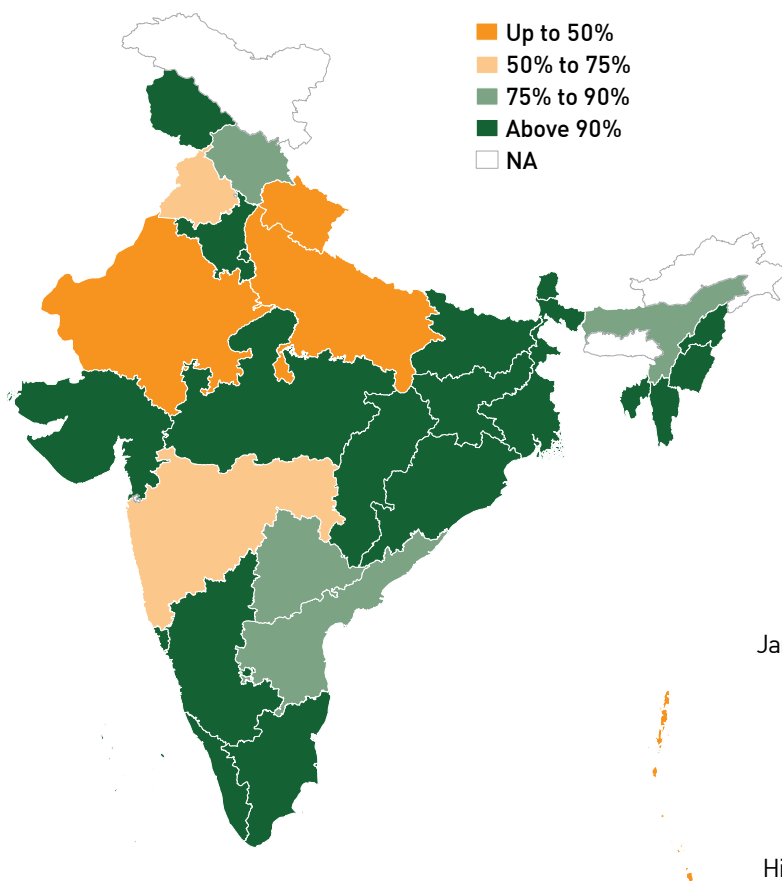
Overall, 22 States/UTs reported the extent of digitisation of CMs to be in excess of 90 per cent. While 10 States/UTs showed no change in digitisation as compared to the last round, apart from the above-mentioned States of Chhattisgarh and Madhya Pradesh, Maharashtra reported a reduction in the extent of digitisation. The reduction in digitisation figures may be an adjustment to reflect a more accurate position or may have been caused by withdrawing specific records that relate to villages which are the subject of re-surveys.

Overall, the States/UTs report a significant increase in digitisation of CMs (at the all-India level) from 54.9 per cent in

According to the DoLR, 19 States/UTs report an increased level of digitisation compared to N-LRSI 2019-20.

Figure 4.1: Digitisation of CMs across States/UTs of India (as per the DoLR website)

Extent of Digitisation of CMs, 2020-21 (%)



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

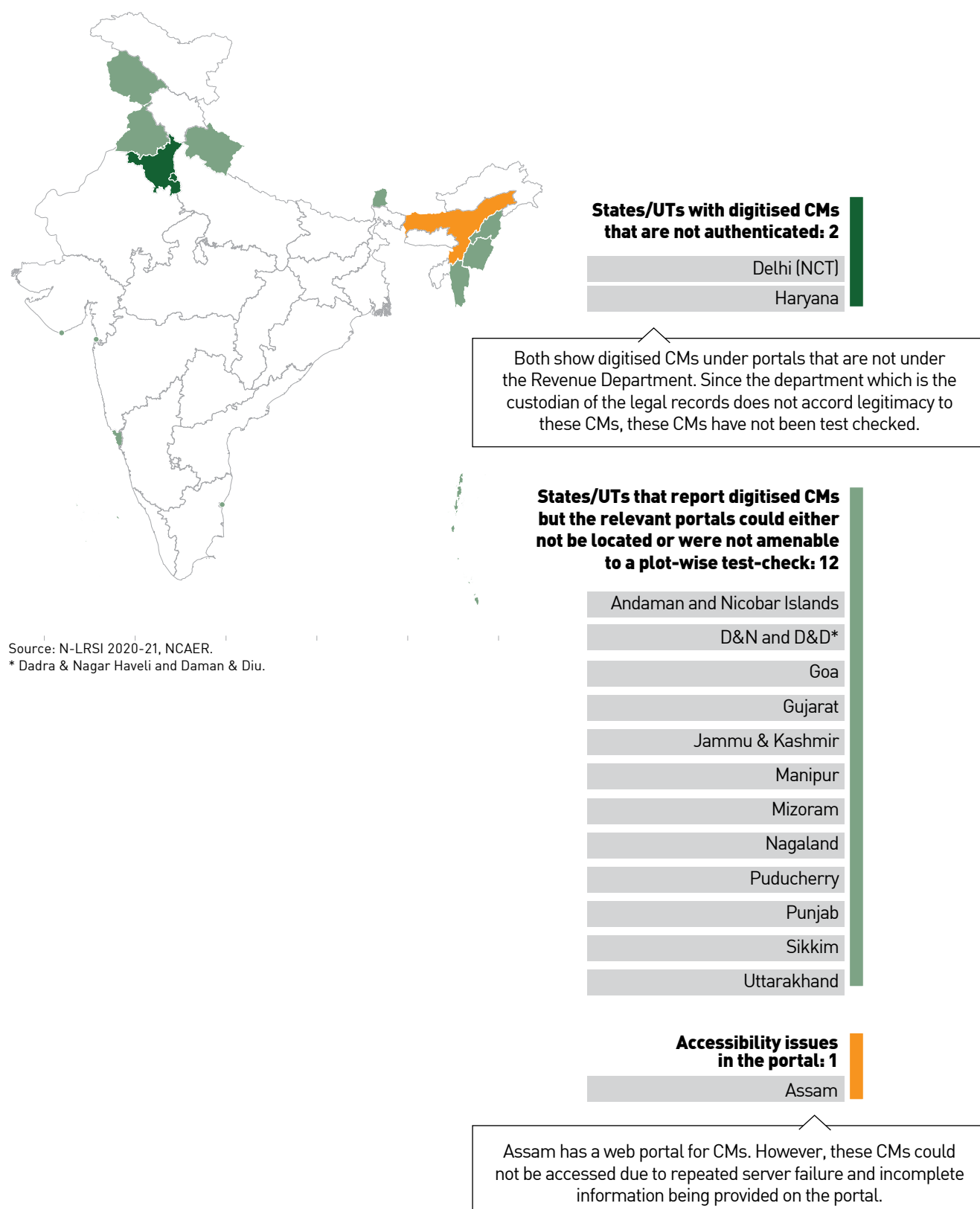
Note: States arranged in descending order of N-LRSI 2020-21 score.

* Dadra & Nagar Haveli and Daman & Diu.

** Andaman & Nicobar Islands.

	Extent of Digitisation of CMs (%)		Difference (Latest-Previous) (percentage points)
	N-LRSI 2020-21	N-LRSI 2019-20	
Bihar	100.0	89.7	10.3 ↑
D&N and D&D*	100.0	100.0	0.0 ↔
Goa	100.0	99.1	0.9 ↑
Gujarat	100.0	37.6	62.4 ↑
Karnataka	100.0	0.0	100.0 ↑
Lakshadweep	100.0	100.0	0.0 ↔
Manipur	100.0	100.0	0.0 ↔
Mizoram	100.0	100.0	0.0 ↔
Nagaland	100.0	100.0	0.0 ↔
Delhi (NCT)	100.0	100.0	0.0 ↔
Odisha	100.0	100.0	0.0 ↔
Puducherry	100.0	100.0	0.0 ↔
Sikkim	100.0	100.0	0.0 ↔
Tripura	100.0	77.2	22.8 ↑
Jharkhand	98.7	76.8	21.9 ↑
Tamil Nadu	98.5	50.4	48.2 ↑
Madhya Pradesh	97.8	100.0	-2.2 ↓
Jammu & Kashmir	96.2	0.0	96.2 ↑
Kerala	94.5	7.0	87.5 ↑
West Bengal	93.7	92.3	1.4 ↑
Haryana	91.6	79.8	11.8 ↑
Chhattisgarh	90.8	100.0	-9.2 ↓
Himachal Pradesh	89.8	88.2	1.6 ↑
Andhra Pradesh	87.2	1.3	85.9 ↑
Telangana	86.5	80.6	5.8 ↑
Assam	84.8	53.2	31.6 ↑
Punjab	70.9	11.7	59.2 ↑
Maharashtra	68.2	76.9	-8.7 ↓
Rajasthan	44.8	9.3	35.5 ↑
Uttar Pradesh	32.7	11.8	20.9 ↑
Uttarakhand	30.7	24.0	6.7 ↑
A&N Islands**	13.0	13.0	0.0 ↔
All India	67.6	55.0	12.7 ↑

Figure 4.2: Status of States/UTs with Digitised Spatial Records Not Amenable to Test Checks



Among the States covered in N-LRSI 2019-20, Kerala, AP and TN demonstrate the best improvements in the extent of the area with digitised CMs.

2020 to 67.6 per cent in 2021. This does not, however, reflect claims of the actual area with digitised land records. This has been calculated as mentioned in the next section.

4.2 Extent of Digitisation of Spatial Records as a Proportion of the Area with Land Records

The digitisation of spatial records presumes the existence of CMs as part of a written land record. Therefore, a similar procedure, as adopted in the case of RoRs, was followed in verifying the extent of digitisation of CMs. First, the proportion of area in a State/UT for which the land records exist, was estimated. *The details of area with land records are taken to be the same as given in Annexure Table A3.1 of Chapter 3.*

Against the 33 States/UTs that report digitised textual records for some or the entire area of the State/UT, digitisation of CMs is reported by 32 States/UTs. However, test checks for digitised CMs were possible only in the case of 17 States/UTs (including Kerala, which made CMs available but not RoRs) as compared to the 27 States/UTs that enabled this exercise for textual records. While this was an improvement from the 14 States/UTs available in N-LRSI 2019-20, it still showed a huge gap out of the 32 States/UTs reporting the digitisation of CMs. Figure 4.2 summarises information about the remaining 15 States/UTs in which spatial records were not amenable to test checks.

As mentioned above, the actual extent of digitised spatial records was computed for 17 States/UTs. The percentage of digitised CMs reflected on the DoLR website was

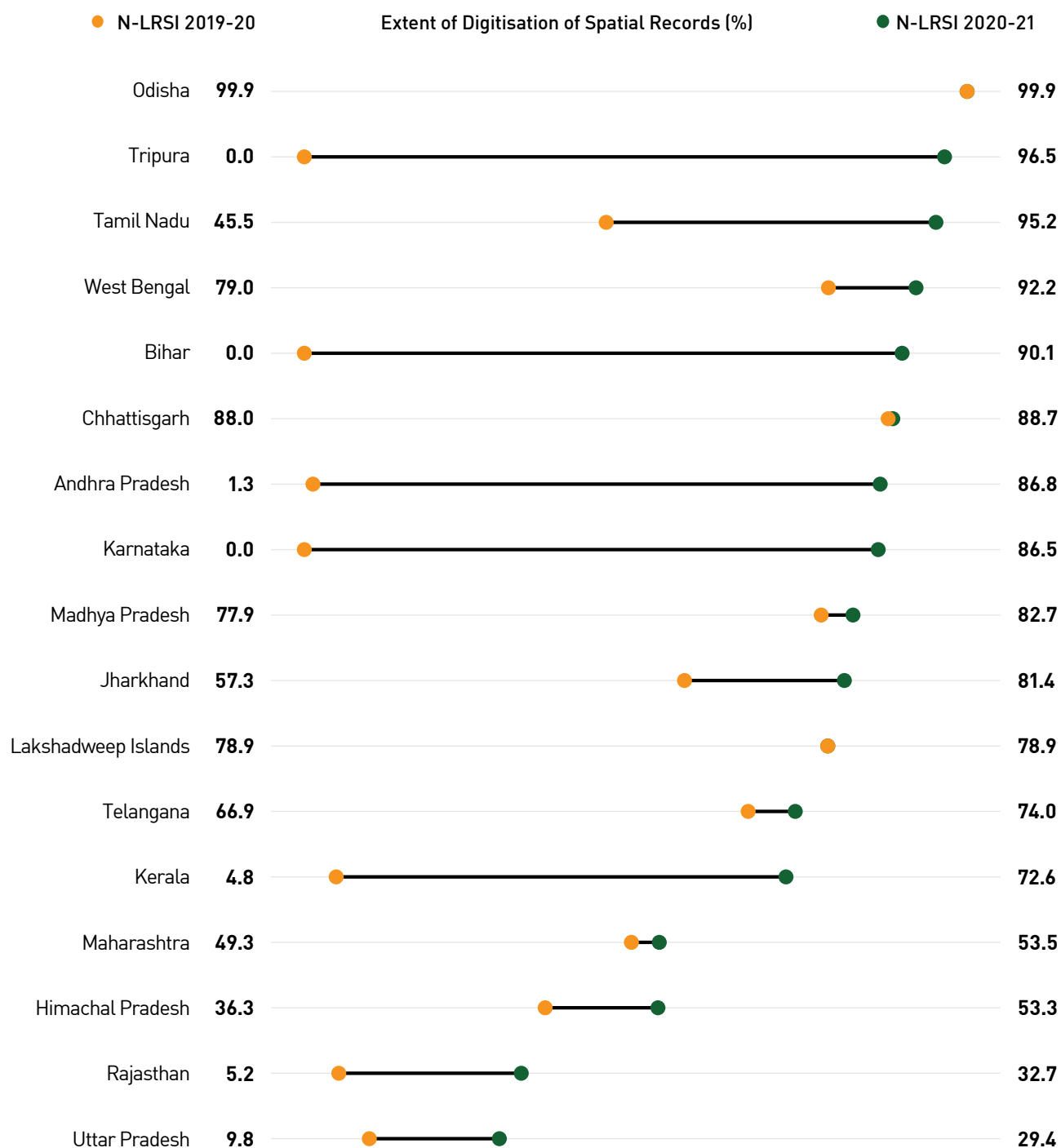
applied to the area for which land records exist. A comparison of the situation that emerged in N-LRSI 2020-21 with that in N-LRSI 2019-20 is presented in Annex Table A4.1. Of the 14 States/UTs covered in N-LRSI 2019-20, 11 States/UTs from the last round have improved on or retained the extent of digitisation of spatial records found the last time. Among the States covered in N-LRSI 2019-20, Kerala, Andhra Pradesh, and Tamil Nadu show the most improvement in the extent of the area with digitised CMs. Karnataka has made available its CMs on a web portal for the first time and reported a very high coverage. Chhattisgarh, Maharashtra, and Madhya Pradesh are the three states reporting a decline.

4.3 Test Check Results

The all-India test checks, covering 17 States/UTs, verified the achievement reported by States/UTs to the extent of 87.8 per cent in 2021 as compared to 63.9 per cent in 2020. The States/UTs with digitisation of more than 90 per cent of the spatial records tested, were, in order of achievement, Odisha, Tripura, Tamil Nadu, West Bengal and Bihar. Another 8 States/UTs reported digitisation of more than 70 per cent of their spatial records in N-LRSI 2020-21. (For details, refer to Annexure Table A4.2).

As compared to N-LRSI 2019-20, as many as 15 States/UTs (including new added states) showed a positive change in the extent of digitisation of CMs in N-LRSI 2020-21, while the balance two maintained their earlier positions, as presented in Figure 4.3. The highest change has been recorded by Tripura, followed by Bihar, Karnataka and Andhra Pradesh. The least positive change has been seen in the case of Chhattisgarh, Maharashtra, and Madhya Pradesh. Figure 4.3 helps

Figure 4.3: Extent of Digitised Spatial Records after Verification by Test Checks-Comparison between N-LRSI 2020-21 and N-LRSI 2019-20



Source: N-LRSI 2020-21 and 2019-20, NCAER.

The overall failure rate in the CM test checks has declined from 36% in N-LRSI 2019-20 to 12.2% in N-LRSI 2020-21.

compare the situation between N-LRSI 2020-21 and N-LRSI 2019-20.

4.4 Reasons for Failure in the CM Test-Checks

The overall failure rate in the CM test checks has declined from 36 per cent in N-LRSI 2019-20 to 12.2 per cent in N-LRSI 2020-21. This significant reduction in the failure rate is due to the fact that almost every State is showing an improvement. The best performers are Tripura, Bihar, Karnataka, Andhra Pradesh, Kerala, Bihar and Tamil Nadu.

The failure of reported digitisation by States/UTs during the test checks can be broadly attributed to the following three reasons:

1. Administrative Unit Not Available

This reason is reported for cases where the village or survey/plot (and sometimes even the tehsil) that has been shown to have digitised land records was not available on the portal. This continues to be the most important reason for failure in the test checks.

2. CM Not Accessible

This reason pertains to cases where even after all the necessary details had been provided to access the CM, the actual CM did not appear on the screen.

3. Server Failure

This reason is attributed to cases where even after repeated attempts at different time periods, the server remained unresponsive and/or errors were constantly reported on-screen.

The State/UT-wise reasons for failure in test checks have been exhibited in Annexure Table A4.3.

4.5 Availability of Legally Usable Digitised Spatial Records

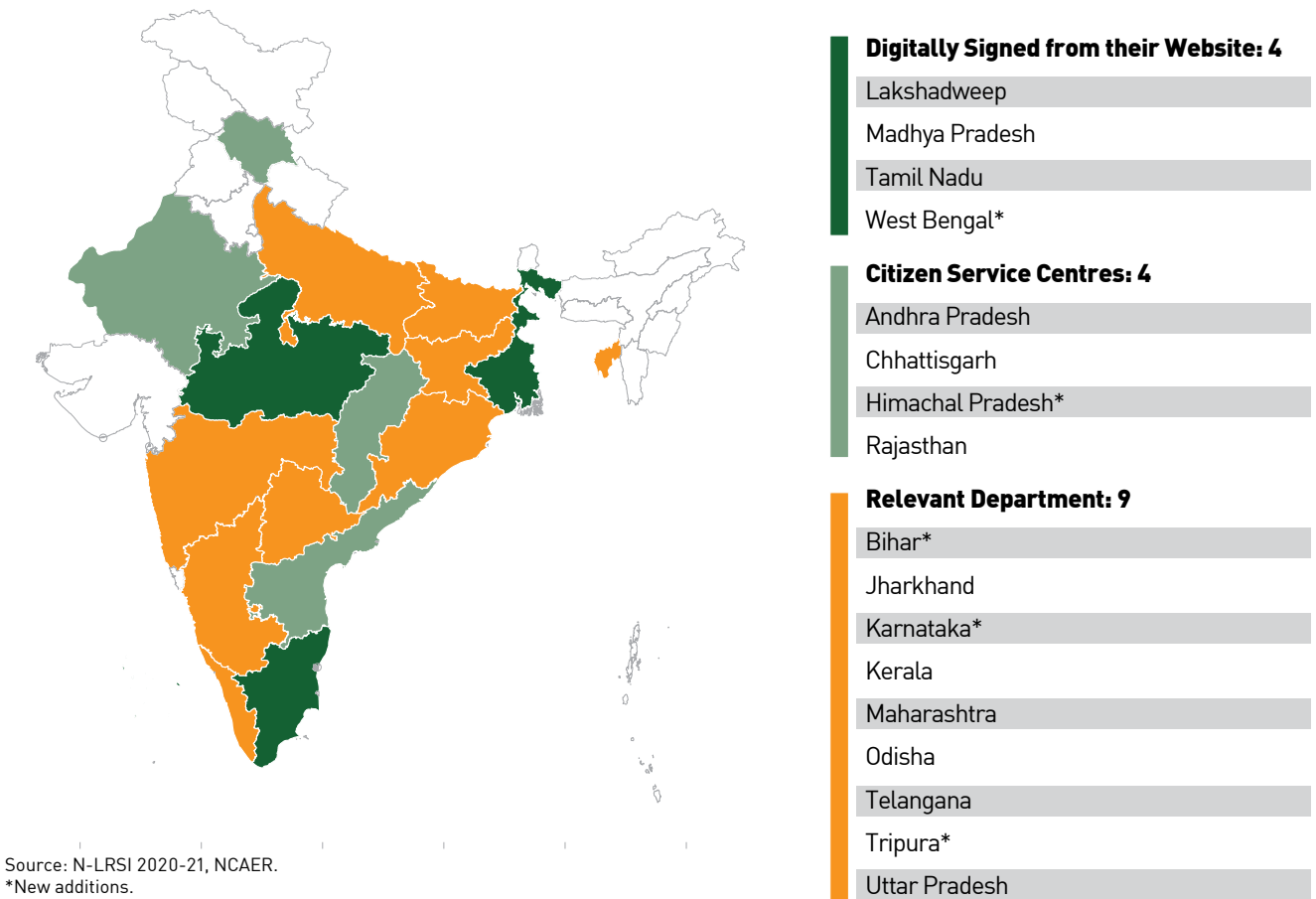
As in the case of the textual records discussed in Chapter 3, the data on this parameter was gathered through informed sources in the States/UTs. Based on the information received, the States/UTs have been grouped into the following three categories:

- 1) States/UTs providing legally usable copies from the websites;
- 2) States/UTs providing legally usable copies from CSCs; and
- 3) States/UTs providing legally usable copies from the relevant department office.

In the first category, where digitally signed copies of CMs are available from the website, the number of States/UTs has gone up to four in the current round from three in the earlier round, with the addition of West Bengal.

The second category, wherein legally signed copies of CMs are available from Citizen Services Centres, also reflects an improvement from three earlier to four now, with Himachal Pradesh added to the list. Karnataka, Bihar, and Tripura, the States covered in N-LRSI 2020-21 for the first time for digitisation of CMs, have confirmed that legally usable copies can be obtained only from the relevant

Figure 4.4: Availability of Legally Usable Copies of CMs



department, and are, therefore, additions to the third category.

4.6 Scores for the Extent of Digitisation of CMs

This section presents the index score that each State/UT obtained based on the achievements in the digitisation of spatial records.

This component has two sub-components as follows:

- 1) Extent of digitised spatial records computed on the basis of area with land records, reported CM digitisation, and

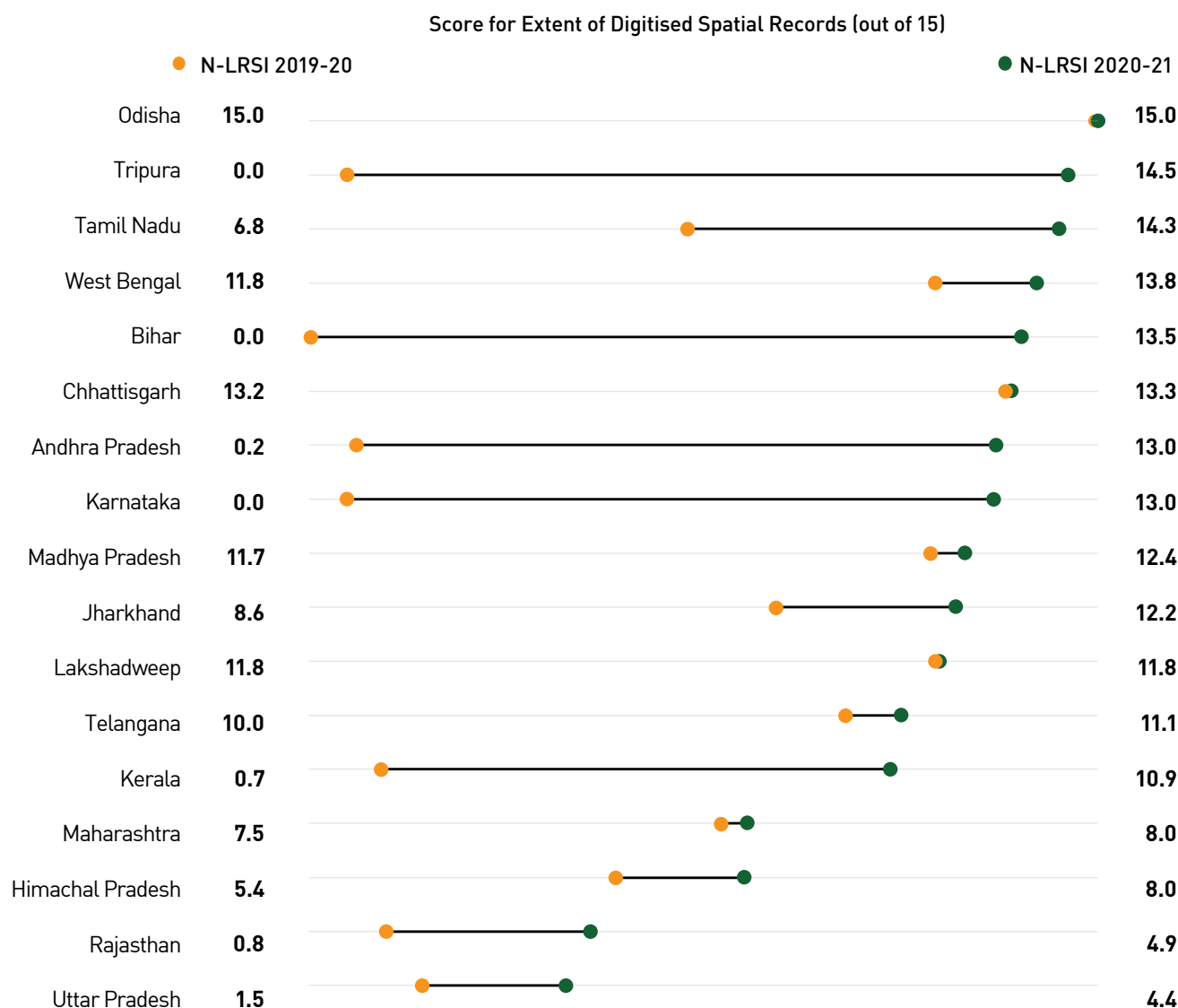
the success rate of the test-checks, and

- 2) The status of availability of legally usable copies of CMs.

For achieving the objective listed in point (1) above, the first step was to determine the area of the State/UT with land records, and to calculate its proportion in the 15 points allocated for this purpose. Thereafter, the proportion of digitisation computed after the test checks was taken as a percentage of the net figure obtained in the first step.

The points obtained (out of 15) by each State/UT are depicted in Figure 4.5 (for details, refer to Annex Table A4.4). The

Figure 4.5: State / UTs Scores for Extent of Digitised Spatial Records after Verification by Test Checks



Source: N-LRSI 2020-21 and 2019-20, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 score.

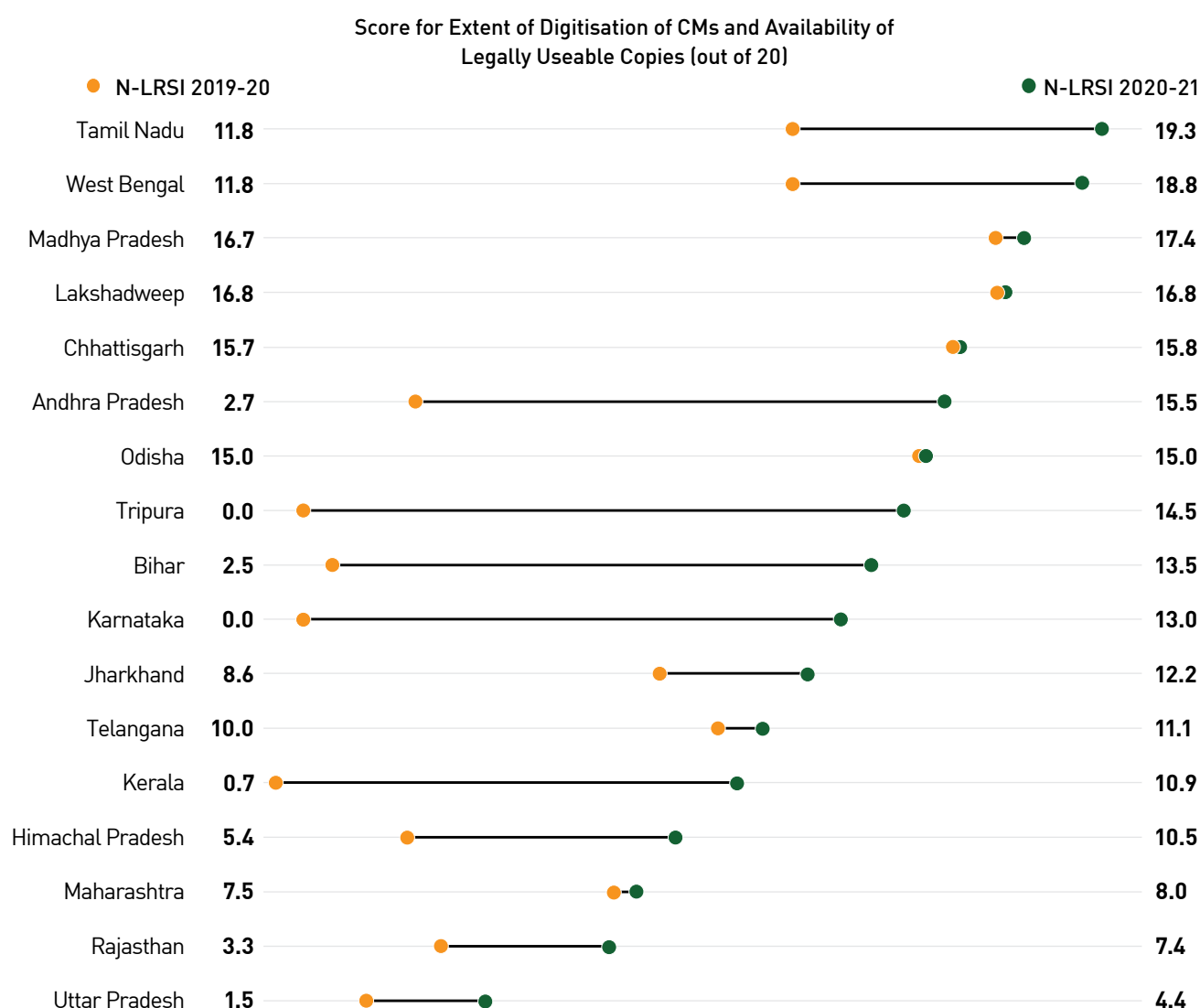
five States/UTs scoring the highest in N-LRSI 2020-21 in descending order are as follows: Odisha (which was first in N-LRSI 2019-20 also), Tripura, Tamil Nadu, West Bengal and Bihar. As compared to the previous round, no State/UT has shown a decline in its score concerning the extent of digitisation.

For the availability of the legally usable

copies of CMs, points have been awarded as mentioned in Chapter 2, as follows: (i) 5 points, if such copies are downloadable directly from the web; (ii) 2.5 points, if such copies have to be obtained from the CSCs; (iii) no points, in case of States/UTs where neither option is available.

The final scores (out of 20, including 5 points for legally usable copies) for

Figure 4.6: Scores for Extent of Digitisation of CMs and Availability of Legally Useable Copies



Source: N-LRSI 2020-21 and 2019-20, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 score.

digitisation of spatial records are presented in Figure 4.4 (details are presented in Annex Table A4.4).

The national mean final score exhibiting the extent of CM digitisation, combined with its legal usability, has improved from 9.1 out of the maximum of 20 in N-LRSI 2019-20 to 13.2 in N-LRSI 2020-

21, for 17 States/UTs. The five States/UTs scoring the highest in this regard are Tamil Nadu, West Bengal, Madhya Pradesh, Lakshadweep, and Chhattisgarh. As compared to the previous round, no State/UT shows any decline in the score for the extent of digitisation of CMs and availability of legally usable copies together.

CHAPTER 5

DIGITISATION OF THE REGISTRATION PROCESS

The N-LRSI 2019-20 report noted that while technology offers enormous scope for improving client experience with the registration process, States/UTs exhibit considerable variation in the extent to which they have made these potential benefits available to citizens. The current N-LRSI 2020-21 report attempts to examine the extent to which this situation has changed for the better over one year by assessing the same five stages of the registration process, and by following a similar procedure in understanding the status of a State/UT with regard to achievement on each of these stages. To recapitulate, the digitisation of the actual process of registration ostensibly comprises the following five stages:

- 1) Entry of referent data related to the transaction to be registered (provision of a web portal for public data entry);
- 2) Availability of the circle rate (guidance rate) that is used to calculate the stamp duty/registration fee payable (on a website/web portal);
- 3) Payment of the stamp duty/registration fee (through a digitally enabled process);
- 4) Attestation of the document to be registered, by the competent authority (the Sub-Registrar) by digital signature; and
- 5) Delivery of the registered document to the concerned parties (soft copy of the document after its registration).

The progress made by States/UTs on the extent of computerisation of the above stages has been made afresh by once again securing information through KCs, and a detailed search on the respective websites.

Overall, N-LRSI 2020-21 finds that 17 States/UTs have a web portal for public data entry; 26 States/UTs made available circle rates on the web; 13 States/UTs had a provision for online payment of stamp duty while 14 States/UTs had an e-stamping facility for stamp duty payment; 8 States/UTs had provisions for the document being registered to be signed digitally for completion of the registration process; and 12 States/UTs offered the option of delivering the registered document as a soft copy.

The stage-wise details of the achievements on digitisation of the registration process verified in the present round, and changes in comparison to N-LRSI 2019-20 are discussed below.

5.1. Public Data Entry

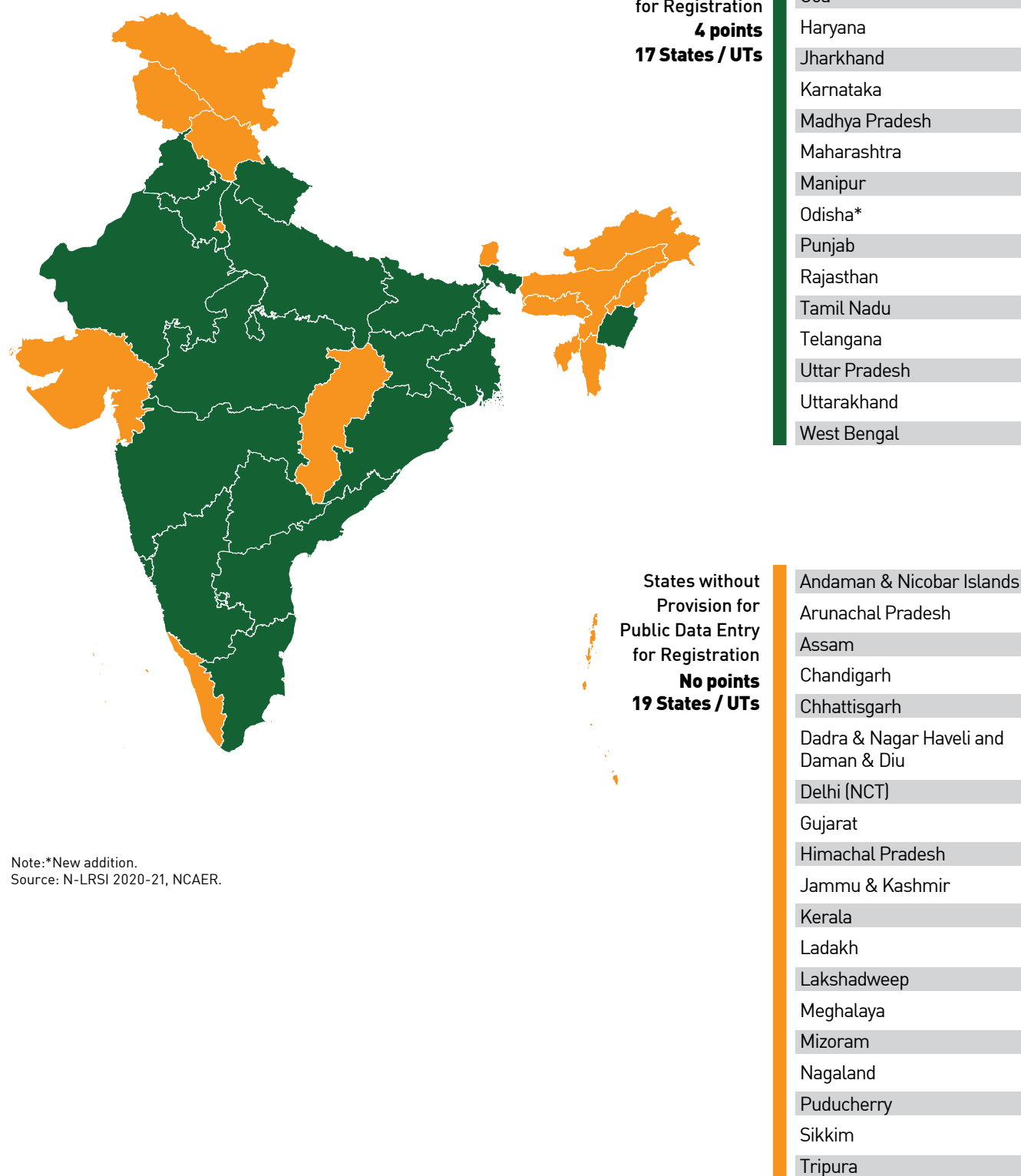
Public data entry implies a facility on a web portal for filling in the requisite details for registration of a transaction. The availability of a State/UT web portal for this purpose in the public domain formed the basis of assessment of digitisation of this stage of registration. The 15 states/UTs that reported offering this facility to the public in the last round, have now seen the addition of Bihar and Odisha, as presented in Figure 5.1.

5.2. Circle Rate Availability

The circle rate (called by various names in different States/UTs) is the minimum price per unit of land used for calculating the stamp duty and the registration fee when the transaction for transfer of a property needs to be registered. The provision of a digitised circle rates facilitates immediate calculation of the stamp duty and registration fee to be paid on registration.

**NLRSI
2020-21
finds that 17
States/
UTs have a
web portal
for public
data entry;
26 States/
UTs make
available
circle rates
on the web
and 13 States/
UTs have a
provision
for online
payment of
stamp duty.**

Figure 5.1: States/UTs with Web Portals for Public Data Entry



Note: *New addition.
Source: N-LRSI 2020-21, NCAER.

The assessment of the online availability of circle rates was carried out through test checks for the sample villages that were selected to check the extent of land records digitisation (as presented in Chapters 3 and 4). This assessment revealed that only a few States and UTs still do not make circle rates available online on their websites. While N-LRSI 2019-20 found that 23 States/UTs had this facility, in the current

N-LRSI 2020-21, this number has risen to 26 States/UTs. The three additions, all of which are UTs, include Chandigarh, Andaman & Nicobar Islands, and Dadra & Nagar Haveli and Daman & Diu.

The format in which these rates are made available online varies significantly across States/UTs. Please refer to Box 5.1 for the different ways in which circle rates are

Box 5.1: State-wise Patterns of Availability of Circle Rates

1. Andhra Pradesh, Bihar, Gujarat, and Jharkhand, have a portal that simply asks for basic administrative units like the district, tehsil, and village to calculate the stamp duty.
2. Himachal Pradesh, Punjab, Haryana, Chhattisgarh, and Uttarakhand list the State-/district-/tehsil-wise files, which makes the search more tedious.
3. In the case of West Bengal, while the circle rates can be retrieved through the portal, the State/UT also requires details like the plot number, proposed land use, distance from the road, and so on, to be filled at the initial stages.
4. Kerala had a similar requirement for entry of the re-survey number, sub-division, and land type.
5. In the case of a few States/UTs, their rates were available on the respective State/UT and district websites.
6. In case of Dadra & Nagar Haveli and Daman & Diu, Andaman & Nicobar Islands, Goa, Sikkim and Chandigarh, PDF files were available on Google search that lists out names of villages except for Chandigarh, where rather than giving the village list, it mentions "all villages in Chandigarh" and gives a common price.

Therefore, while some States have a simpler procedure for availability of circle rates for citizens, in the case of other States, there is a need to make it more user-friendly.

Source: N-LRSI 2020-21, NCAER.

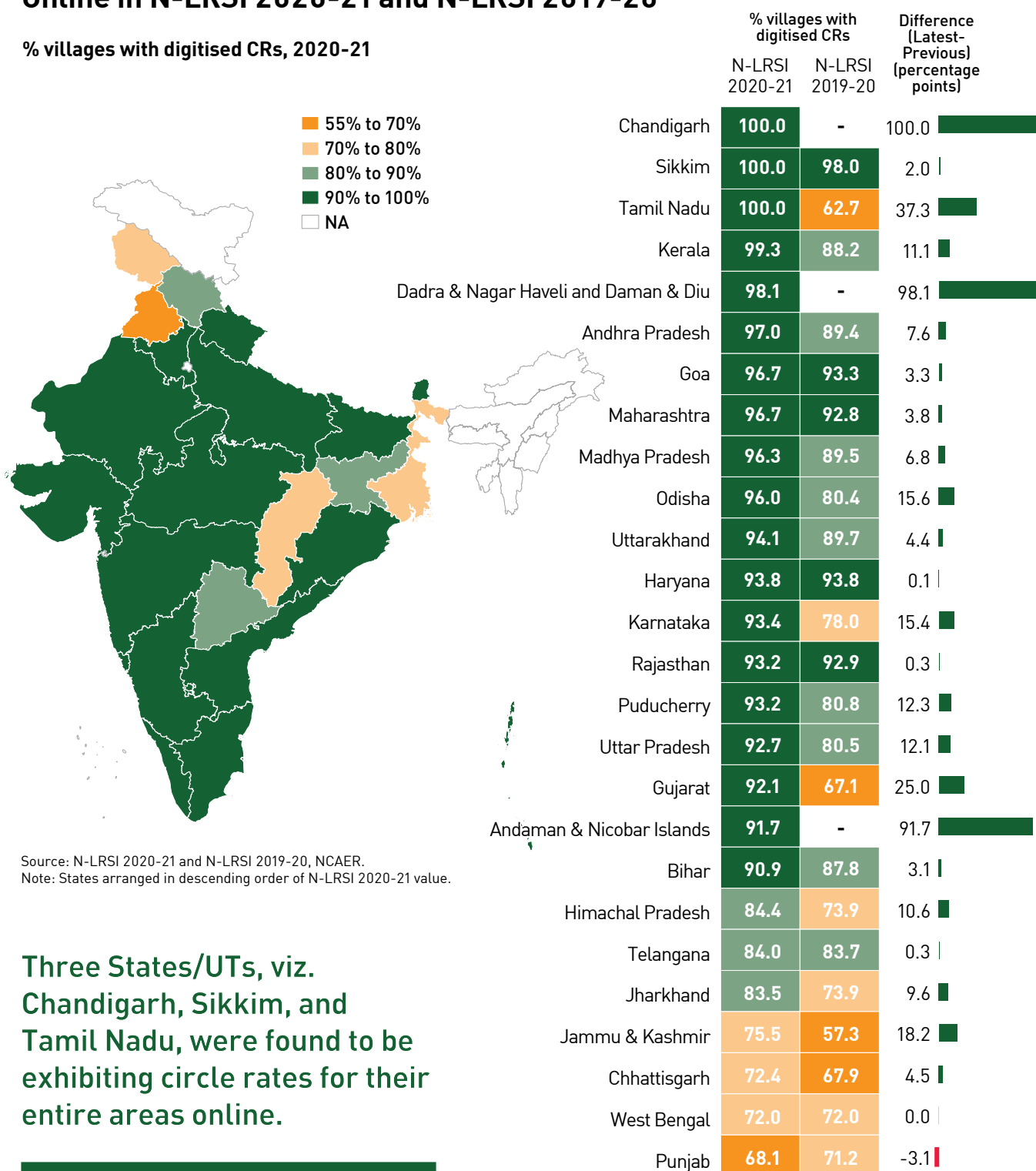
Out of the 26 States/UTs covered in the current exercise, three States/UTs viz. Chandigarh, Sikkim, and Tamil Nadu, were found to be exhibiting circle rates for their entire areas online. In the case of another 16 States/UTs, the extent to which circle rates were available online, was above 90 per cent.

Compared to the last round, all the States/

UTs barring Punjab have either improved or retained their position in the present round. Tamil Nadu, Gujarat, Jammu & Kashmir, Odisha, and Karnataka are among the States/UTs reporting maximum improvement in N-LRSI 2020-21. Punjab is the only State reporting a lower availability of circle rates as compared to the last round. The decline is mainly on account of the non-availability of the

Figure 5.2: Success Rates in Accessing Circle Rates Online in N-LRSI 2020-21 and N-LRSI 2019-20

% villages with digitised CRs, 2020-21



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 value.

Three States/UTs, viz. Chandigarh, Sikkim, and Tamil Nadu, were found to be exhibiting circle rates for their entire areas online.

circle rates for some of the new villages included in the sample and some villages for which circle rates were available online in N-LRSI 2019-20 but are not available now for N-LRSI 2020-21.

The average availability of circle rates on websites in N-LRSI 2021 was found to be 90 per cent, up from 77.7 per cent recorded in N-LRSI 2020. In providing access to circle rates, the States/UTs exhibited a status of 100 per cent availability in three cases and a 28 per cent failure for the worst performer.

In 16 States/UTs, the failure rate was less than 10 per cent. Figure 5.2 depicts a comparison of the success rates in test checks in N-LRSI 2020-21 and N-LRSI 2019-20. Details of the availability of circle rates in both rounds and variations in the performance of the States/UTs are provided in Annex Table A5.1. The failure was mostly attributable to the fact that village names, as given in the land records, were not available in the database of circle rates (details are presented in Annex Table A5.2).

5.3 Stamp Duty Payment

The general practice in India is that once the stamp duty (and registration fee) have been calculated, these need to be paid in advance before presenting the transfer document for registration. The traditional payment system involves the purchase of paper stamps from stamp vendors or government treasuries. The findings for N-LRSI 2020-21 confirm that 9 States/UTs, the same number as in N-LRSI 2019-20, continue to follow the traditional method requiring the purchase of stamped paper.

However, of the 18 States/UTs that had reported allowing payment by purchase of e-stamped paper in the previous round, four have now graduated further up by providing portals that enable online payment of this tax and fee. Consequently, there are now 14 States/UTs with this facility. The four new additions are: Bihar, Himachal Pradesh, Delhi, and Punjab.

Figure 5.3 presents the distribution of States/UTs across the different modes of stamp duty payment.

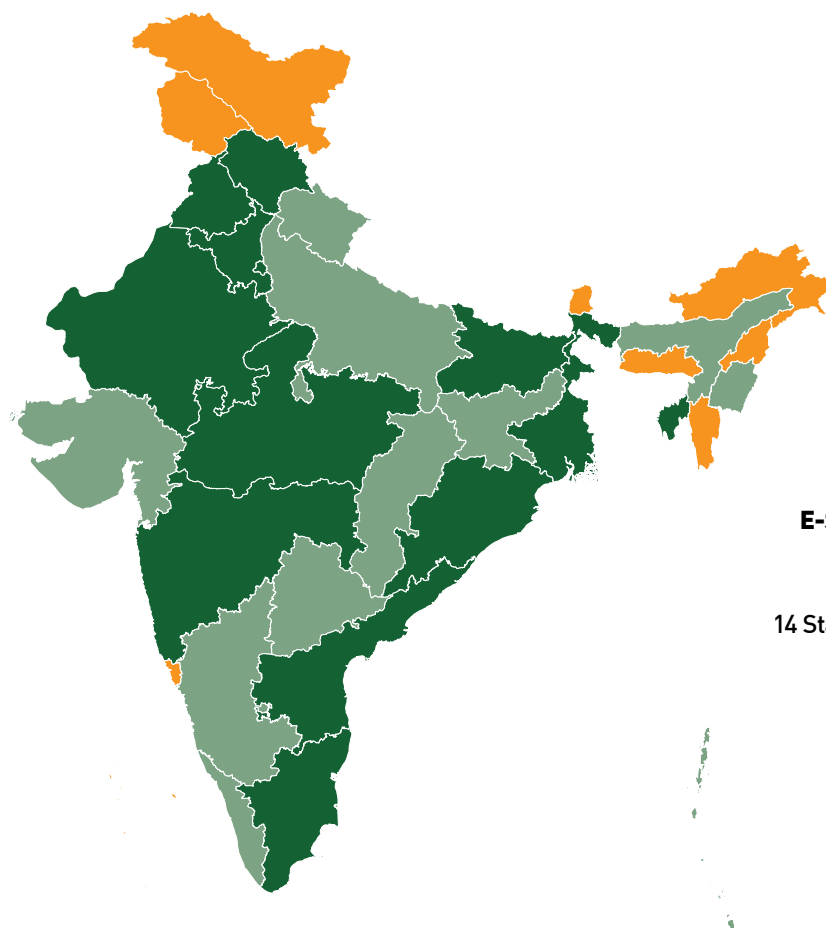
5.4 Digital Attestation of the Document being Registered

Once it has been verified that: (a) the data relevant to the transaction has been correctly entered in the document to be registered, and (b) the stamp duty and registration fee have been calculated accurately and paid, the SRO signs the document being registered after ascertaining the identity of the parties and witnesses to the transaction. If this process is undertaken digitally, it signifies another step in the direction of reducing the time taken in the process and the discretion exercised by the SRO in the registration process. Based on the information received from KCs in this regard, the States/UTs that have the facility of attestation of the registered document through digital signatures, have been listed in Figure 5.4.

Only 8 States/UTs have a provision for digital signature of the document presented for registration to the SRO. This is the same number as reported in N-LRSI 2019-20. However, there is one significant change: West Bengal has, since the last round, introduced a compulsory

The average availability of circle rates on websites in N-LRSI 2021 was found to be 90 per cent, up from 77.7 per cent recorded in N-LRSI 2019-20.

Figure 5.3: Systems for Online Stamp Duty Payment



Note: *New addition.
Source: N-LRSI 2020-21, NCAER.

Online Payment
4 points
13 States / UTs

Andhra Pradesh
Bihar*
Delhi (NCT)*
Haryana
Himachal Pradesh*
Madhya Pradesh
Maharashtra
Odisha
Punjab*
Rajasthan
Tamil Nadu
Tripura
West Bengal

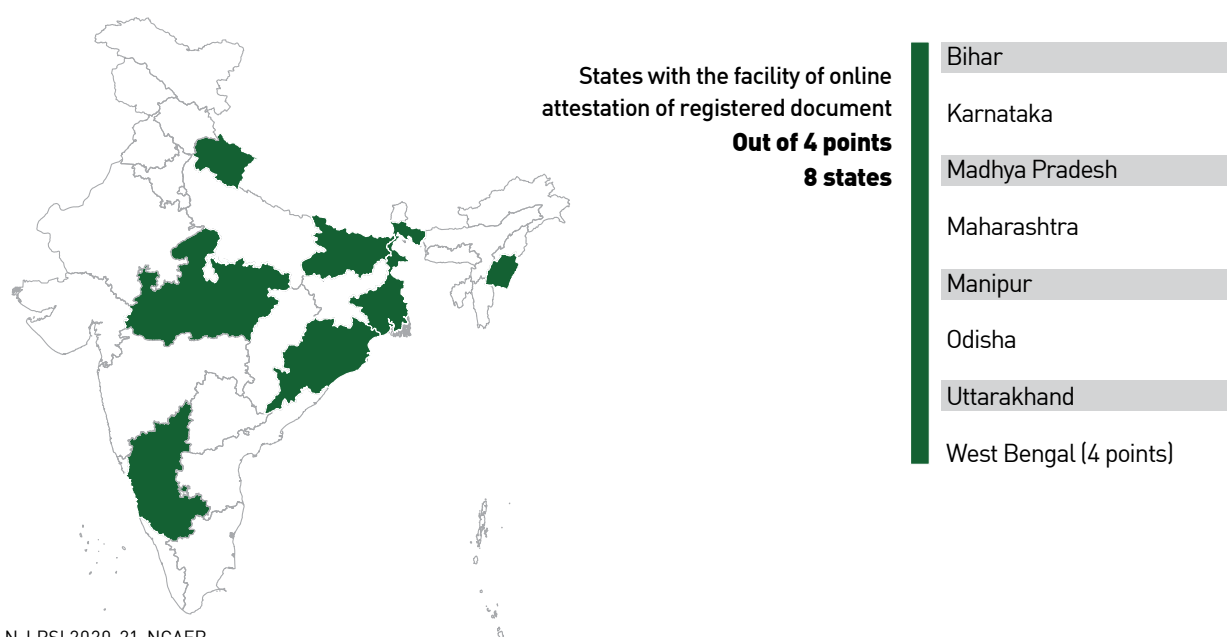
E-Stamping Facility
2 points
14 States / UTs

Andaman & Nicobar Islands
Assam
Chandigarh
Chhattisgarh
Dadra & Nagar Haveli and Daman & Diu
Gujarat
Jharkhand
Karnataka
Kerala
Manipur
Puducherry
Telangana
Uttar Pradesh
Uttarakhand

Paper Stamps
No points
9 States / UTs

Arunachal Pradesh
Goa
Jammu & Kashmir
Ladakh
Lakshadweep
Meghalaya
Mizoram
Nagaland
Sikkim

Figure 5.4: States/UTs with Facility of Online Attestation of the Registered Document



provision for any document presented for registration to be digitally signed for storage (whether electronically entered or after a scan of paper documents). All registered documents in the State are now stored in digital format and not in paper form. Upon registration, the document is delivered immediately to an e-address, if provided. West Bengal is the only State to have made this provision compulsory. In the other 7 States, digital signature by the SRO is still optional.

5.5. Online Delivery of the Registered Document

The last step in the registration process is the delivery of the registered document to the concerned parties. An online provision for attestation with a digital signature can enable the concerned parties to receive a digital/soft copy of the document immediately on registration. This will ensure that no time is wasted in the

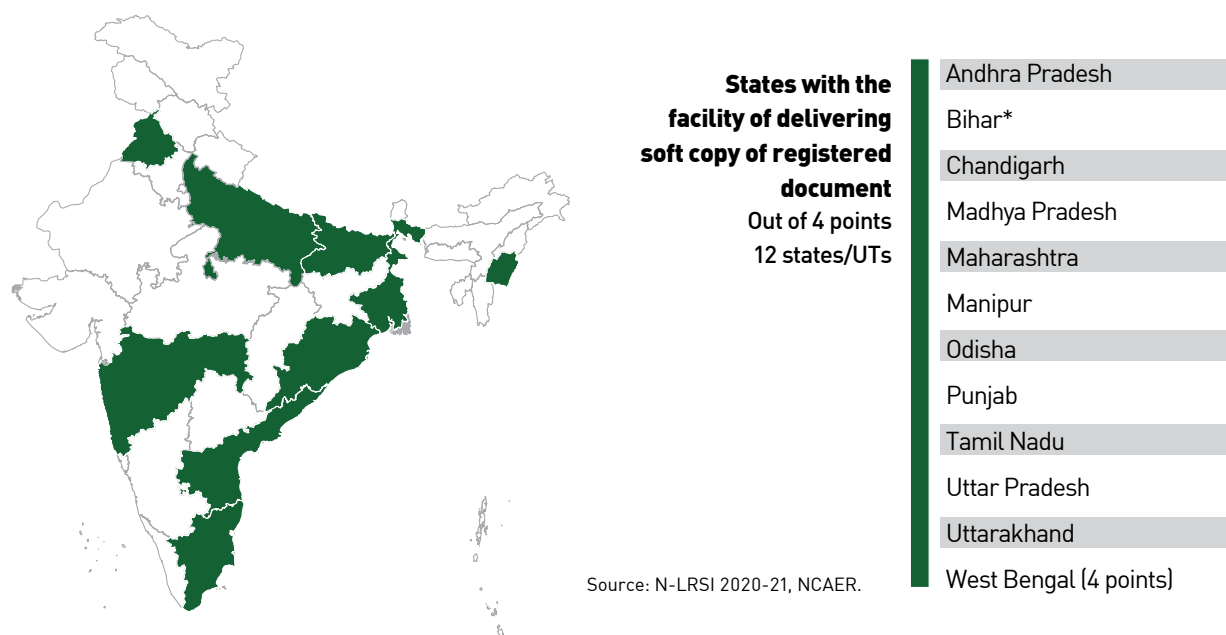
process and that there is no delay in this delivery. Information was obtained from the KCs regarding availability of a facility to immediately deliver a digital/soft copy of the registered document.

Overall, 12 States/UTs provide the option of this facility. Except Bihar that has introduced this facility recently, all the other States/UTs were in this category in N-LRSI 2019-20 as well. The other significant difference is that in West Bengal, a soft copy is immediately made available after the compulsory digital signature by the SRO. The States/UTs that have this facility are listed in Figure 5.5.

5.6. Summary of the Digitisation of the Registration Process

Based on the detailed discussion in this chapter, Figure 5.7 delineates the overall status of digitisation of various stages of

Figure 5.5: States/UTs with Facility of Online Delivery of the Registered Document



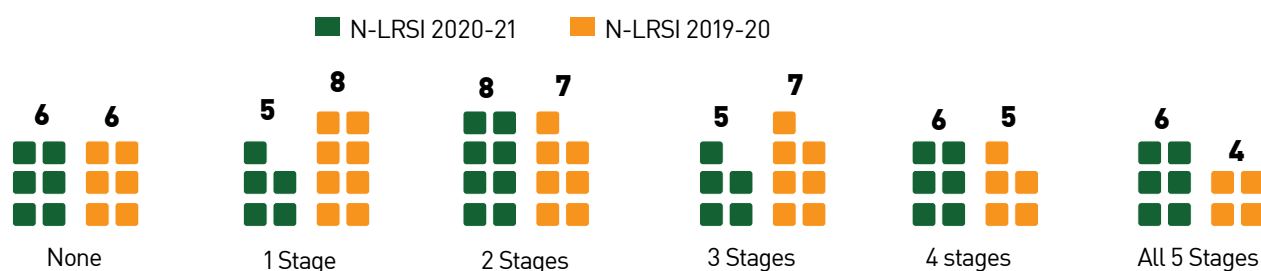
the registration process (for details, please refer to Annex Table A5.3).

The States/UTs have been divided into six categories—States/UTs with digitisation of all the five stages of registration (6 States/UTs), followed by the States/UTs with digital availability at four stages (6), three stages (5), two stages (8), one stage (5), and finally those with no provision for

digitisation of any stage of the registration process (6).

Compared to N-LRSI 2019-20, the number of States/UTs with digital availability of all five stages, four stages and two stages of the registration process has seen a positive change in the present round. While the number of States/UTs with digital availability of three and one

Figure 5.6: Changes in States/UTs Status on Digitisation of the Registration Process: N-LRSI 2020-21 and 2019-20



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Figure 5.7: Summary of Status of Digitisation of the Registration Process

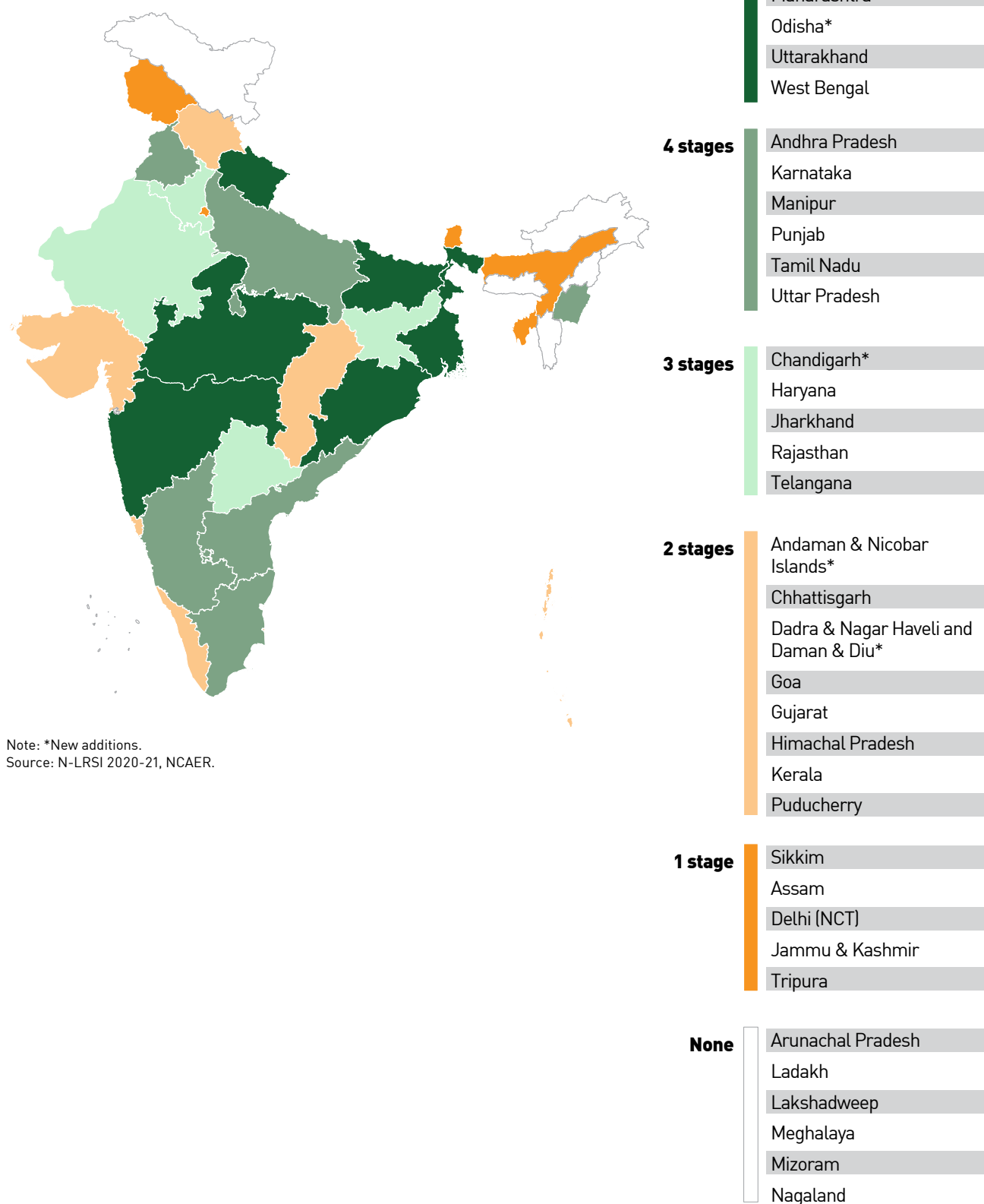
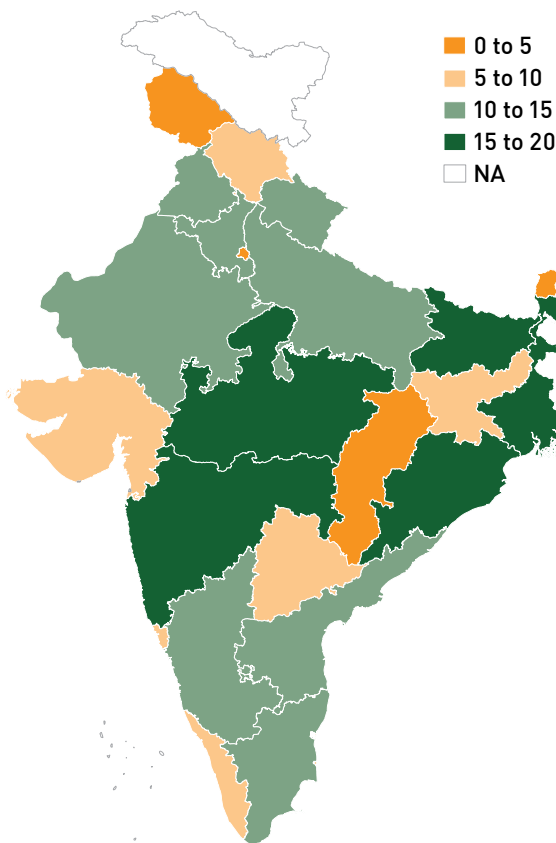


Figure 5.8: Scores for Extent of Digitisation of the Registration Process: N-LRSI 2020-21 and 2019-20

Registration Score, 2020-21 (out of 20)



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

	Registration Score (out of 20)		Difference (Latest-Previous) (points)
	2020-21	2019-20	
West Bengal	18.9	14.9	4.0
Maharashtra	15.9	15.7	0.2
Madhya Pradesh	15.9	15.6	0.3
Odisha	15.8	11.2	4.6
Bihar	15.6	7.5	8.1
Tamil Nadu	14.0	12.5	1.5
Andhra Pradesh	13.9	13.6	0.3
Uttarakhand	13.8	13.6	0.2
Punjab	12.7	10.8	1.9
Haryana	11.8	11.8	0.0
Karnataka	11.7	11.1	0.6
Rajasthan	11.7	11.7	0.0
Uttar Pradesh	11.7	11.2	0.5
Manipur	10.0	10.0	0.0
Telangana	9.4	9.3	0.1
Jharkhand	9.3	9.0	0.3
Chandigarh	8.0	4.0	4.0
Goa	7.9	7.7	0.2
Himachal Pradesh	7.4	5.0	2.4
Kerala	6.0	5.5	0.5
Dadra & Nagar Haveli and Daman & Diu	5.9	2.0	3.9
Puducherry	5.7	5.2	0.5
Gujarat	5.7	4.7	1.0
Andaman & Nicobar Islands	5.7	2.0	3.7
Chhattisgarh	4.9	4.7	0.2
Delhi (NCT)	4.0	2.0	2.0
Sikkim	4.0	3.9	0.1
Tripura	4.0	4.0	0.0
Jammu & Kashmir	3.0	2.3	0.7
Assam	2.0	2.0	0.0

stage of registration process have reduced in number, as presented in Figure 5.6.

5.7. Scores for the Extent of Digitisation of the Registration Process

As discussed in Chapter 2, the extent of digitisation has been gauged on all the five stages separately, with a maximum of 4 points awarded for each step. Based on the assessment discussed in above sections, the points scored, both on each step and overall for the registration process, are presented in Annex Table A5.4. The composite points obtained by the States/UTs in both rounds are presented in Figure 5.8.

Six States/UTs reported no provision for digitisation of any stage of the registration process. Therefore, the scores have been calculated for the balance 30 States/UTs.

The mean national score for the extent of digitisation of the registration process

across these 30 States/UTs is 9.5 (out of 20) in N-LRSI 2020-21, with 14 States/UTs performing above this mean. In N-LRSI 2019-20, the average score for digitisation of the stages of the registration process was lower at 8.2.

No State/UT has regressed compared to the position exhibited in N-LRSI 2019-20. The top five States in performance this time are West Bengal, Maharashtra, Madhya Pradesh, Odisha and Bihar.

Compared to the last round, the States/UTs that have improved most in the present round are Bihar, Odisha, West Bengal, and the three new additions: Chandigarh, Dadra & Nagar Haveli and Daman & Diu, and Andaman & Nicobar Islands. Another 20 States/UTs have shown varying levels of improvement. The five States that have retained their overall score at the same level as in the last round are Haryana, Tripura, Manipur, and Assam.

The mean national score for the extent of digitisation of the registration process across these 30 States/UTs is 9.5 (of 20 marks) in N-LRSI 2020-21, with 14 States/UTs performing above this mean.



CHAPTER 6

QUALITY OF LAND RECORDS

Digitisation of existing land records does not by itself create a substantially improved record. It can facilitate the tallying of figures of the area of plots with total ownership in an account as well as of the total of all accounts with the area in a village, and so on. More important, it can enable analysis to highlight various shortcomings in the record that need correction for making the record more comprehensive and in line with reality. Finally, it can enable integration of various databases to further this process. In other words, digitisation of land records can both facilitate improving the quality and assessing the quality of the record. In this context, an assessment to measure the quality of the digitised land records was carried out in N-LRSI 2019-20. A similar exercise has been repeated in N-LRSI 2020-21 with respect to the following five elements that ought to be captured in a comprehensive record:

- (1) Updating ownership details;
- (2) Extent of joint ownership;
- (3) Land use;
- (4) Land area; and
- (5) Recording encumbrances









As discussed in Chapter 2, instead of a direct investigation of the on-ground situation, the N-LRSI uses certain indicators to measure the quality of the digitised land record for each of the specified five elements.

6.1 Updating Ownership

The indicator used to capture the accuracy of ownership details in the record is the swiftness with which the mutation process occurs to reflect the change in ownership, following the registration of a transaction. In this context, the DoLR website provides information on the extent of “integration” between land records and registration, as well as prevalence of the practice of “instant mutation” in the States/UTs. However, the exact nature of this *integration* and the understanding of *instant mutation* have not been clearly defined. For further clarity in this matter, it was felt that these terms could imply one or more of the following steps that represented a successively higher form of integration/instant mutation:

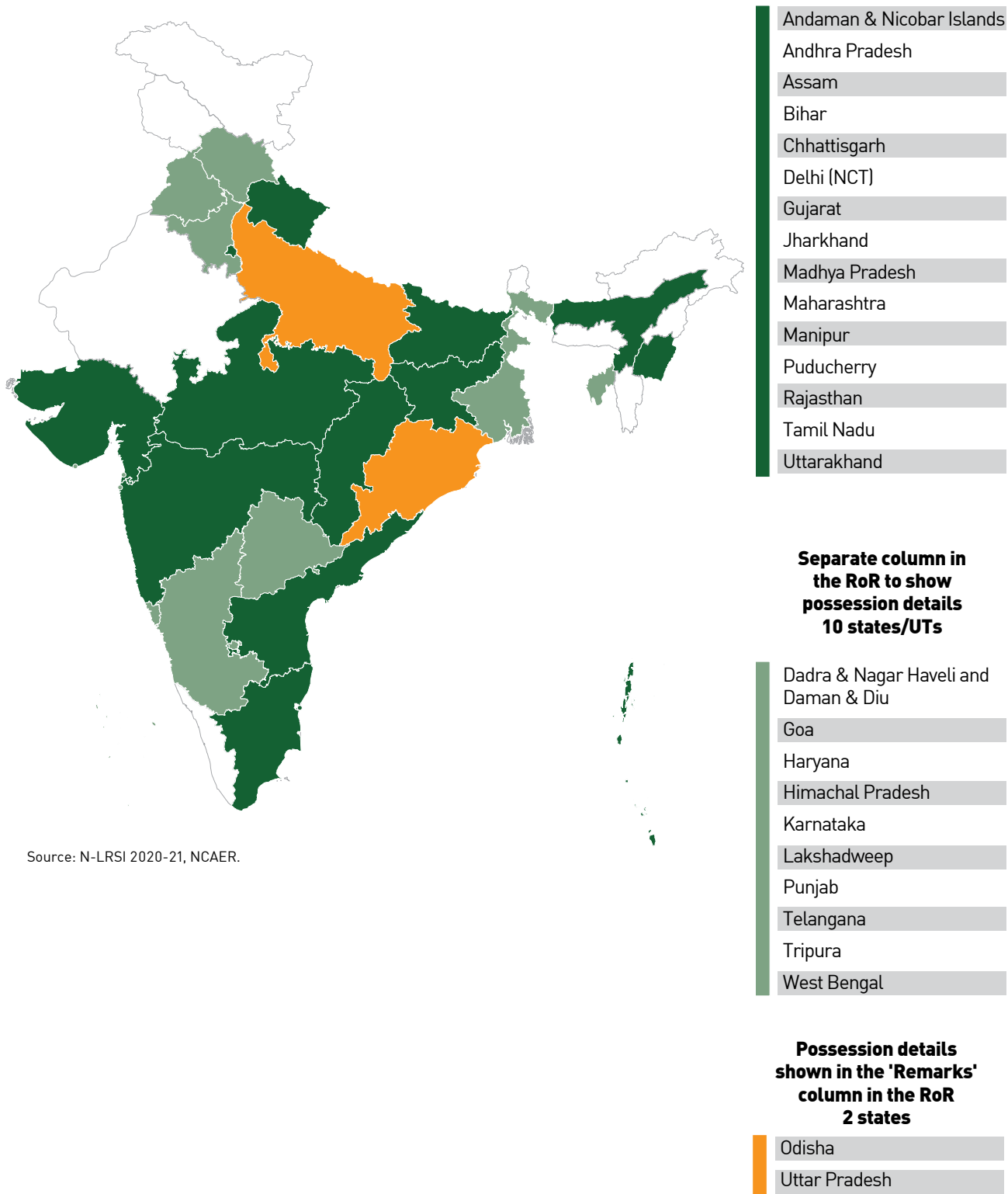
- a) *SROs can check the RoR online during the registration process.*

Figure 6.1: States/UTs with Different Categories of "Integration" and "Instant Mutation"

	Number of States/UTs (total 36)	
	N-LRSI 2020-21	N-LRSI 2019-20
No linkage between RoR and registration	 12	 13
SROs can only view RoRs online	 3	 5
SROs send SMS/e-mail to revenue office	 11	 11
Automatic note is generated in the RoR	 10	 7
Mutation attested on the same day	0	0

Source: N-LRSI 2019-20, NCAER

Figure 6.2: Possession in the RoR



- b) *Information about the registration is sent by the SMS/e-mail to the revenue office responsible for entering or attesting the mutation.*
- c) *On registration, a note is generated and entered in the RoR automatically.*
- d) *The mutation is attested on the same day as the registration.*

Information received from KCs has been used to categorise the States/UTs in terms of the actual practice of what is meant by integration/instant mutation, as summarised in Figure 6.1.

N-LRSI 2020-21 reports an improvement in the number of States using an integration between the registration process and the RoRs. While there is still no State/UT with a provision for same-day mutation, in ten States/UTs, a note appears in the RoR automatically upon registration as compared to seven States/UTs recorded with this facility in N-LRSI 2019-20.

The total number of States/UTs in the category wherein information is sent by SMS/e-mail to the revenue office responsible for entering the mutation, remains 11. While Sikkim has moved out of the category showing no integration, Bihar has and Odisha out of the category with only an ability for SROs to view RoRs to a status of automatic generation of a note in the RoR when a transaction is registered. (For details, see Annex Table A6.1.)

6.2 Extent of Joint Ownership

The extent of joint ownership in the record has been considered as the closest proxy for examining the status of possession as most States/UTs do not even have a

separate column of possession to record this information. Even in the States/UTs that record this information separately in the RoR, there is no way of knowing if this is an accurate reflection of the on-ground situation since it often records that all owners are in possession.

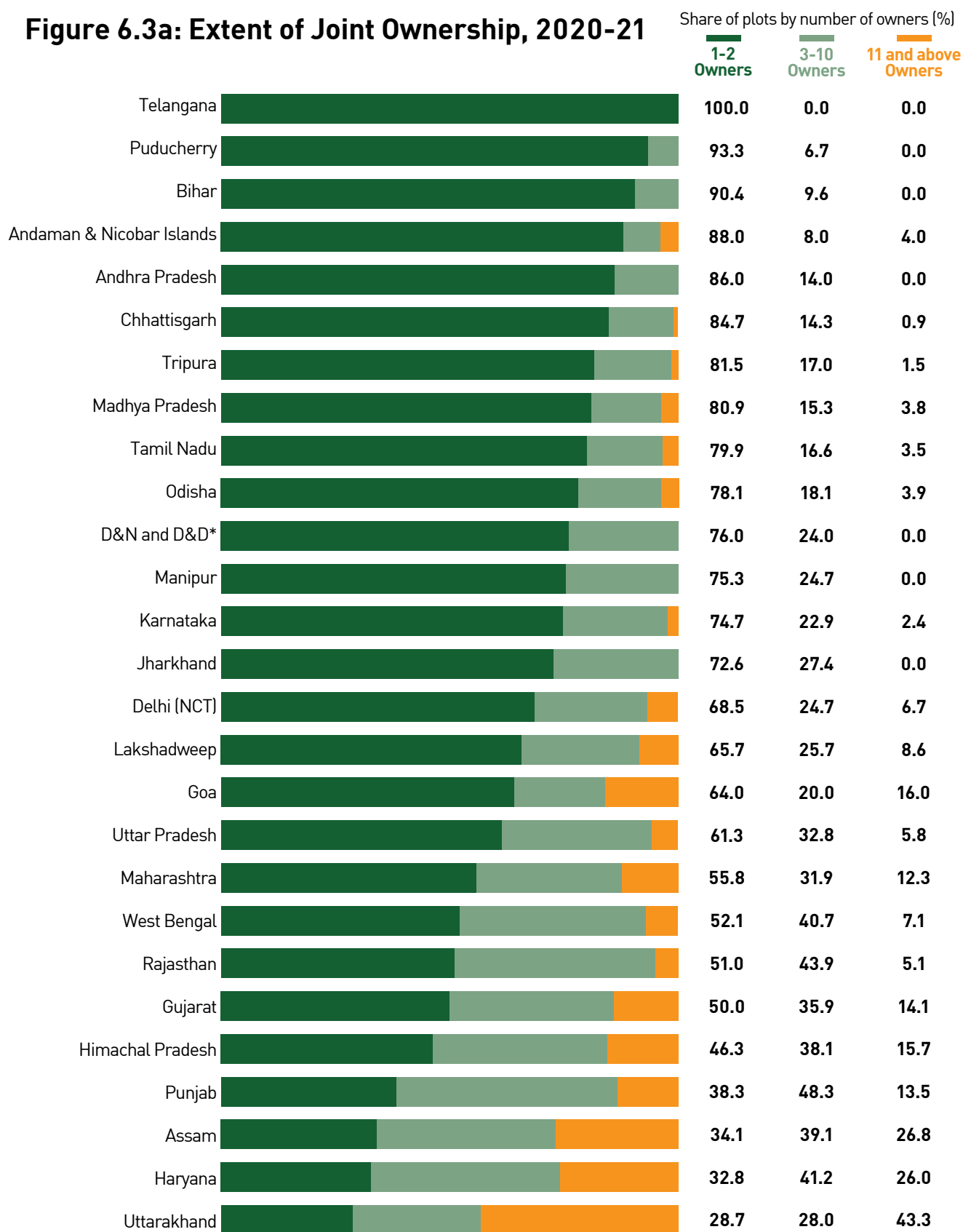
The N-LRSI has adopted the proxy “number of owners in RoR” as a measure of likely possession. Based on an earlier study (NCAER, 2017), the assumption made is that the greater the number of owners, the less likely it is that all of them are in possession of the property. Regardless of the extent to which joint ownership reflects possession, the greater the number of owners, the greater is the difficulty in transacting in property and therefore, showing fewer owners is taken to be a feature of a good record. The position of States/UTs on how possession is recorded is presented in Figure 6.2. This was important for devising the methodology adopted to test the extent of joint ownership/possession.

The test checks to gauge the extent of joint ownership revealed a number of States/UTs where the RoR accounts are kept for single owners. However, the plots listed in these individual accounts are often owned jointly with other individual account holders. In these cases, the plot-wise record of the co-sharers (where available) was referred to and not the RoR *per se* for checking the extent of multiple ownership/possession.

Telangana scored 100 per cent on this proxy of up to two owners (Figure 6.3b). The States/UTs with a relatively higher degree of joint ownership (above 11 owners) include Uttarakhand, Assam, Haryana, Goa, Himachal Pradesh, and Gujarat. Among them, Uttarakhand has the highest extent of joint ownership of

In ten States/UTs, a note appears in the RoR automatically upon registration - Seven States/UTs reported this facility in N-LRSI 2019-20.

Figure 6.3a: Extent of Joint Ownership, 2020-21



Source: N-LRSI 2020-21, NCAER.

Note: States arranged in descending order of share of 1-2 owners.

* Dadra & Nagar Haveli and Daman & Diu.

Figure 6.3b: Extent of Joint Ownership-Comparison between N-LRSI 2020-21 and N-LRSI 2019-20

Share of plots by number of owners (%) 0 to 25 25 to 50 50 to 75 75 to 100

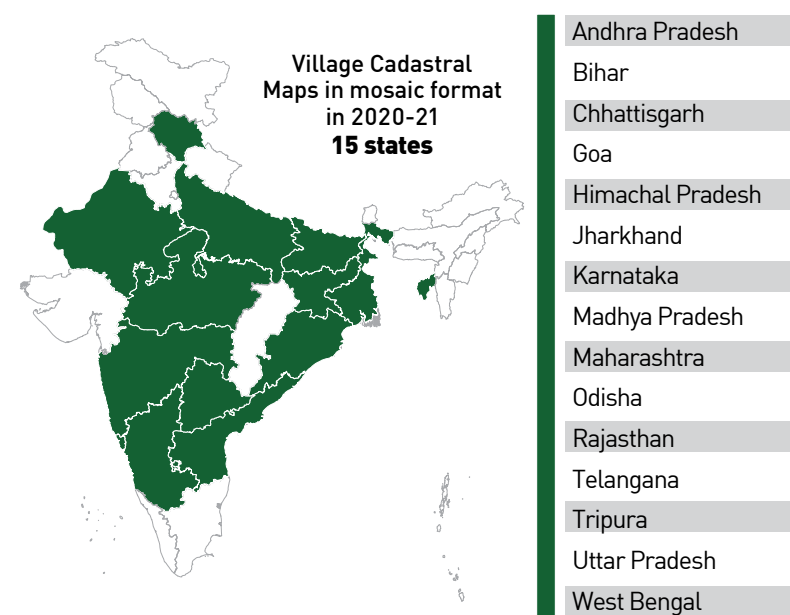
	1-2 Owners		3-10 Owners		11 and above Owners	
	N-LRSI 2020-21	N-LRSI 2019-20	N-LRSI 2020-21	N-LRSI 2019-20	N-LRSI 2020-21	N-LRSI 2019-20
Andaman & Nicobar Islands	88.00	87.41	8.00	12.59	4.00	0.00
Andhra Pradesh	86.04	93.55	13.96	6.45	0.00	0.00
Assam	34.08	52.48	39.11	38.72	26.82	8.80
Bihar	90.42	91.38	9.58	8.60	0.00	0.02
Chhattisgarh	84.72	85.08	14.34	14.77	0.94	0.15
D&N and D&D*	76.00	86.96	24.00	5.22	0.00	7.83
Delhi (NCT)	68.54	68.48	24.72	28.43	6.74	3.09
Goa	64.00	83.34	20.00	16.02	16.00	0.64
Gujarat	50.00	68.02	35.92	28.76	14.08	3.22
Haryana	32.83	39.59	41.16	41.64	26.01	18.77
Himachal Pradesh	46.27	65.01	38.06	28.61	15.67	6.38
Jharkhand	72.58	88.88	27.42	10.88	0.00	0.24
Karnataka	74.66	81.94	22.93	17.10	2.41	0.96
Lakshadweep	65.71	72.73	25.71	25.45	8.57	1.82
Madhya Pradesh	80.87	79.04	15.29	20.26	3.85	0.70
Maharashtra	55.81	49.34	31.91	39.02	12.27	11.64
Manipur	75.29	88.49	24.71	11.51	0.00	0.00
Odisha	78.06	81.14	18.06	18.14	3.89	0.72
Puducherry	93.33	95.93	6.67	4.07	0.00	0.00
Punjab	38.26	52.45	48.26	41.07	13.48	6.48
Rajasthan	51.04	70.61	43.90	26.38	5.06	3.01
Tamil Nadu	79.85	88.27	16.62	10.86	3.53	0.87
Telangana	100.00	100.00	0.00	0.00	0.00	0.00
Tripura	81.48	100.00	17.04	0.00	1.48	0.00
Uttar Pradesh	61.32	61.34	32.84	36.21	5.84	2.45
Uttarakhand	28.73	47.18	28.00	43.38	43.27	9.44
West Bengal	52.14	64.93	40.71	32.84	7.14	2.24

Source: N-LRSI 2020-21, NCAER.

Note: States arranged in alphabetical order.

* Dadra & Nagar Haveli and Daman & Diu.

Figure 6.4: Availability of Cadastral Maps as Mosaics



Source: N-LRSI 2020-21, NCAER.

above 11 owners found in 43.3 per cent of the sample, as depicted in Figures 6.3a and 6.3b. Figure 6.3b depicts the extent of joint ownership for property owned by 3-10 owners.

The States/UTs of Jammu & Kashmir, Ladakh, Chandigarh, Sikkim, Arunachal Pradesh, Nagaland, Mizoram, and Meghalaya either do not have a web portal to view the record or do not possess written rural land records. Hence, they were not included in this analysis.

The overall scores for joint ownership are presented in Figure 6.5. As compared to N-LRSI 2019-20, the mean national score for the extent of joint ownership increased marginally by 1.6 per cent in N-LRSI 2020-21 (for detailed scores, see Annex Table A6.2).

Of the 27 States/UTs for which this analysis was carried out, 16 have shown

an increase in their scores, 10 have shown a decrease in scores, and one has reported no change in scores. Among the 16 States/UTs that have shown an increase in scores, Haryana has exhibited a 33.8 per cent increase across the two N-LRSI rounds, followed by Himachal Pradesh with an increase of 12.6 per cent. Among the States/UTs that have shown a decrease in scores, Tripura, Goa, and Gujarat have exhibited a decrease of 5.3 per cent, 5.7 per cent, and 5.7 per cent, respectively. Telangana is the only State with no change in its score.

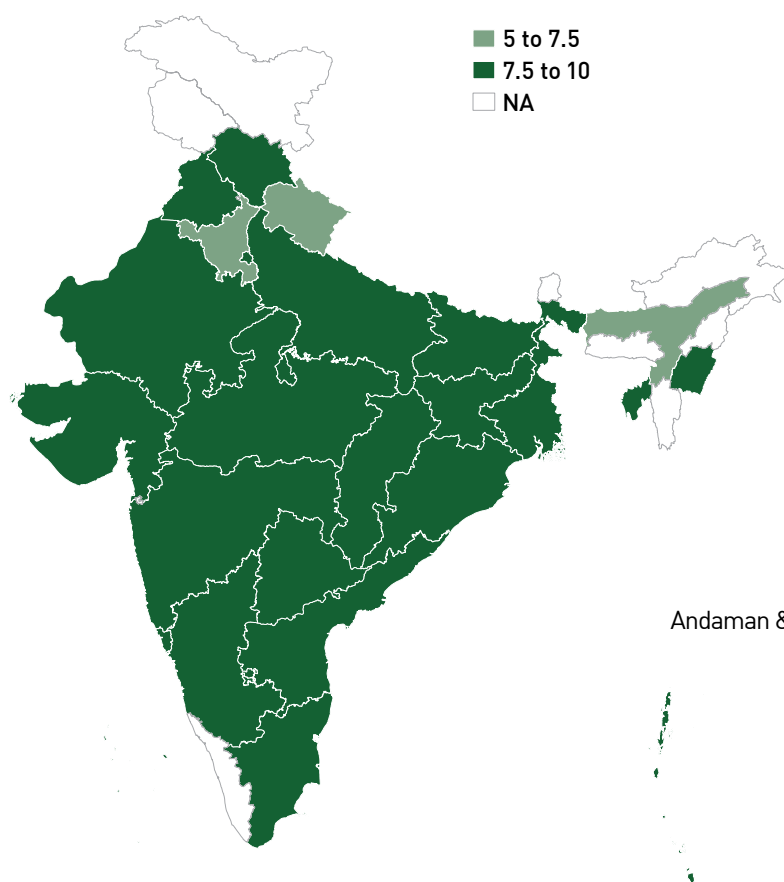
6.3 Land Use

An accurate record should immediately capture the on-ground changes in terms of the land use of the plot. In order to capture the extent of accuracy in this regard, this exercise attempted to compare the reported land use with the Google Earth Pro map-images of the plots. This consistency check was aimed at distinguishing between agricultural and non-agricultural land use. The checks could be conducted only for the States/UTs that had a land records portal and a mosaic of the village Cadastral Map (CM). These States/UTs are listed in Figure 6.4.

Compared to N-LRSI 2019-20, five more States could be tested for land use in N-LRSI 2020-21. While in the case of Andhra Pradesh, Bihar, Karnataka, and Tripura, CMs were made available on their websites in this round, Goa sent the mosaics for sample villages separately (as the digitised CMs are still not available in the public domain). Tamil Nadu and Lakshadweep also make CMs available online but these are not shown in mosaic form. Tamil Nadu and Lakshadweep provide Field Measurement Books (FMBs), with land parcel maps, but these

Figure 6.5: Scores of Joint Ownership Extent (out of 10)

Score of Joint Ownership Extent, 2020-21 (out of 10)



Source: N-LRSI 2020-21, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 score.

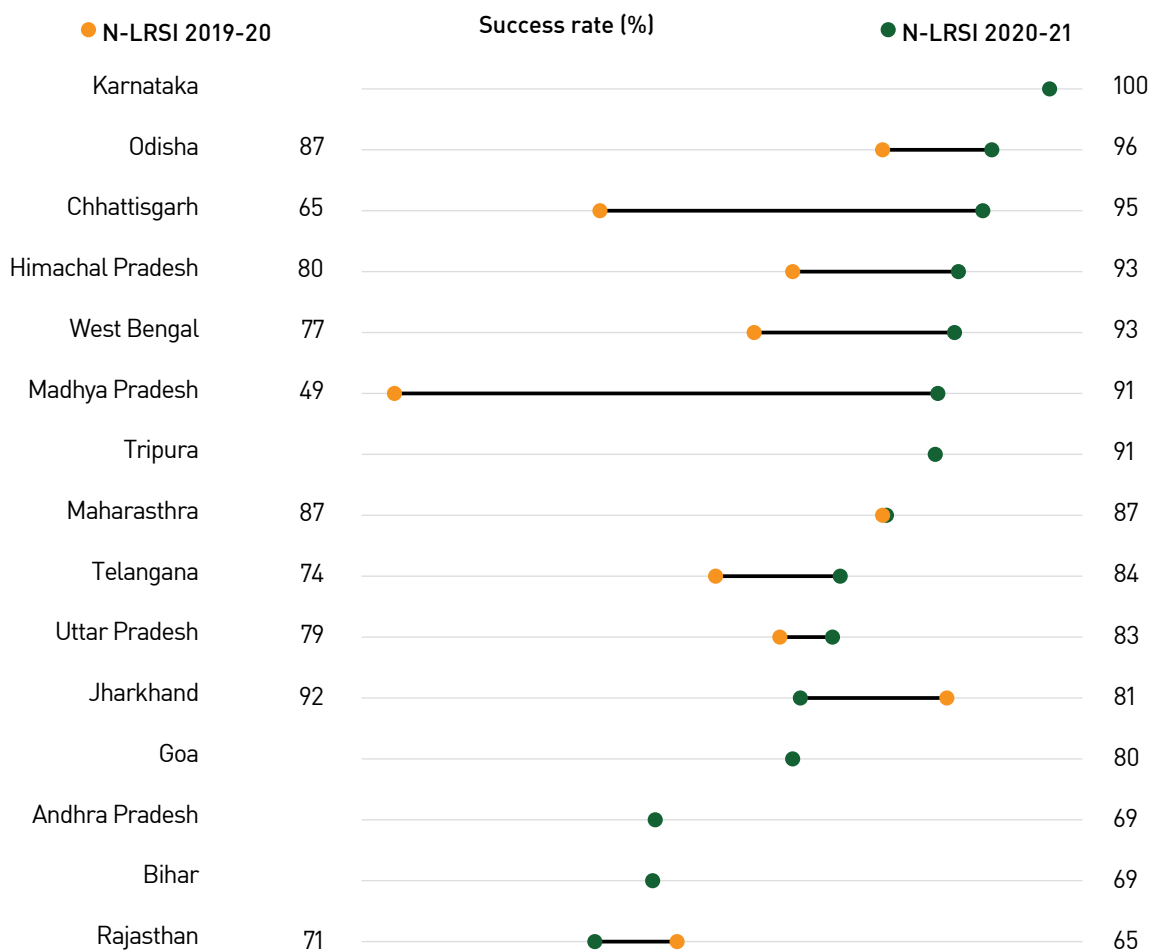
* Dadra & Nagar Haveli and Daman & Diu.

Score of Joint Ownership Extent (out of 10)

	N-LRSI 2020-21	N-LRSI 2019-20	Change
Telangana	10.00	10.00	0.00 ↔
Puducherry	9.87	9.83	0.04 ↑
Bihar	9.79	9.73	0.06 ↑
Andhra Pradesh	9.69	9.64	0.05 ↑
Chhattisgarh	9.58	8.98	0.60 ↑
Manipur	9.48	9.69	-0.20 ↓
Tripura	9.47	10.00	-0.53 ↓
Jharkhand	9.40	9.64	-0.24 ↓
Andaman & Nicobar Islands	9.36	9.53	-0.17 ↓
D&N and D&D*	9.32	9.20	0.12 ↑
Madhya Pradesh	9.31	9.16	0.15 ↑
Tamil Nadu	9.29	9.39	-0.11 ↓
Odisha	9.28	9.20	0.07 ↑
Karnataka	9.23	9.20	0.03 ↑
Delhi (NCT)	8.99	8.60	0.39 ↑
Uttar Pradesh	8.79	8.25	0.54 ↑
Lakshadweep	8.69	8.80	-0.11 ↓
Rajasthan	8.59	8.08	0.51 ↑
Goa	8.40	8.91	-0.51 ↓
West Bengal	8.35	8.55	-0.20 ↓
Maharashtra	8.10	7.99	0.11 ↑
Gujarat	7.90	8.38	-0.48 ↓
Himachal Pradesh	7.84	6.96	0.87 ↑
Punjab	7.61	6.95	0.66 ↑
Haryana	6.85	5.12	1.73 ↑
Assam	6.65	6.25	0.40 ↑
Uttarakhand	5.16	5.35	-0.19 ↓

Of the 27 States/UTs for which analysis of joint ownership was carried out, 16 have shown an increase in their scores.

Figure 6.6: Land Use Congruence: Percentage of Success



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 value.

are not sufficient to identify a particular plot in Google Earth pro. Therefore, these two units could not be test checked for land use consistency between the record and the on-ground situation. Andhra Pradesh has both FMBs and CMs available online and was therefore, included for test checking the status on consistency between recorded and actual land use. The results of the land use congruence for the 15 States/UTs that could be included in this exercise are presented in Figure 6.6.

Overall, the 15 States/UTs exhibited a mean consistency of 87.9 per cent between

recorded land use and the use reflected in Google Earth Pro images—comparing whether land shown as put to various agricultural uses had been converted to non-agricultural use, as reflected in the presence of a building on the land parcel concerned.

The best performance is exhibited by Karnataka with a 100 per cent consistency, followed by Odisha and Chhattisgarh with a consistency of 96 per cent and 95 per cent, respectively. In N-LRSI 2019-20, the overall consistency of land use between the recorded and Google Earth images in the

Figure 6.7: States/UTs with Digitised CMs and FMBs

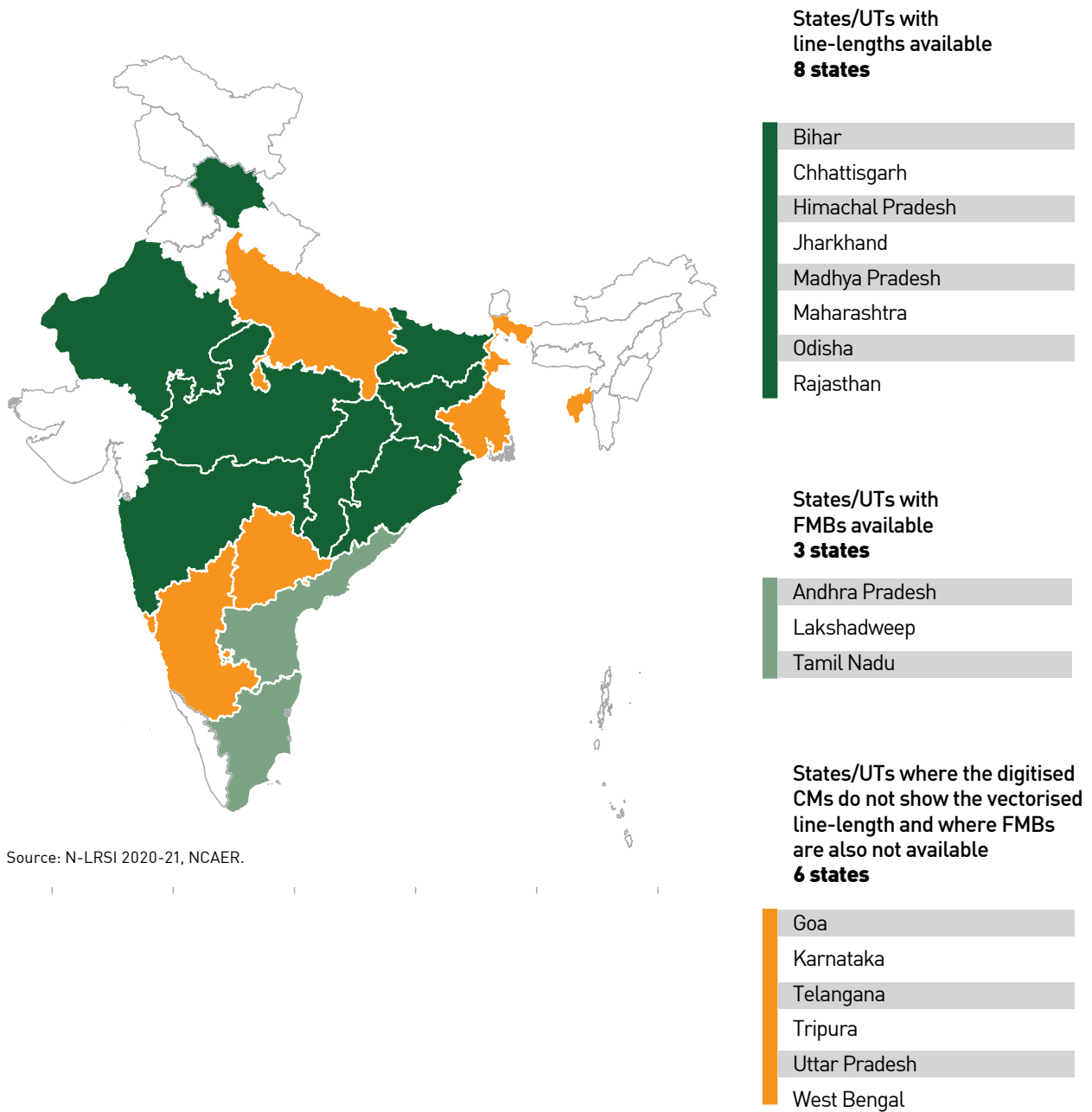


Figure 6.8 Percentage of Plots by Range of Variation between the Area in the RoR and CMs and Scores of States/UTs for Land Area Congruence

	No. of CMs Checked	Percentage of Plots in different categories based on percentage difference in ROR and CAD verification			Scores for Land Area Congruence (out of 10)			Change in score
		<5%	5%-10%	Above 10	N-LRSI 2020-21	N-LRSI 2019-20		
Lakshadweep	32	47%	9%	44%	7	8		↓
Odisha	715	33%	17%	51%	5	6		↓
Tamil Nadu	361	30%	7%	63%	4	7		↓
Chhattisgarh	401	23%	14%	63%	4	5		↓
Rajasthan	79	24%	14%	62%	4	5		↓
Madhya Pradesh	815	32%	13%	55%	5	5		↔
Jharkhand	355	19%	10%	71%	3	6		↓
Himachal Pradesh	118	16%	12%	72%	3	1		↑
Andhra Pradesh	458	21%	7%	72%	3	8		↓
Maharashtra	101	23%	8%	69%	4	-		
Bihar	170	3%	1%	96%	1	-		

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

ten States/UTs that were tested for this element, was 73.3 per cent. For the same ten States/UTs, the consistency of land use in N-LRSI 2021 increased to 89.6 per cent. Compared to the previous round, seven States/UTs showed an improvement in their score, one showed a similar position, and two States/UTs showed a decline (for detailed scores of land use, see Annex Table A6.3).

6.4 Land Area

As discussed in Chapter 2, the land area recorded in the RoRs is mostly based on surveys conducted with traditional instruments, with a significant possibility of error between the record and the actual on-ground area. This is further compounded by the fact that even in re-

surveys, the legacy record of the area is expected to be maintained to reduce the possibility of disputes. The proxy used to assess the gap between the actual land area and that reported in the record is the area of plots provided in the digitised RoRs and CMs.

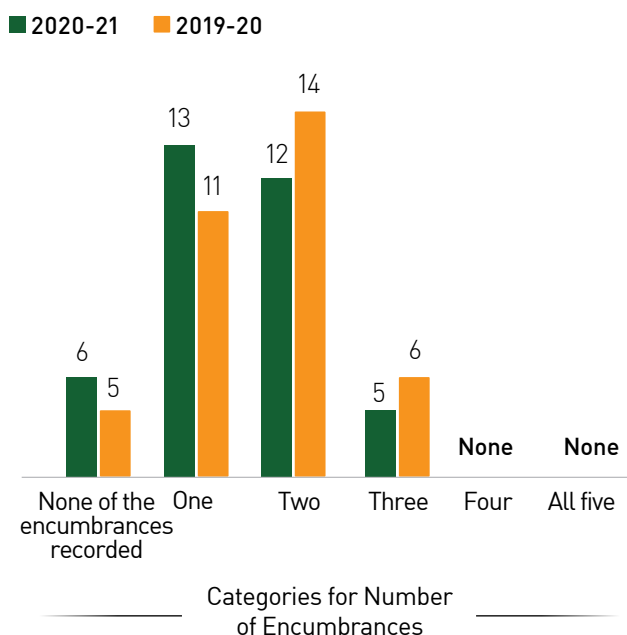
The extent of congruence between the area shown in the RoR and that in CMs is taken to represent greater or lesser accuracy of the area shown in the RoR. Tests for the extent of this congruence required that States/UTs meet the following two conditions:

- CMs must be digitised; and*
- CMs must show the vectorised line-lengths of plots.*

Meeting these two conditions allowed

Figure 6.9: Status of Recording Encumbrances

Number of States/UTs



Source: N-LRSI 2020-21 and 2019-20, NCAER.

Note: One symbol means one encumbrance recorded and so on.

* Dadra & Nagar Haveli and Daman & Diu. ** Andaman & Nicobar Islands.

for calculation of the area of the digitised plots, even if it is not reflected in the CM or it is taken to be identical with that in RoR (as is often the case). Plot areas can also be calculated in the States where FMBs are available as they contain the details of the dimensions of the individual plots. The availability of land area data across States/UTs is presented in Figure 6.7.

The actual test checks for land extent were conducted in respect of the 11 States/UTs in Categories 1 and 2 presented in Figure 6.7. While Bihar does not show the line lengths on the digitised CMs exhibited on its website, the State separately provided vectorised maps of all the relevant villages for test checks by the NCAER team.

The overall findings show relatively limited congruence in the area of plots between the RoRs and CMs. As presented in Figure 6.8, 62.6 per cent of the plots assessed exhibited a variation of more than 10 per cent. Except in the case of

State-wise Number of Encumbrances Recorded

Number of encumbrances recorded (out of 5 categories)

	N-LRSI 2020-21	N-LRSI 2019-20
A&N Islands**		
Andhra Pradesh		
Arunachal Pradesh		
Assam		
Bihar		
Chandigarh		
Chhattisgarh		
D&N and D&D*		
Delhi (NCT)		
Goa		
Gujarat		
Haryana		
Himachal Pradesh		
Jammu & Kashmir		
Jharkhand		
Karnataka		
Kerala		
Ladakh		
Lakshadweep		
Madhya Pradesh		
Maharashtra		
Manipur		
Meghalaya		
Mizoram		
Nagaland		
Odisha		
Puducherry		
Punjab		
Rajasthan		
Sikkim		
Tamil Nadu		
Telangana		
Tripura		
Uttar Pradesh		
Uttarakhand		
West Bengal		

The overall findings show relatively limited congruence in the area of plots between the RoRs and CMs.

Lakshadweep, more than 50 per cent of the plots in all the other States/UTs exhibited a variation exceeding 10 per cent between the area noted in the RoR, and that calculated from the dimensions expressed in the CMs/FMBs.

Bihar, with 96 per cent of the plots in the CMs showing more than 10 per cent variation in area when compared to RoR data, exhibited the least amount of congruence. In the States of Tamil Nadu, Rajasthan, Chhattisgarh, Maharashtra, Andhra Pradesh, Jharkhand, and Himachal Pradesh, more than 60 per cent of the plots showed a variation of more than 10 per cent in area between the CMs/FMBs and the RoRs. Only Lakshadweep, where the variation in area between the spatial and textual records was less than 5 per cent in 47 per cent of the plots, reflected the most accurate position on this element.

The final scores (out of 10 points for land area) as compared to N-LRSI 2020, are presented in Figure 6.9 (for detailed scores of land area, see Annex Table A6.4).

All the States/UT have shown a decline in scores except Himachal Pradesh. The main reason for this decline is that the sample size in N-LRSI 2019-20 for this check was relatively small in all the States/UTs, thereby increasing the margin of error. In N-LRSI 2020-21, Andhra Pradesh exhibited the sharpest decline in land area scores when compared with N-LRSI 2019-20. In this State, the sample size increased considerably from nine plots in N-LRSI 2019-20 to 458 plots in N-LRSI 2020-21. Another possible reason that needs further investigation, could be the fact that in N-LRSI 2020-21, samples were selected from a wider set of villages

than for N-LRSI 2019-20. The sample plots taken in N-LRSI 2019-20 were limited to the *tehsil/taluka* headquarter villages whereas in N-LRSI 2020-21, sample locations have been widened to cover locations away from the headquarter villages.

6.5 Recording Encumbrances

Encumbrances are generally recorded in the 'Remarks' column of the RoRs. Traditionally, only mortgages have received attention as a form of encumbrance. However, other restrictions and conditions related to land are increasingly becoming a source of disputes and enhancing the costs of transactions. The importance of exhibiting them in the land records is also being recognised. This exercise sought information from the KCs on whether instructions exist to show the following five kinds of encumbrances in the RoR:

- Mortgages,
- Land acquisition proceedings,
- Institution of revenue court cases,
- Institution of civil court cases, and
- Any statutory land use restrictions applicable to a particular plot.

The status of recording encumbrances across States/UTs is presented in Figure 6.9.

In six States/UTs, even mortgages are not reflected in the RoR and none of the States /UTs records more than three encumbrances.

In comparison to N-LRSI 2019-20, changes in the recording of encumbrances

have been observed in the case of Bihar, Tripura, Sikkim, and West Bengal, in the current round.

Bihar is now shown to record none of the encumbrances. This is because the State has represented that the traditional RoR that recorded an encumbrance like a mortgage is no longer in use. It is a record that is updated only during a settlement operation. Instead the standard document that is now accepted as performing the function of an updated RoR is called '*jamabandi*' in Bihar and does not record any encumbrance.

In the case of Tripura, Sikkim, and West Bengal, the Revenue Departments of the States have clarified in writing that the position given by the KCs last year, that more than one encumbrance is shown in the land records, was erroneous and that only one encumbrance relating to mortgages is actually recorded in these States.

Based on the assessment discussed in above sections, the points scored, both on each step and overall for the quality, are presented in Annex Table A6.5.



CHAPTER 7

**THE N-LRSI
2020-21-FINAL
RANKINGS**

While Chapter 1 introduced the objectives and the rationale for the N-LRSI 2020-21, the methodology and process for construction of the N-LRSI was explained in Chapter 2. Chapters 3 to 6 presented the results of the exercise undertaken to assess the following aspects: the extent of digitisation of textual records (RoRs); the extent of digitisation of spatial records (CMs); the extent of digitisation of the five identified stages of the registration process; and the quality of the land records measured by using five indicators.

Against the maximum points assigned to the 14 sub-components of N-LRSI based on the achievements described in the previous chapters, Chapter 7 presents the final scores and ranking that each State/UT obtained on two broad components of N-LRSI 2020-21 as well as the overall index. This chapter presents a comparison with the results of N-LRSI 2019-20, and the findings of a sensitivity analysis.

7.1. Components of N-LRSI 2020-21: Scores and Ranking

As mentioned in Chapter 2, the N-LRSI is based on the following two broad components:

- (i) Extent of digitisation of land records (textual and spatial) and the registration process (maximum 60 points), and
- (ii) Quality of land records and services (maximum 40 points).

Component 1: Extent of Digitisation of Land Records and the Registration Process

The performance of the States/UTs in respect of digitisation of textual and spatial records and their individual scores out of 20 marks each, were discussed in Chapters 3 and 4. The component on the extent of digitisation of textual and spatial records each has the following two sub-components:

- (i) Extent of digitisation of area with land records (both textual and spatial), computed on the basis of test checks of appropriately sampled records; and
- (ii) The status of availability of legally usable copies of RoRs/CMs.

As discussed in Chapter 5, the registration process was divided into five stages, and the extent of digitisation has been gauged for all the five stages separately, with a maximum of 4 points allocated to each step. The points scored on each of these five stages and the overall registration were enumerated in chapter 5.

Based on the assessment discussed in Chapters 3, 4 and 5, the points scored by each State/UT on the overall extent of digitisation of textual and spatial records and registration process, are presented in Annex Table A7.1.

The total points obtained by the States/UTs in N-LRSI 2020-21 and N-LRSI 2019-20 have been presented in Figure 7.1.

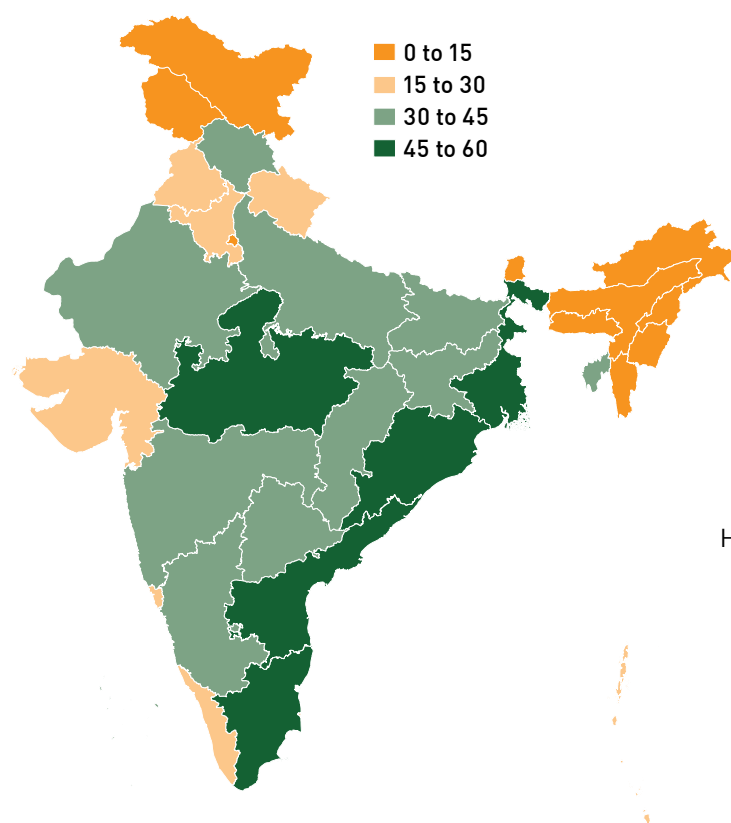
The mean national score for all aspects of digitisation has increased to 29.6 points out of 60 in N-LRSI 2020-21 from the 24.6 points recorded in N-LRSI 2019-20.

The five States that have exhibited the best scores in the extent of digitisation are West Bengal, Tamil Nadu, Madhya Pradesh, Odisha and Andhra Pradesh, with the

The top-5 States for the extent of digitisation are West Bengal, Tamil Nadu, Madhya Pradesh, Odisha and Andhra Pradesh.

Figure 7.1: Scores for Extent of Digitisation and Registration Process

Score for Extent of Digitisation and Registration Process, 2020-21 (out of 60)



Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.
Note: States arranged in descending order of N-LRSI 2020-21 score.
* Dadra & Nagar Haveli and Daman & Diu.

	Score for Extent of Digitisation and Registration Process (out of 60)		Difference (points)	
	2020-21	2019-20		
West Bengal	57.4	40.0	17.4	
Tamil Nadu	53.1	43.2	9.9	
Madhya Pradesh	52.2	51.3	0.9	
Odisha	48.3	41.2	7.1	
Andhra Pradesh	46.0	32.8	13.2	
Bihar	43.8	16.8	27.0	
Maharashtra	43.2	42.1	1.1	
Karnataka	41.2	27.2	14.0	
Chhattisgarh	38.1	39.8	-1.7	
Tripura	35.9	20.1	15.8	
Telangana	35.5	34.3	1.2	
Rajasthan	35.3	31.2	4.1	
Uttar Pradesh	34.9	31.4	3.5	
Himachal Pradesh	32.8	25.4	7.4	
Jharkhand	32.4	28.1	4.3	
Lakshadweep	30.3	29.4	0.9	
Punjab	28.3	26.0	2.3	
Uttarakhand	27.6	27.2	0.4	
Goa	27.5	26.9	0.6	
D&N and D&D*	23.8	19.9	3.9	
Haryana	23.3	22.5	0.8	
Gujarat	21.9	21.2	0.7	
Puducherry	21.4	21.5	-0.1	
Andaman & Nicobar Islands	18.7	14.9	3.8	
Kerala	16.9	6.2	10.7	
Delhi (NCT)	12.5	10.5	2.0	
Manipur	11.8	11.8	0.0	
Assam	8.6	9.9	-1.3	
Chandigarh	8.0	4.0	4.0	
Sikkim	4.0	3.9	0.1	
Jammu & Kashmir	3.0	2.3	0.7	
Arunachal Pradesh	0.0	0.0	0.0	
Ladakh	0.0	0.0	0.0	
Meghalaya	0.0	0.0	0.0	
Mizoram	0.0	0.0	0.0	
Nagaland	0.0	0.0	0.0	

top-five mean score being 51.4 points. At the other end, the five States/UTs at the bottom have a bottom-five mean score of only 7.1 points.

Compared to N-LRSI 2019-20, Bihar, West Bengal, Tripura, Karnataka, Andhra Pradesh, Kerala and Tamil Nadu have shown a significant improvement in the extent of digitisation of land records and registration in N-LRSI 2020-21.

Overall, 28 states/UTs have improved or retained their position in the present round over the last round, and only three States/UTs have recorded a decline. Among the States that have shown significant improvement in this round, Tripura and Tamil Nadu, have recorded better results in respect of the availability of both digitised textual and spatial records. Bihar has recorded an improvement in all digitised textual and spatial records and registration process. West Bengal has shown an improvement in the availability of digitised textual records as well as the digitisation of the various stages of the registration process. Karnataka, Kerala and Andhra Pradesh have recorded the maximum improvement in making available digitised CMs on the web.

Component 2: Quality of Land Records (out of 40)

The status of different States/UTs in respect of the five elements of the quality of land records studied in this exercise was discussed in Chapter 6. The points obtained by the States/UTs on the five parameters are presented in Annex Tables A6.1 to A6.4. The overall scores of the States/UTs for this component in both N-LRSI 2020-21 and N-LRSI 2019-20 are presented in Figure 7.2 and Annex Table A7.2.

The average score for the quality of land records has increased in N-LRSI 2020-21 to 16.4 points out of a maximum score of 40 from the 15.1 reported in N-LRSI 2019-20.

Based on the assessment of the five proxy indicators, the five States that achieved the best scores for their quality of records are Odisha, Madhya Pradesh, Maharashtra, Jharkhand and Chhattisgarh, with a top-five mean score of 27.7 points. The five States/UTs with the lowest score had a bottom-five mean score of only 3.1 points.

The five States/UTs showing the maximum improvement in scores relating to the quality of land records in N-LRSI 2020-21 are Karnataka, Bihar, Tripura, Goa, and Madhya Pradesh. Overall 24 states/UTs have improved or retained their position in the present round as compared to N-LRSI 2019-20. On the other hand, 8 States/UTs record a decline in these scores (for details, see Annex Table A7.3).

7.2. Overall N-LRSI 2020-21: Scores and Ranking

Based on all the 14 sub-components, the overall N-LRSI 2020-21 and N-LRSI 2019-20 scores are presented in Figure 7.3.

Compared to N-LRSI 2019-20, the most striking features of N-LRSI 2020-21 can be delineated as follows:

- i) The mean N-LRSI score across 32 States/UTs has increased to 45.1 in 2020-21 as compared to 38.7 in 2019-20 out of the maximum score of 100 points.
- ii) While Madhya Pradesh has emerged as the top performer for

The five States that have exhibited the best scores in the extent of digitisation are West Bengal, Tamil Nadu, Madhya Pradesh, Odisha and Andhra Pradesh.

The top-5 States have scored more than 70 points in N-LRSI 2020-21, up from only one State that scored more than 70 points in N-LRSI 2019-20.

the second year in a row, it has made a considerable effort to retain this position by increasing its score from 75 points in N-LRSI 2019-20 to 80.2 points N-LRSI 2020-21.

- iii) The top five States have scored more than 70 points in N-LRSI 2020-21, up from only one State that scored more than 70 points in N-LRSI 2019-20.
- iv) Out of the 32 States/UTs that have been ranked in the two editions of the N-LRSI, only Assam and Lakshadweep have shown a decline in their points since last year. Two States/UTs have retained their earlier scores whereas as many as 28 States/UTs have registered at least some improvement in their scores.
- v) In percentage terms, the **improvement in mean scores between the two rounds has been 16.6 per cent**, indicating the considerable priority that States/UTs have accorded to digitising their records and processes.
- vi) The most significant jump in percentage terms is in the case of Bihar at 125 per cent that enabled the State to jump from rank 23 to 8 in N-LRSI 2020-21. On the other hand, the next best improvement in percentage terms has been shown by Kerala (99.7 per cent). However, this improvement is on a very low base and did not enable Kerala to make a significant change in its position (with its rank improving only by one place, to 27 from 28 earlier). Tripura, Karnataka, West Bengal, and Andhra Pradesh are the other States/UTs which exhibited significant improvement in both percentage terms and in their ranking

in N-LRSI 2020-21 as compared to N-LRSI 2019-20.

Details of the changes in total scores and changes in the positions of all States/UTs since the last round, are presented in Annex Tables A7.3 and A7.4, respectively.

7.3. Sensitivity Analysis

A sensitivity analysis was carried out on the basis of the following key parameters:

- 1) Changing the weightage between the “extent of digitisation” and “quality of land records” to 50: 50 instead of the 60: 40 used in the original Index as presented; and
- 2) Impact of selected indicators, as well as the cumulative effect of all indicators, pertaining to the quality of land records.

Scenario 1: Change in weightage of extent of digitisation and quality of land records

The current N-LRSI methodology accords 60 per cent weightage to the “extent of digitisation”, and 40 per cent to the “quality of land records”. To check for the sensitivity of the index values and ranking of the States/UTs to the weights, the index was changed to provide equal weightage of 50 per cent each.

Scenario 2: Exclusion of encumbrances and updating ownership from quality of land records

As discussed in Chapter 2, two out of five sub-components of the “quality of land records” are derived from the information obtained from the KCs. Sensitivity analysis was carried out by removing the

Figure 7.2: Scores for Quality of Land Records and Services (out of 40)

Scores for Quality of Land Records and Services, 2020-21 (out of 40)

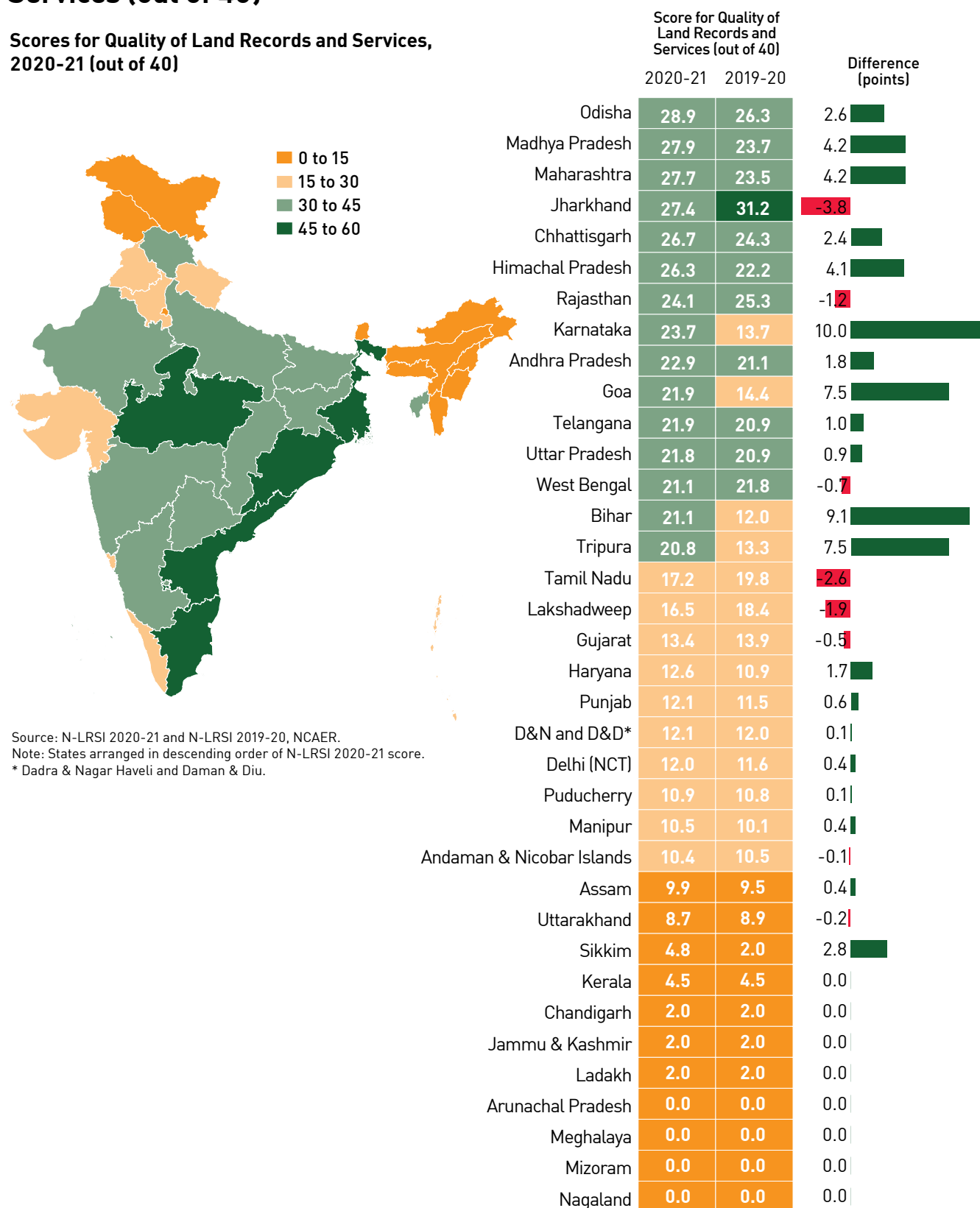


Figure 7.3: N-LRSI Scores 2020-21 and 2019-20

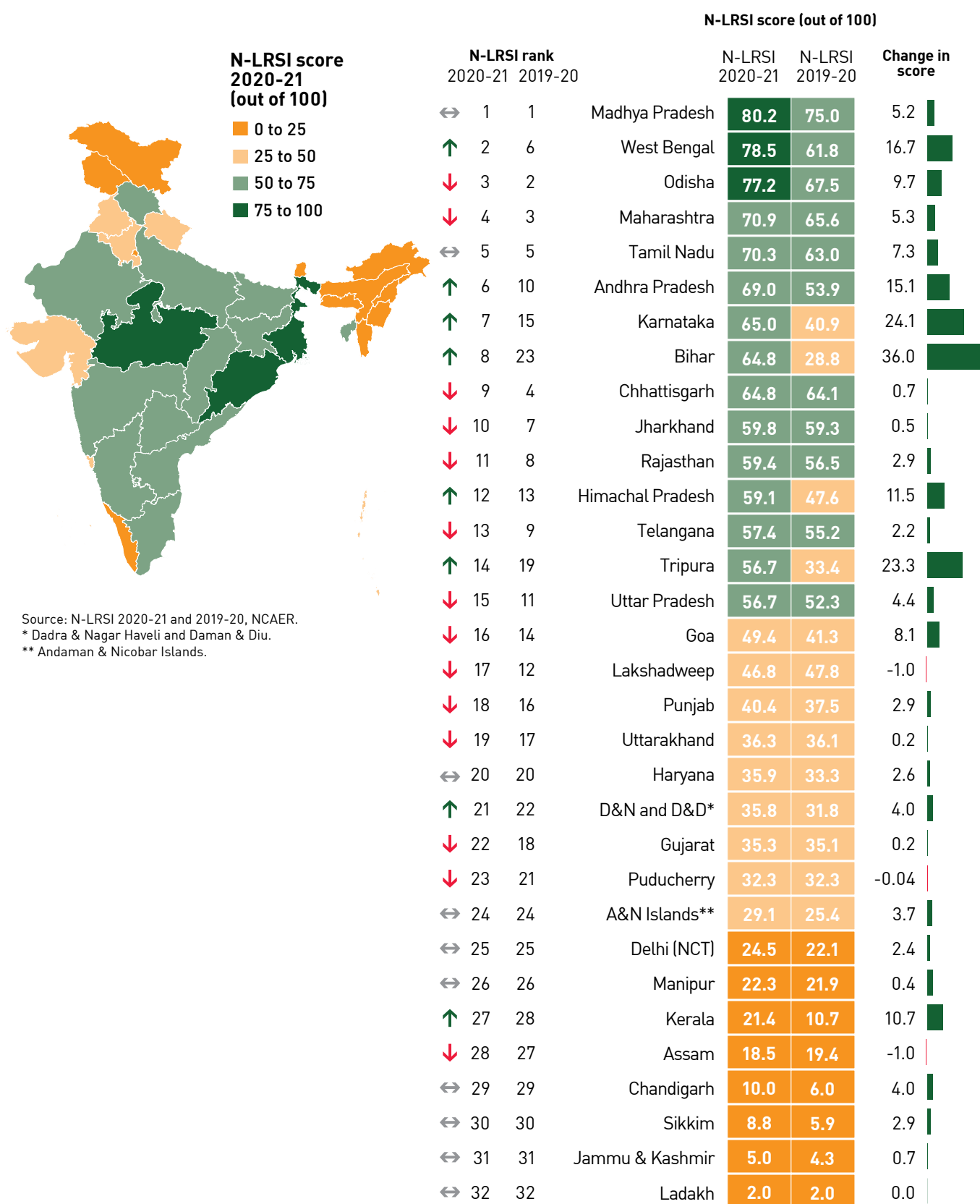


Table 7.1: Sensitivity Analysis

↑ GAIN ↓ LOSS

Top Five States under Different Scenarios of Sensitivity Analysis

Original rankings	Scenario 1	Scenario 2	Scenario 3	Scenario 4
for N-LRSI 2020-21	Change in weights to the extent of digitisation and quality of land records	Exclusion of encumbrances and Updating ownership from Quality of Land Records	Exclusion of Extent of joint ownership from Quality of Land Records	Exclusion of Extent of joint ownership, encumbrances and Updating ownership from Quality of Land Records
Top-Five States				
Madhya Pradesh	Madhya Pradesh	Madhya Pradesh	Madhya Pradesh	Madhya Pradesh
West Bengal	↑ Odisha	West Bengal	Odisha	↑ Odisha
Odisha	↓ West Bengal	Odisha	West Bengal	↑ West Bengal
Maharashtra	Maharashtra	↑ Andhra Pradesh	Maharashtra	Maharashtra
Tamil Nadu	↑ Andhra Pradesh	↓ Maharashtra	Tamil Nadu	↑ Andhra Pradesh

Source: N-LRSI 2020-21, NCAER.

scores for these two sub-components from the “quality of land records”.

Scenario 3: Exclusion of extent of joint ownership from quality of land records

The third scenario for sensitivity analysis entailed exclusion of the extent of joint ownership from the index calculation and arriving at the final score with modified values for the “quality of land records”.

Scenario 4: Exclusion of extent of joint ownership, encumbrances, and updating ownership from quality of land records

The last scenario for sensitivity analysis was a combination of the second and third scenarios, and excluded joint ownership, encumbrances, and updating ownership from the “quality of land records” component of the N-LRSI 2020-21. In this scenario, the quality of land records consists of only the mapping-based verification checks—land use and land area/extent. The final index values were obtained from the normalised scores for these two checks of quality of land records.

Table 7.1 summarises the results of the sensitivity analysis and places the top five and the bottom five States/UTs based on the original N-LRSI 2020-21 rankings and for the different scenarios of the sensitivity analysis.

The sensitivity analysis shows that Madhya Pradesh retained its position under all scenarios. West Bengal retains its second position under scenario 2, but its rank falls in other scenarios. Odisha, the third ranking State on the N-LRSI 2020-21, moves up to ranks 2 under different scenarios 1, 3 and 4. Maharashtra retains its fourth position under scenarios 1, 3 and 4. Tamil Nadu, the fifth-ranking State in N-LRSI 2020-21, shows up only in scenario 3, but drops off the top-five list in all other scenarios.

The bottom five States/UTs also remain unchanged in all the four cases of sensitivity analysis. No change of significance is seen in the position of the other States/UTs in different sensitivity scenarios. Detailed scores and rankings based on sensitivity analysis are presented in Annex Tables A7.5 to A7.8.

MP retains its top position under all the scenarios of the sensitivity analysis.

CHAPTER 8

THE ACCESSIBILITY INDEX 2020-21

The National Land Records Modernisation Programme (NLRMP), approved in 2008 as a Centrally-sponsored Scheme, has since been revamped as the Digital India Land Records Modernisation Programme (DI-LRMP) as a Central Sector Scheme, with 100 per cent funding from the Government of India with effect from 1 April 2016. The programme has the following major components:

- i) Computerisation of land records;
- ii) Survey/re-survey and updating of the survey and settlement records (including the ground control network and ground truthing);
- iii) Computerisation of registration;
- iv) Modern record rooms/land record management centres at the *tehsil/taluka*/circle/block level;
- v) Training and capacity building;
- vi) Core GIS;
- vii) Legal changes; and
- viii) Programme management.

The DoLR Guidelines (2018–19) comprise the following three parts: Part A (Guidelines), Part B (Technical Manuals), and Part C (MIS). These collectively provide instructions to the States/UTs to enable proper implementation, including the supply-side aspects of business processes, software standards, and MIS. The standards and targets that have been laid down also indicate how these efforts will ultimately benefit citizens. Accessible land records are expected to deliver the following benefits:

- Allowing landowners to gain confidence in their rights by checking real-time and tamper-proof ownership record, and applying for corrections if discrepancies are found;

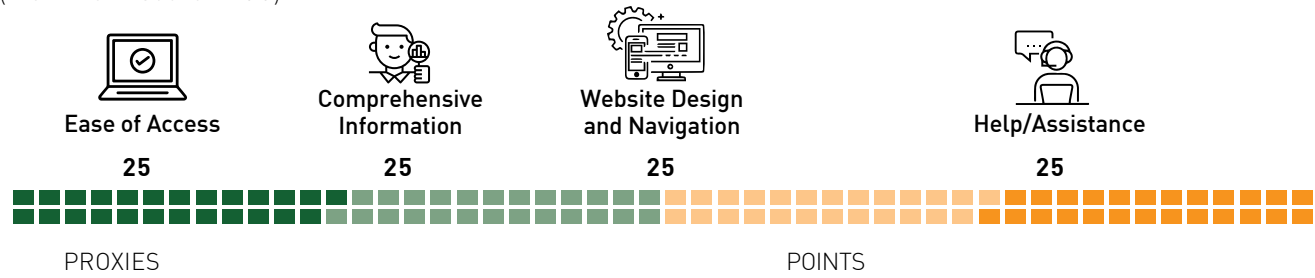
- Drastically reducing the time taken for obtaining records and the manual interactions with officers and agents, thereby reducing delay in land administration activities and rent-seeking opportunities;
- Opening land markets by inducing confidence among the buyers by gathering official information about the location, rightful owner, existing claims, and disputes about the land intended for purchase;
- Enabling financial institutions to seek information from land portals before processing loans that have land as collateral;
- Making market-value (circle rates) freely available on public websites, as a result of which citizens are less likely to face opacity in stamp duty computation or manual errors; and
- Facility for citizens to obtain certificates based on land data (e.g. information on domicile, caste, and income) for loans and insurance, eligibility information for obtaining benefits under Government programmes, etc.

Under the DI-LRMP, 31 States/UTs (out of 36) have designed and hosted websites for information related to land records. The States/UTs of Chandigarh, Sikkim, and Jammu & Kashmir have only uploaded data on circle rates (in pdf) and are yet to launch websites for RoRs and CMs. Four States and one UT (Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, and Ladakh) are yet to make any data publicly available on the web. Hence, the accessibility index was not assessed for these States and UT.

Under the DI-LRMP, 31 States/UTs (out of 36) have designed and hosted websites for information related to land records.

Table 8.1: Accessibility Indicators and Proxies

(Maximum score = 100)



TEXTUAL RECORD

1	Website loading time (RoR, CM, CR)	5	<div><div></div><div></div><div></div><div></div><div></div></div>
2	Number of attempts to access content (RoR, CM, CR)	5	<div><div></div><div></div><div></div><div></div><div></div></div>
3	Content loading time (RoR, CM, CR)	5	<div><div></div><div></div><div></div><div></div><div></div></div>
4	Accessibility on different mobile bandwidths (2G, 3G, 4G)	5	<div><div></div><div></div><div></div><div></div><div></div></div>
5	Accessibility on mobile phone	5	<div><div></div><div></div><div></div><div></div><div></div></div>

COMPREHENSIVE INFORMATION

1	Operability across browsers and no change in information, navigation buttons, and functionality	6.25	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
2	Website availability in two languages	6.25	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
3	Document availability in two languages	6.25	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
4	Functional links provided to other land record-related activities (registration, online fee portals, and revenue courts portal)	6.25	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>

WEBSITE DESIGN AND NAVIGATION

1	Consistency in menus	6.25	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
2	Information available readily with primary data (Owner or Identifier No) - RoR, CM, CR	6.25	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
3	Display clarity (lower degree of clutter)	6.25	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
4	Search button available or not	6.25	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>

HELP/ASSISTANCE

1	Help/frequently asked questions (FAQs) tab availability	12.5	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>
2	Customer care-availability, working, language understanding, answering basic questions about the website, and answer to questions of RoR, CM and CR	12.5	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>

Source: N-LRSI 2020-21, NCAER.

Note: Scoring is done on the basis of Test checks.

The efforts of the States/UTs in digitising and uploading land-related data will fructify only if the records and associated services are *easily accessible and provide the facility of trouble-free transactions to all citizens*.

During N-LRSI 2019-20, an attempt was made to discuss the problems and obstacles faced in accessing land record services provided by the websites of the States/UTs. In order to measure the ease of access, the indicators assessed included:

- a) Ease of access to the server and documents;
- b) Timing and time taken;
- c) Simplicity and language; and
- d) User interface.

A stage-wise analysis of the access of RoRs and CMs across States/UTs was also carried out for all the States/UTs. However, an accessibility index was not computed in N-LRSI 2019-20. In N-LRSI 2020-21, on the other hand, an accessibility index has been constructed. The States/UTs with land record portals (related to RoRs, CMs, and CRs) were assessed on the basis of indicators used to measure their progress in making the land records and related services accessible to the public. This chapter outlines the accessibility indicators measured and the results of the analysis of the State/UT land portals.

8.1. Accessibility Index for Land Records and Related Services

In India, for providing better accessibility of Government websites, the National Informatics Centre (NIC) formulated a

set of guidelines under the Ministry of Electronics and Information Technology (MeitY), Government of India. These are called Guidelines for Indian Government Websites (GIGW) (First Edition, January 2009). Every Government website in the country is expected to follow these guidelines while developing their websites. At present, the second edition (GIGW 2.0) is in place since February 2019. GIGW 2.0 focusses on the standardisation and uniformity aspects in all the Government websites and is based on the following standards, guidelines and Acts:

- ISO 23026 Standard;
- International Web Content Accessibility Guidelines 2.0;
- India's Information Technology Act, 2000; and
- Rights of Persons with Disabilities Act 2016

Based on GIGW 2.0, an index was designed to measure the accessibility of land record-based services in all the States/UTs in the country. The review of GIGW 2.0 showed that the components of accessibility had the following four broad indicators based on which the index can be computed:

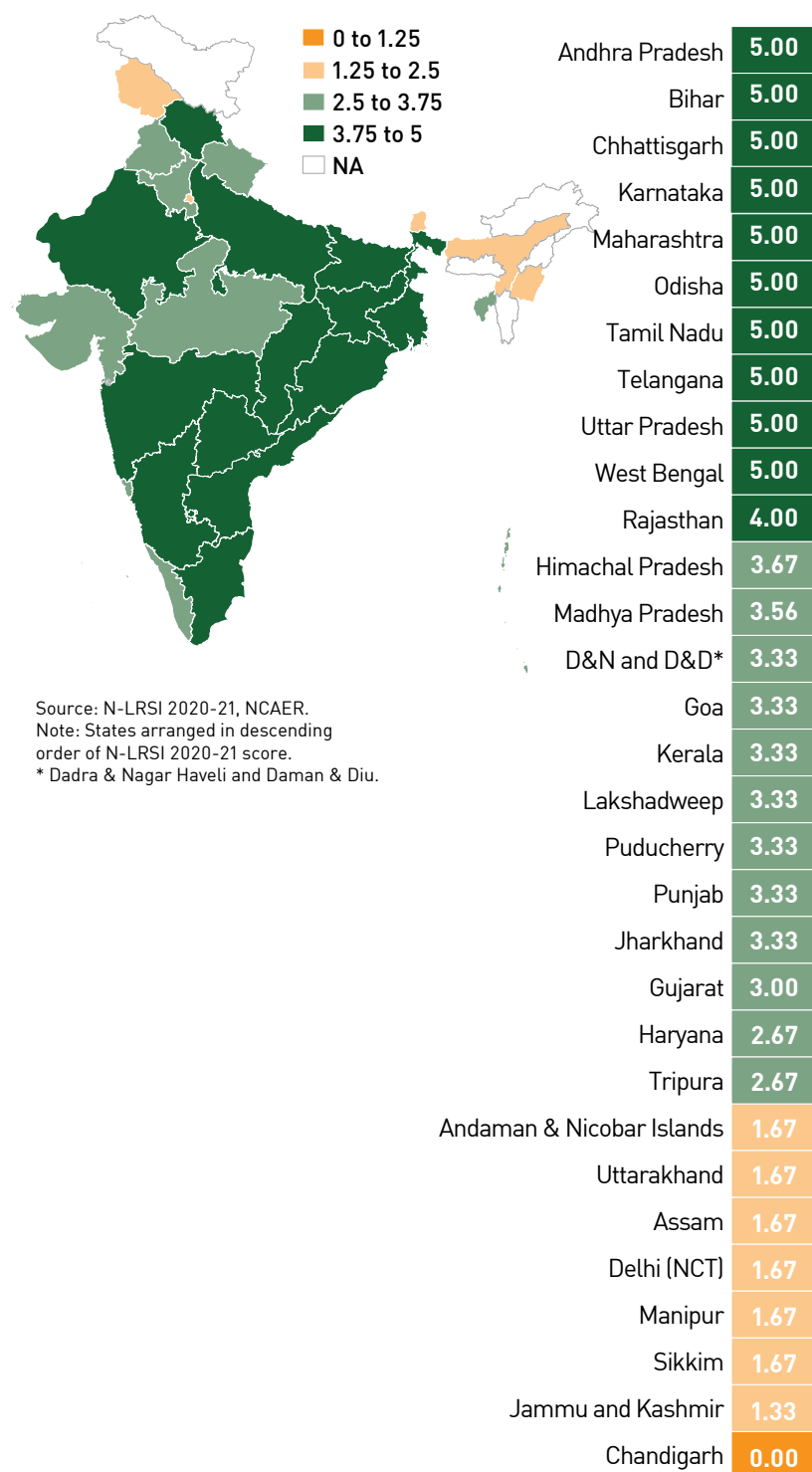
- i) Ease of access—Operational features;
- ii) Comprehensive information—Perceivable features;
- iii) Website design and navigation—Understandable features; and
- iv) Help/Customer Care—Assistance features.

Since each of the indicators cannot be computed directly, proxy indicators were

Each of the four main indicators was accorded equal importance, each contributing 25 marks for the total of 100 marks for the Accessibility Index.

Figure 8.1: Scores for Website Accessibility

Score for Website loading time (out of 5)



Source: N-LRSI 2020-21, NCAER.
Note: States arranged in descending order of N-LRSI 2020-21 score.
* Dadra & Nagar Haveli and Daman & Diu.

defined, as presented in Table 8.1. Each of the four main indicators was accorded equal importance, with each contributing 25 marks for obtaining a total of 100 marks for the Accessibility Index.

8.1.1. Ease of access

In order to evaluate the ease of access, which is an operational feature, the following five elements have been considered:

1. Website loading time: This element is assessed for the website's main page to load for RoRs, CMs, and CRs with equal weightage. Marks are awarded in the following manner: if the website accessible time is 5 seconds and below, then full marks are awarded; if the website accessible time ranges from 6 seconds to 10 seconds, then a 20 per cent penalty is levied; if the website accessible time ranges from 11 seconds to 15 seconds, then a 40 per cent penalty is levied; if the website accessible time ranges from 16 seconds to 20 seconds, then a 60 per cent penalty is levied; if the website accessible time is above 20 seconds, then an 80 per cent penalty is levied; if the website is not accessible at all, then a 100 per cent penalty is levied.

Figure 8.1 presents the scores of States/UTs for website accessibility. Ten States scored full five marks for this: Andhra Pradesh, Bihar, Chhattisgarh, Karnataka, Maharashtra, Odisha, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal.

2. Number of attempts to access content: This element is assessed for RoRs, CMs, and CRs with equal weightage. Marks are awarded in the following manner: if the website is accessed in a single attempt, then full marks are awarded; if it is accessed in 2 to 4 attempts, then a 25 per cent penalty is

levied; if it is accessed in 5 to 9 attempts, then a penalty of 50 per cent is levied; if it takes more than 10 attempts to access it, then a 75 per cent penalty is levied; if the website content is not accessible at all, then zero marks are awarded.

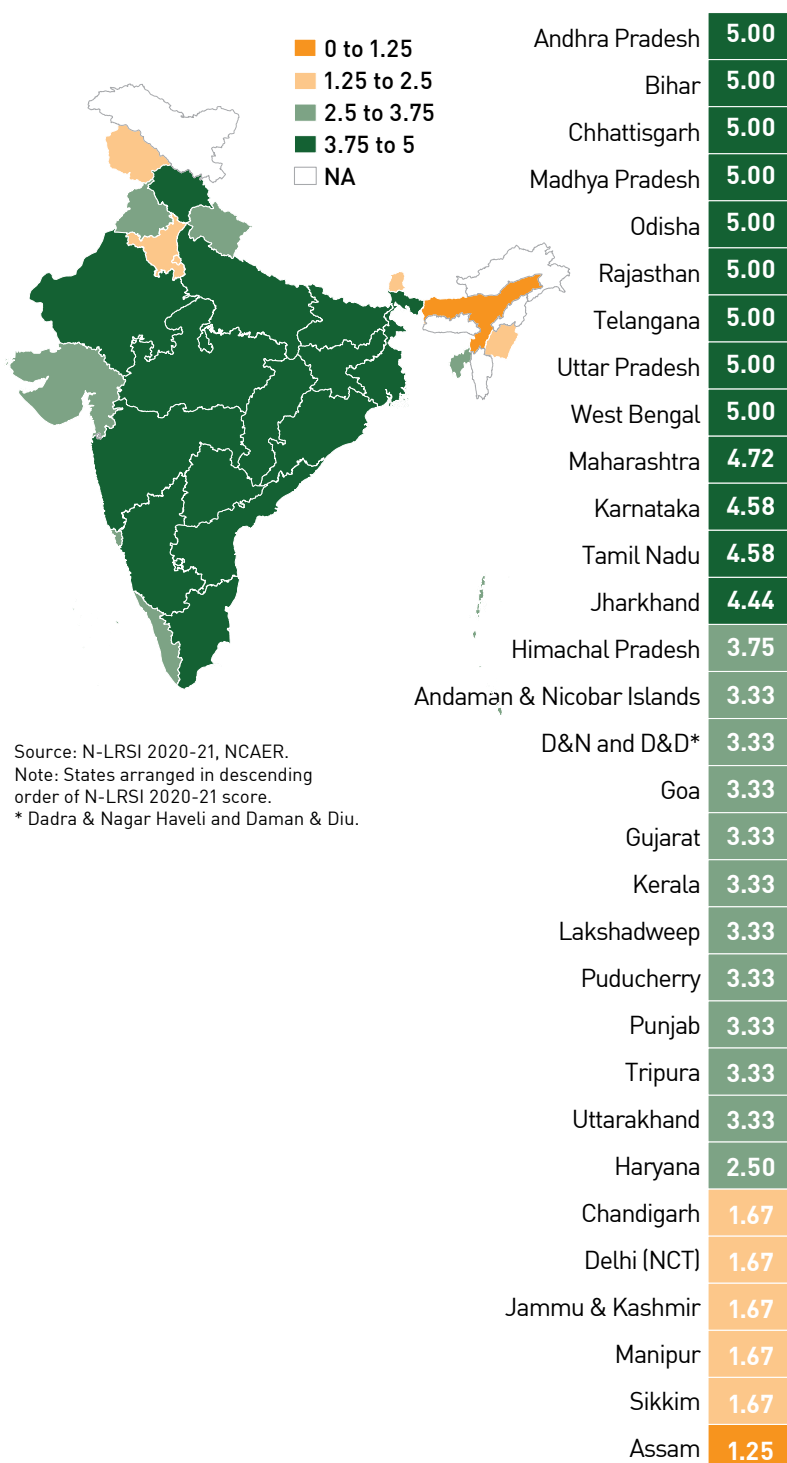
Figure 8.2 presents the scores of States/UTs for this indicator. Nine States scored full marks – these are: Andhra Pradesh, Bihar, Chhattisgarh, Madhya Pradesh, Odisha, Rajasthan, Telangana, Uttar Pradesh, and West Bengal. The websites of Assam, Manipur, Delhi (NCT), and Haryana present challenges to users in accessing their websites.

3. Content loading time: This element is assessed when a plot number is entered, and its respective content is loaded. The content loading time for RoRs, CMs, and CRs are recorded, and they have been accorded equal weightage. Marks are awarded in the following manner: if the website accessible time is 5 seconds and below, then full marks are awarded; if the website accessible time ranges from 6 seconds to 10 seconds, then a 20 per cent penalty is levied; if the website accessible time ranges from 11 seconds to 15 seconds, then a 40 per cent penalty is levied; if the website accessible time ranges from 16 seconds to 20 seconds, then a 60 per cent penalty is levied; if the website accessible time is above 20 seconds, then an 80 per cent penalty is levied; if the website is not accessible at all, then a 100 per cent penalty is levied (zero marks awarded).

Figure 8.3 presents the scores of States/UTs for this indicator. The five States scoring full marks on this indicator are Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, and Tamil Nadu. The websites of Assam, Kerala, and Tripura present difficulties in respect of this indicator.

Figure 8.2: Scores for Number of Attempts to Access the Website

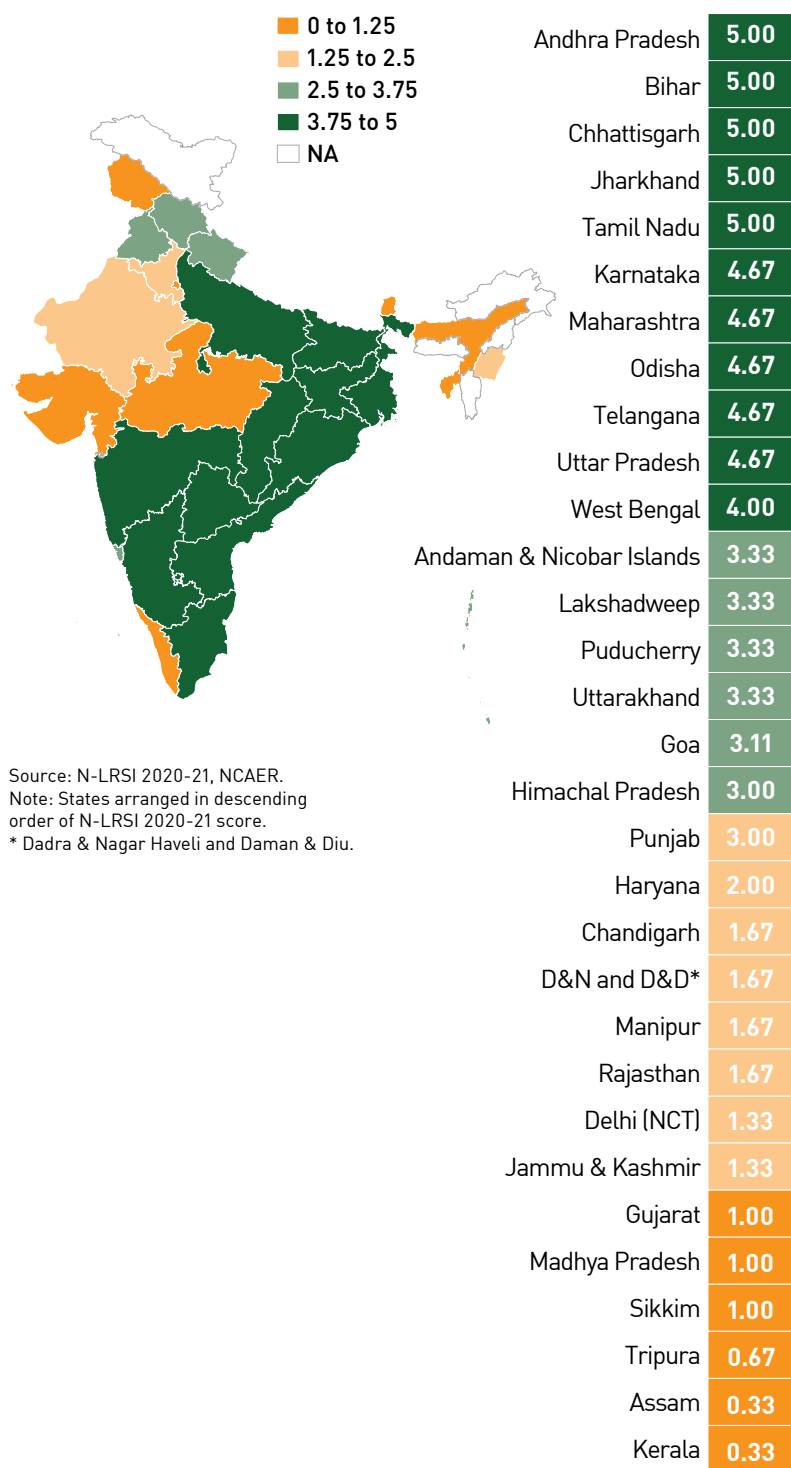
Score for number of attempts to access content (out of 5)



Source: N-LRSI 2020-21, NCAER.
Note: States arranged in descending order of N-LRSI 2020-21 score.
* Dadra & Nagar Haveli and Daman & Diu.

Figure 8.3: Scores for Content Loading Time

Score for content loading time (out of 5)



Source: N-LRSI 2020-21, NCAER.
 Note: States arranged in descending order of N-LRSI 2020-21 score.
 * Dadra & Nagar Haveli and Daman & Diu.

4. Accessibility on different mobile bandwidths (2G, 3G, 4G): Tests were conducted to assess whether the content of the websites can be accessed on different bandwidths (2G, 3G, 4G). If the content is accessed on a particular bandwidth, then full marks are given, else zero. Finally, a cumulative score is obtained by considering equal weights for every bandwidth. Figure 8.4 presents the scores of States/UTs for this indicator.

The 31 States/UTs assessed fall in the following three clusters: 20 States/UTs scored the highest marks of 3.33, followed by seven States/UTs in second place with a score of 1.63, and four States/UTs in third place with a zero score.

5. Accessibility on the mobile phone: Tests were also conducted to assess whether the website content can be accessed on a mobile phone and the content is accessible in the default browser of the mobile i.e. in case of an Android mobile, content is accessible in the Chrome mobile browser and for an iPhone, content is accessible in the Safari mobile browser. If it is possible to access the content on the mobile browser, full marks are given, else zero. Figure 8.5 presents the scores of States/UTs for this indicator.

The 31 States/UTs assessed also fall in the following three clusters: 15 States/UTs score full marks, followed by nine States/UTs in second place with a score of 3.33. Seven States/UTs are at the bottom with 1.63 marks.

8.1.2. Comprehensive information

Comprehensive information, which is a perceivable feature of accessibility, was measured by using the following four elements:

1. Operability across browsers and no change in information, navigation buttons, and functionality: According to <https://gs.statcounter.com/browser-market-share/desktop/india>, for October 2020, the shares of the top desktop browsers share in India are as follows: Chrome (86.76 per cent), Firefox (5.71 per cent), Edge (2.75 per cent), and Safari (2.07 per cent). Hence, in order to understand whether the websites are operable across browsers without losing information, each website was checked using the following three browsers: Chrome, Firefox, and Edge. If there was a change in the information available on the website, then a 100 per cent penalty was levied, and if there was no change in information, then the State/UT earned full marks. Every browser was given equal weight in calculating the scores. Except for Sikkim, Jammu & Kashmir, and Chandigarh, all the 31 States/UTs scored full marks for this indicator.

2. Website availability in two languages: In general, most of the States/UTs have their land record-related website in local languages. For example, in Maharashtra, it is in Marathi. Some people may not be able to read the local or the State language. Hence, it was assumed that the land records' website is likely to be more accessible if available in two languages, with the second language being English or Hindi. The States/UTs with websites in two languages were given full scores and zero if it was in only one language.

Figure 8.4: Scores for Accessibility on Different Mobile Bandwidths (2G, 3G, 4G)

Score for accessibility on different mobile bandwidths (out of 5)

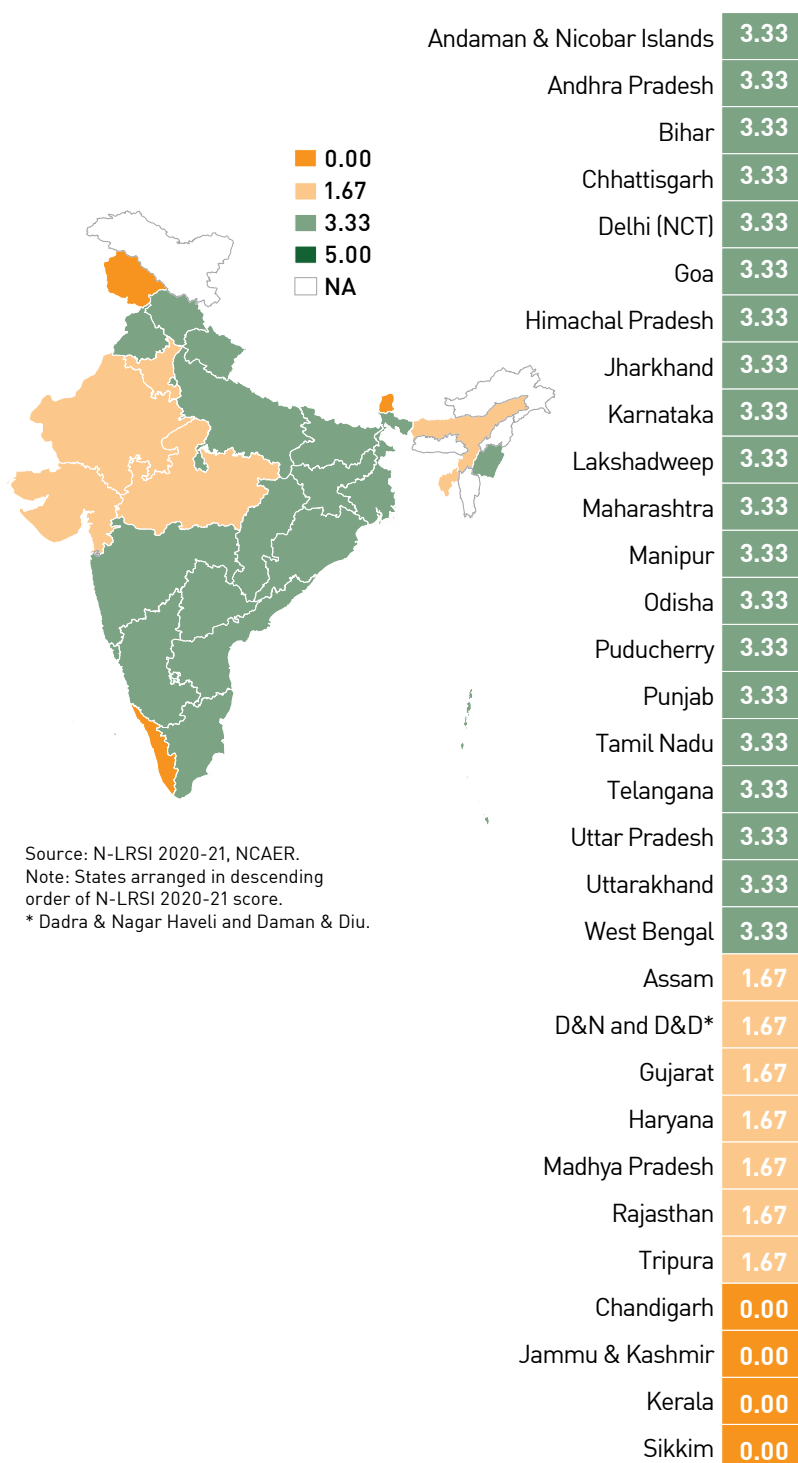
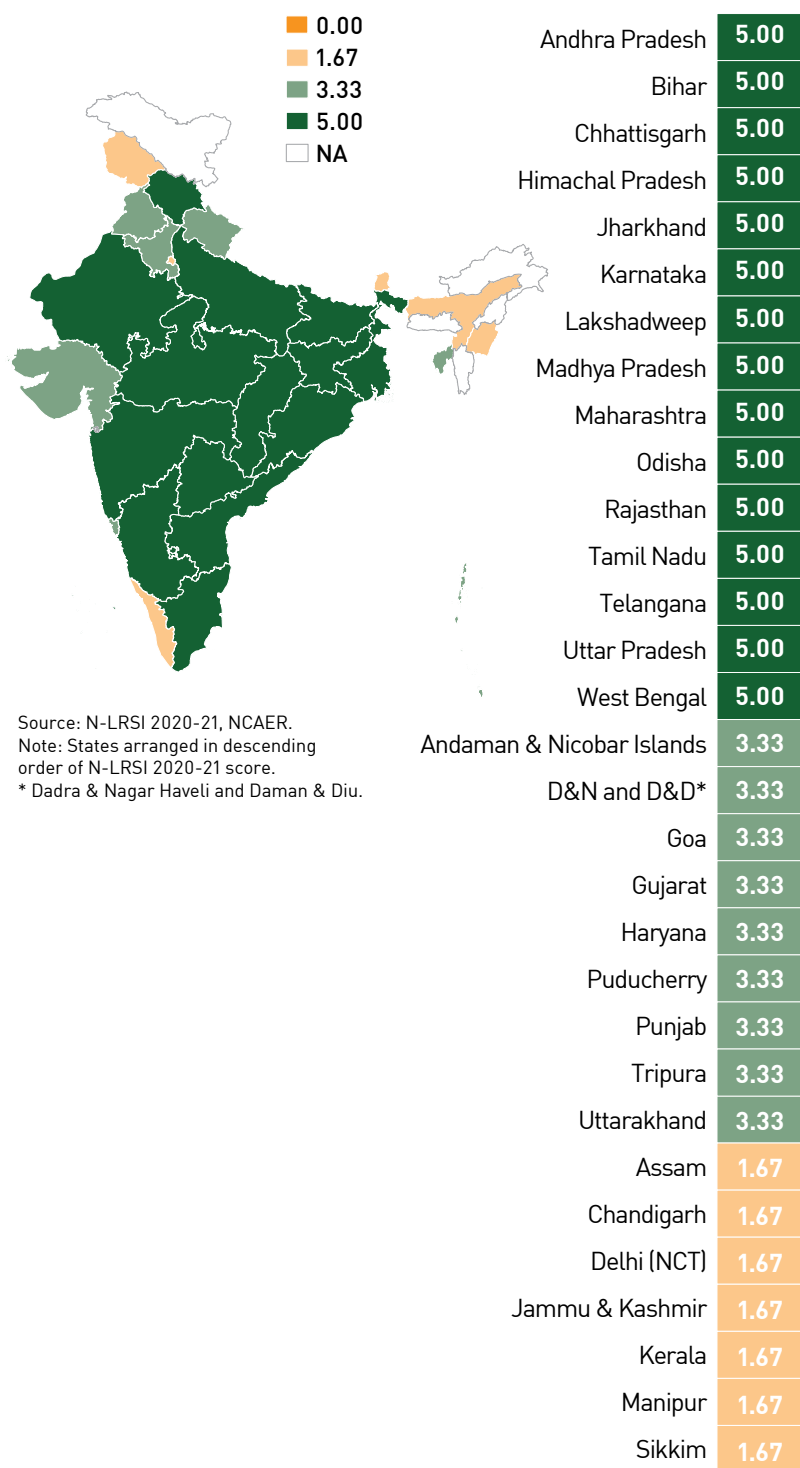


Figure 8.5: Scores for Accessibility on the Mobile Phone

Score for accessibility on the mobile phone (out of 5)



Source: N-LRSI 2020-21, NCAER.
 Note: States arranged in descending order of N-LRSI 2020-21 score.
 * Dadra & Nagar Haveli and Daman & Diu.

Ten States/UTs, viz. Gujarat, Haryana, Jharkhand, Karnataka, Maharashtra, Odisha, Punjab, Tamil Nadu, Telangana, and West Bengal, have websites of land records in two languages. The rest of the States/UTs have land-related portals in only one language.

3. Document availability in two languages: In general, most States have their land records in local languages. For example, in Karnataka, it is in Kannada. Some people may not be able to read documents in the local or the State language. Hence, it was assumed that the land records' documents could be more accessible if available in two languages, with the second language being English or Hindi. Thus, the States/UTs having documents on their websites in two languages were awarded full scores. All the States/UTs have their land records (ownership details) in one language.

4. Functional links provided to other activities with a close association with land records: Three functional links were deemed desirable on the land records' websites of the States/UTs: these are links for registration, portals for online fee payments, and link to the revenue courts' portals. If a particular link was available, then full marks were given, else zero marks were given. The three functional links have equal weightage. As depicted in Figure 8.6, the States/UTs fall into four clusters for this indicator: three States scored full marks, seven States/UTs scored 4.17 marks, seven scored 2.08 marks, and eight States/UTs scored zero.

8.1.3. Website design and navigation:

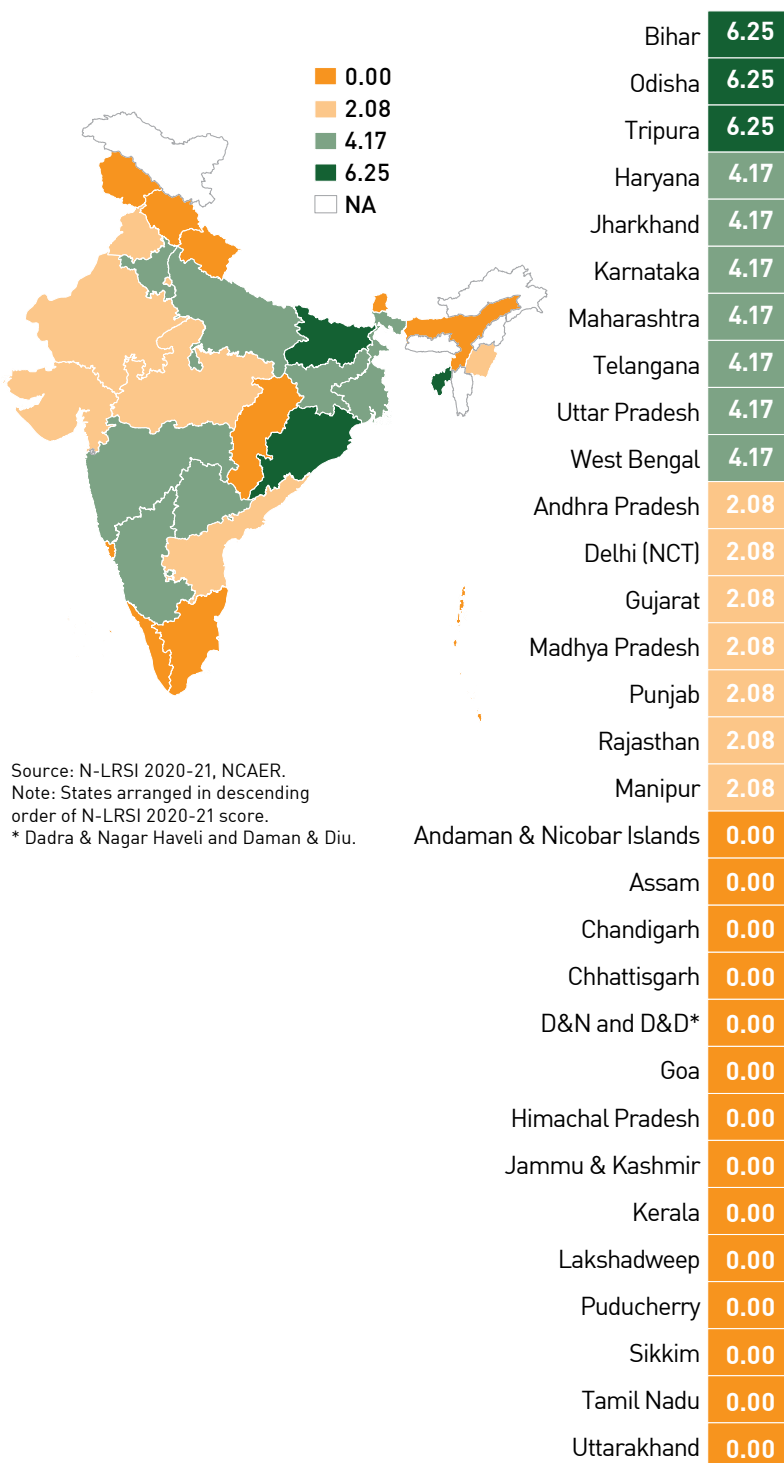
In order to measure website accessibility in terms of design and navigation, the following four proxy indicators have been used:

1. Consistency in menus on the main website: Consistency in the menu is important in any website design so that the end-user can check the required information quickly and efficiently. If the menus in the land-related websites were consistent, then full marks were awarded, else, the state/UT scores zero. Twenty eight States/UTs scored full marks as the websites are consistent in terms of their menu designs. Due to lack of websites for RoR, CM, and the CRs accessible only in pdf format for Sikkim, Jammu & Kashmir, and Chandigarh, these three scored zero.

2. Accessibility of information with basic details: For assessing this indicator, the websites were tested to examine whether the RoR, CM, and CR data can be accessed using basic details like the plot number and name of the owner of the property in a particular village. If a State/UT failed this test, then it scored zero and if the data could be accessed using either the plot number or the name of the owner, then full marks were awarded to the State/UT. If information on land records could be accessed by only one of the two basic details, i.e. by the plot number or the name of the owner, then a penalty of 50 per cent was levied. Equal weightage was given to the RoR, CM, and CR websites in order to finalise the scores for each State/UT. As Figure 8.7 shows, Odisha and Rajasthan achieved the highest scores of 4.17; 12 States/UTs scored 3.13; 10 States/UTs scored 2.08, four States/UTs scored 1.04, and three States/UTs scored zero.

Figure 8.6: Scores for Functional Links for Accessing Information on Other Land Record-related Activities

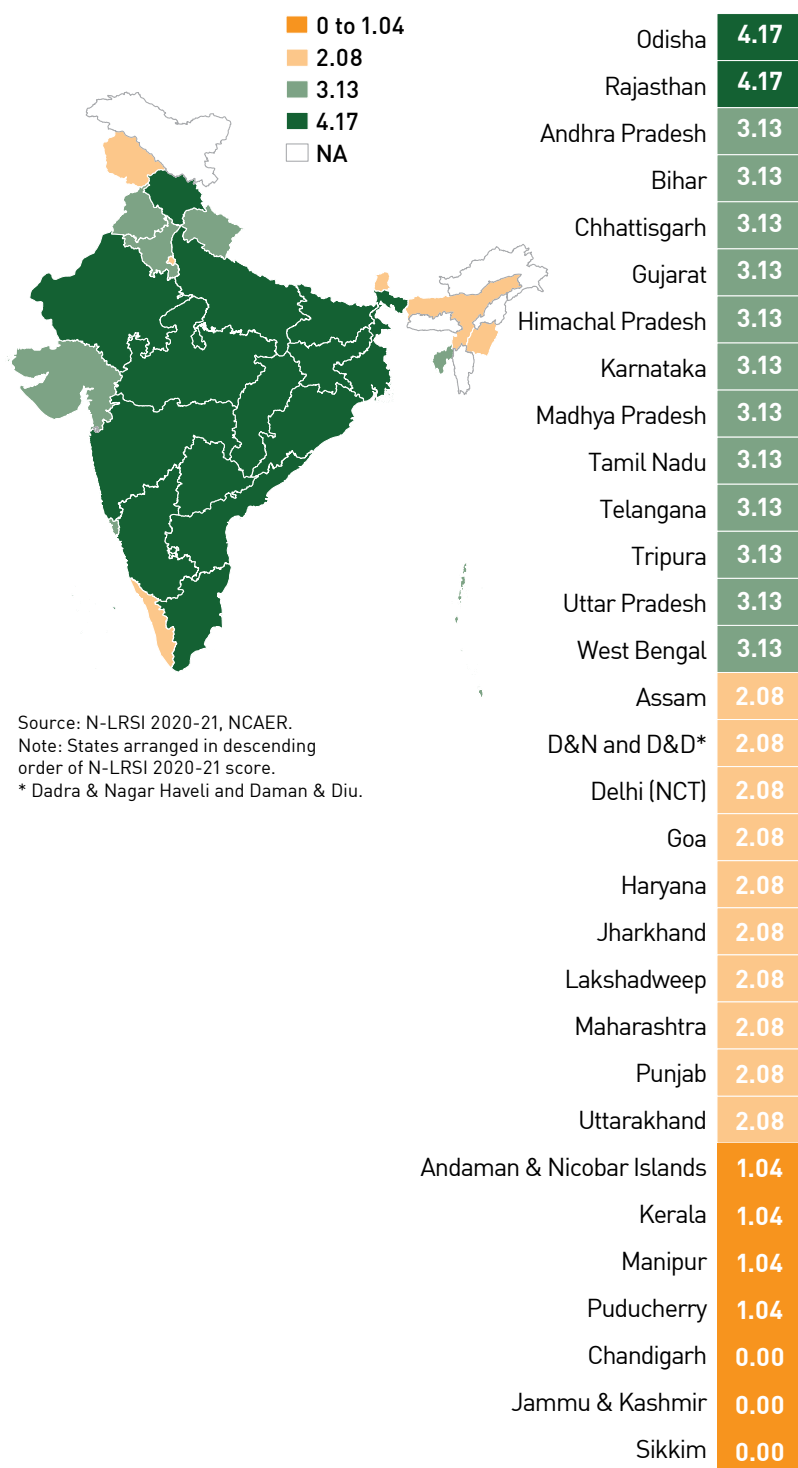
Score for functional links provided to other related land record related activities (out of 6.25)



Source: N-LRSI 2020-21, NCAER.
Note: States arranged in descending order of N-LRSI 2020-21 score.
* Dadra & Nagar Haveli and Daman & Diu.

Figure 8.7: Scores for Accessibility of Information with Basic Details

Score for accessibility of information with basic data (out of 6.25)



Source: N-LRSI 2020-21, NCAER.
 Note: States arranged in descending order of N-LRSI 2020-21 score.
 * Dadra & Nagar Haveli and Daman & Diu.

3. **Cluttered display on the main page:** Cluttered display can confuse the user and pose a barrier to understanding information on the website. If excessive content was crammed on to the website page, and this matter did not appear relevant to the RoRs, CMs, or CRs, then a 100 per cent penalty was imposed, else full marks were given. The assessment of this element is dependent on the perception of the person assigning scores. Using a liberal disposition, under this exercise, the websites of the 28 States/UTs were found to conform to the 'no-clutter' indicator and were awarded full marks. Due to lack of websites for RoR, CM, and the CRs accessible only in pdf format for Sikkim, Jammu & Kashmir, and Chandigarh, these scored zero.

4. **Search button available or not on the main page:** A functional search button is crucial for accessing any website as it helps the user search for information according to her needs. Half of the marks were awarded for State/UT websites that displayed the search option on the main page, and the other half of the marks were awarded when the search tab was found to be functioning. The States/UTs of Lakshadweep, and West Bengal have functioning search options on their websites. The website of Bihar, Haryana, and Odisha have the search option available, but it was not functioning when the test was conducted. The rest of the States/UTs do not have search options on their websites. This appears to be a serious drawback in the websites of various States/UTs, that needs immediate remedy.

8.1.4. Help/Assistance:

This is a critical element of the website that helps users to easily access the information or services available on the website either by learning themselves or by taking the help of an authorised representative of the agency/department of the States/UTs. The two sub-elements of Help/Assistance that were assessed for the Accessibility Index are detailed below.

1. Help/Frequently Asked Questions (FAQs) Tab Availability: If the Help/FAQ tab was available, then half of the marks (12.5) were awarded, else, the state/UT scores zero. The remaining half of the marks were awarded if the tab was working. The websites of Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Manipur, Odisha, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal have an active Help/FAQ tab. The Jharkhand portal has Help/FAQ tabs but these were not working. The rest of the States/UTs did not have any Help/FAQ tabs in their portals. This appears to be a serious drawback that needs urgent attention from the concerned States/UTs.

2. Customer care—availability and working status, understanding of language, and ability to answer basic questions about the website, and answer questions on RoRs, CMs, and CRs: This element has the following six dimensions: availability of service, active status, availability of customer care in the local language and in two languages, whether customer care helpline is able to answer basic navigation questions about the website, and whether the customer care helpline is able to answer questions related to a particular plot number (especially information on RoRs, CMs, and CRs). The six elements were accorded

Figure 8.8: Scores for Customer Care

Score for customer care (out of 12.5)

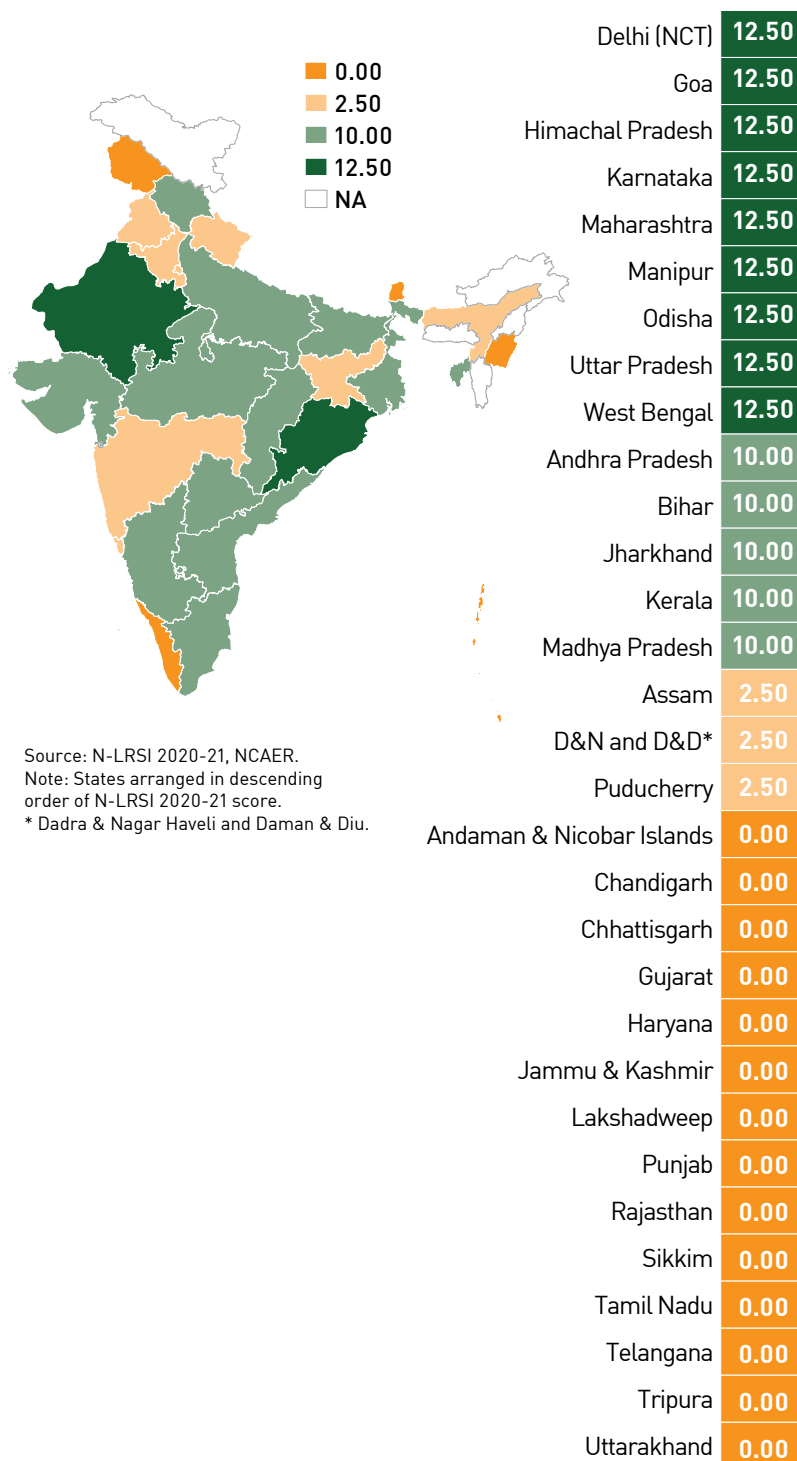


Table 8.2: State-wise Scores on the Accessibility Index

		0 to 6.25	6.25 to 12.50	12.50 to 18.75	18.75 to 25.00	
Rank		Ease of access (25 points)	Comprehensive information (25 points)	Design & Navigation (25 points)	Help & FAQ (25 points)	Total Score (100 points)
1	Odisha	23.00	18.75	19.79	25.00	86.54
2	West Bengal	22.33	16.67	21.88	25.00	85.88
3	Karnataka	22.58	16.67	15.63	25.00	79.88
4	Bihar	23.33	12.50	18.75	22.50	77.08
5	Uttar Pradesh	23.00	10.42	15.63	25.00	74.04
6	Jharkhand	21.11	16.67	14.58	16.25	68.61
7	Maharashtra	22.72	16.67	14.58	12.50	66.47
8	Himachal Pradesh	18.75	6.25	15.63	25.00	65.63
9	Tamil Nadu	22.92	12.50	15.63	12.50	63.54
10	Madhya Pradesh	16.22	8.33	15.63	22.50	62.68
11	Haryana	12.17	16.67	17.71	12.50	59.04
12	Chhattisgarh	23.33	6.25	15.63	12.50	57.71
13	Andhra Pradesh	23.33	8.33	15.63	10.00	57.29
14	Manipur	10.00	8.33	13.54	25.00	56.88
15	Telangana	23.00	16.67	15.63	0.00	55.29
16	Tripura	11.67	12.50	15.63	12.50	52.29
17	Kerala	8.67	6.25	13.54	22.50	50.96
18	Goa	16.44	6.25	14.58	12.50	49.78
19	Punjab	16.33	14.58	14.58	0.00	45.50
20	Lakshadweep	18.33	6.25	20.83	0.00	45.42
21	Delhi (NCT)	9.67	8.33	14.58	12.50	45.08
22	Gujarat	12.33	14.58	15.63	0.00	42.54
23	Rajasthan	17.33	8.33	16.67	0.00	42.33
24	Puducherry	16.67	6.25	13.54	2.50	38.96
25	D&N and D&D*	13.33	6.25	14.58	2.50	36.67
26	Uttarakhand	15.00	6.25	14.58	0.00	35.83
27	A&N Islands	15.00	6.25	13.54	0.00	34.79
28	Assam	6.58	6.25	14.58	2.50	29.92
29	Jammu & Kashmir	6.00	0.00	0.00	0.00	6.00
30	Chandigarh	5.00	0.00	0.00	0.00	5.00
30	Sikkim	6.00	0.00	0.00	0.00	6.00
	Mean	16.20	9.68	14.28	10.93	51.08

Source: N-LRSI 2020-21, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 score and rank.

* Dadra & Nagar Haveli and Daman & Diu. ** Andaman & Nicobar Islands.

equal weightage. Calls were made during daytime working hours to the customer care numbers provided on the websites, and based on responses, marks were accorded to provide scores on these customer care accessibility indicators. Figure 8.8 shows that nine States/UTs scored full marks, which is a laudable achievement. Sikkim, Jammu & Kashmir, and Chandigarh score zero as these do not have land-related websites.

8.2. All-India Accessibility Index Scores and Ranks

The scores of each of the four main components, i.e. ease of access, comprehensive information, website design and navigation, and help/assistance; were aggregated to yield the accessibility scores and ranks of each State/UT, as presented in Table 8.2.

The all-India mean Accessibility Index for 2021 is 51.08: Odisha, West Bengal, Karnataka, Bihar, and Uttar Pradesh are the top five States offering the best access to users via their websites. The bottom-five States/UTs in this regard are Andaman & Nicobar Islands, Assam, Jammu & Kashmir, Sikkim, and Chandigarh.

Ease of Access: The websites of Bihar, Chhattisgarh, and Andhra Pradesh offer quick access, and are accessible on different mobile bandwidths (2G, 3G, and 4G) as well as on different mobile browsers; hence these are the top scorers in the ease of access component. At the other end, Assam and Delhi (NCT) scored low in terms of ease of access as both of them do not have accessible CMs and CRs on their websites, and hence scored zero in the ease of accessibility for

these components. Kerala is the only state in India where the RoR and CM can only be viewed with a payment of user fee and hence it scored zero in accessibility of RoR and CMs. Sikkim, Jammu & Kashmir, and Chandigarh are also at the bottom in ease of access as these only have CRs uploaded in pdf format and are yet to launch websites for RoRs and CMs.

Comprehensive Information: The website for the land records of Odisha recorded high scores on the comprehensive information category of the Accessibility Index, as the State has a dual language portal with functional links to other land records related services. Apart from zero scores to Sikkim, Jammu & Kashmir, and Chandigarh, the States/UTs of Andaman & Nicobar Islands, Assam, Dadar & Nagar Haveli and Daman & Diu, Puducherry, Chhattisgarh, Goa, Lakshadweep, Himachal Pradesh, Kerala, and Uttarakhand are at the bottom of the table in this component. The reason for their low scores is that these States/UTs provide both the data and website content in only one language, and the functional links providing access to other land record-related activities, like registration, online fee payment portals, and revenue courts portal, are missing in these websites.

Website Design and Navigation: West Bengal scored the highest marks in the website design and navigation component. Out of four sub-components, most of the States/UTs scored the highest marks in menu-design consistency and the 'no-clutter' display indicator. The availability of the search option and its functionality in the land portals of West Bengal fetched it highest marks. Apart from Sikkim, Jammu & Kashmir, and Chandigarh that do not have websites for RoR and CM,

Odisha, West Bengal, Karnataka, Bihar, and UP are the top-5 States offering the best access to users via their websites.

Figure 8.9: Scores of N-LRSI 2021 versus the Accessibility Index 2021

0 to 25 25 to 50 50 to 75 75 to 100

	Score (out of 100)		Rank (out of 31)	
	N-LRSI 2020-21	Accessibility 2020-21	N-LRSI 2020-21	Accessibility 2020-21
Madhya Pradesh	80.2	62.68	1	10
West Bengal	78.5	85.88	2	2
Odisha	77.2	86.54	3	1
Maharashtra	70.9	66.47	4	7
Tamil Nadu	70.3	63.54	5	9
Andhra Pradesh	69.0	57.29	6	13
Karnataka	65.0	79.88	7	3
Bihar	64.8	77.08	8	4
Chhattisgarh	64.8	57.71	9	12
Jharkhand	59.8	68.61	10	6
Rajasthan	59.4	42.33	11	23
Himachal Pradesh	59.1	65.63	12	8
Telangana	57.4	55.29	13	15
Tripura	56.7	52.29	14	16
Uttar Pradesh	56.7	74.04	15	5
Goa	49.4	49.78	16	18
Lakshadweep	46.8	45.42	17	20
Punjab	40.4	45.50	18	19
Uttarakhand	36.3	35.83	19	26
Haryana	35.9	59.04	20	11
D&N and D&D*	35.8	36.67	21	25
Gujarat	35.3	42.54	22	22
Puducherry	32.3	38.96	23	24
A&N Islands**	29.1	34.79	24	27
Delhi (NCT)	24.5	45.08	25	21
Manipur	22.3	56.88	26	14
Kerala	21.4	50.96	27	17
Assam	18.5	29.92	28	28
Chandigarh	10.0	5.00	29	31
Sikkim	8.8	6.00	30	29
Jammu & Kashmir	5.0	6.00	31	29

Source: N-LRSI 2020-21, NCAER.

Note: States arranged in descending order of N-LRSI 2020-21 rank.

* Dadra & Nagar Haveli and Daman & Diu. ** Andaman & Nicobar Islands.

the States/UTs of Puducherry, Andaman & Nicobar Islands, Kerala and Manipur have portals without the search option and also lack access to information with basic details like plot number and name of the landowner. Therefore, these record low scores for the website design and navigation component.

Help/Assistance: Only six States/UTs have scored high marks for these indicators and websites of the bulk of the States/UTs have challenges—these can seriously constrain citizens from accessing help and/or customer care services.

8.3. Correlation between N-LRSI 2021 and the Accessibility Index 2021

There is a strong positive correlation between the N-LRSI 2021 scores and the Accessibility Index 2021 scores, with the Spearman's correlation coefficient of 0.81. Figure 8.9 presents the N-LRSI 2021 and the Accessibility Index 2021 scores.

However, some States/UTs score low on accessibility despite recording an impressive performance in N-LRSI 2021—these include Andhra Pradesh, Madhya Pradesh, and Rajasthan. For these States, a better performance in digitisation and quality of records has not translated into better services due to barriers in accessibility. These States/UTs can achieve quick wins by improving access to their portals. In contrast, there are States/UTs that have accessible websites but their record in terms of digitisation and the quality of records needs improvement.

CHAPTER 9

PROGRESS AND PROSPECTS

9.1. Progress

N-LRSI 2019-20 was a pioneering effort that generated considerable interest in the hitherto neglected field of land records and associated services in India. The release of the N-LRSI 2019-20 (in February 2020) was accompanied by a compendium of both short- and medium-term suggestions for bringing about improvements specific to each State/UT.

It has been extremely heartening to see that many States/UTs have actually implemented various suggestions offered in N-LRSI 2019-20 in the short span of one year, which is reflected in the considerable improvements in the performance of these States/UTs observed in N-LRSI 2020-21. Remarkably, this has been done without any expenditure being reported under the Government of India's flagship DI-LRMP. The States/UTs have thus owned up to what is essentially a State subject and responsibility.

For each State/UT, information on its current status, its relative position on the Index, areas where other States/UTs are ahead, and suggestions on possible improvements appear to have had an impact, demonstrating the potential for constructive competitive federalism. This demonstrates that the N-LRSI can be a valuable instrument for helping achieve the land policy objectives of making better land and property records available to the people of India.

Some of the significant changes in N-LRSI 2020-21 as compared to N-LRSI 2019-20 are worth reiterating here, and are delineated below.

- i) The mean national N-LRSI score covering 32 States/UTs has increased to 45.1 in 2021 from 38.7 in

N-LRSI 2019-20, representing an improvement of more than 16 per cent in one year!

- ii) This improvement has been broad-based. Out of 32 States/UTs that have been ranked in the two editions of the N-LRSI, as many as 28 States/UTs have shown at least some improvement in their scores and two have maintained their scores at the same level.
- iii) While Madhya Pradesh has emerged as the top performer for the second year in a row, it has made considerable effort to retain this position by increasing its score from 75 points in N-LRSI 2019-20 to 80.2 points in N-LRSI 2020-21.
- iv) In the current round, the top five States have scored above 70 points, whereas in the last round, only one State had scored above 70 points. In N-LRSI 2020-21, 15 States/UTs have scored more than 50 points as compared to 11 States/UTs that scored corresponding points in N-LRSI 2019-20.
- v) States/UTs have capitalised on the potential for quick wins offered by the components of the Index that measure the extent of digitisation of the land records and the registration process. Given the significant levels of digitisation of textual records shown in N-LRSI 2019-20, the major scope for improvement was in making available digitised Cadastral Maps (CMs) and in offering online facilities for the various stages of the registration process. The States/UTs have made most strides in these two areas. The efforts in making CMs available are especially noteworthy.

**States/
UTs have
capitalised
on the
potential for
quick wins
offered by
the compo-
nents of the
N-LRSI that
measure
the extent of
digitisation
of the land
records
and the
registration
process.**

West Bengal has become the first State in India to introduce a provision for compulsory digital signature by the SRO at the time of registration of a transaction.

More maps are not only being reported as available but are actually available! In the case of spatial records, test checks verified that the achievement reported by States/UTs was to the extent of 87.8 per cent in 2020-21 as compared to 63.9 per cent in 2019-20. Overall, the average score for all aspects of digitisation has increased to 29.6 points out of 60 in N-LRSI 2020-21 from the 24.6 points recorded in N-LRSI 2019-20.

- vi) The States of Bihar, West Bengal, Tripura, Odisha and Tamil Nadu have reported a considerable increase in the level of digitisation of their textual records. The States of Karnataka, Tripura, and Bihar have uploaded the digitised copies of their CMs on their respective websites. Other States that have made considerable efforts to increase the digitisation of their spatial records are Tamil Nadu, Kerala, Jharkhand, and Andhra Pradesh. West Bengal has upgraded the value of its digitised records and joined the States/UTs making digitally signed copies of RoRs and CMs available on their websites.
- vii) Himachal Pradesh has started providing legally signed copies of CMs from its Citizen Services Centres instead of only providing them from the departmental offices. Bihar and Odisha has joined the States/UTs that make a web portal facility available for filling in the requisite details for registration of a transaction.
- viii) Three UTs, that is, Chandigarh,

Andaman & Nicobar Islands, and Dadra & Nagar Haveli and Daman & Diu, have been added to the list of States/UTs making circle rates available on their websites. Most States/UTs have also made considerable efforts to improve the online availability of their circle rates. Four States, that is, Bihar, Himachal Pradesh, Delhi (NCT), and Punjab are new additions to the list of States/UTs offering a facility for online payment of registration fees and duties.

- ix) West Bengal has become the first State in India to introduce a provision for compulsory digital signature by the SRO at the time of registration of a transaction. All the registered documents in the State are now only stored in a digital format. A digital copy is immediately available to parties after the digital signature by the SRO. Bihar has joined the list of States providing the online facility of delivering soft copy of registered document.
- x) The relatively more difficult area of improving the quality of records has also seen progress though not at the same level as in the extent of digitisation. The mean score for the overall quality of land records and services has increased to 16.4 in N-LRSI 2020-21 as compared to 15.1 in N-LRSI 2019-20.
- xi) The States of Odisha, Madhya Pradesh, Maharashtra, Jharkhand, and Chhattisgarh achieved the best scores for the quality of records. As

compared to N-LRSI 2019-20, the maximum improvement in scores in N-LRSI 2020-21 has been reported in the States of Karnataka, Bihar, Tripura, Goa, and Madhya Pradesh.

- xii) Sikkim, Odisha and Bihar have upgraded the integration between their textual records and the registration process to enable automatic generation of a note in the RoR when a transaction is registered. They join seven other States that exhibited this feature in N-LRSI 2019-20.
- xiii) In N-LRSI 2019-20, test checks for land use were possible only in ten States/UTs since a comparison between the land use exhibited in the record and that shown on the ground, is possible only if CMs are made available online in a mosaic form. In N-LRSI 2020-21, five additional States, that is, Andhra Pradesh, Bihar, Karnataka, Tripura, and Goa, made their CMs available in mosaic form.
- xiv) In N-LRSI 2019-20, test checks for land area of plots were possible only in the case of nine States, as this necessitated making line lengths of digitised plots available so that the area could be computed and compared with the area shown in the RoR. In N-LRSI 2020-21, this became possible for two additional States, Maharashtra and Bihar, which provided the necessary details.
- xv) In N-LRSI 2020-21, accessibility was measured using a rigorous set of indicators provided in the

Guidelines for Indian Government Websites 2.0 (GIGW 2.0), prepared by the Ministry of Electronics and Information Technology (MeitY). An Accessibility Index has been constructed in this round, using the following four indicators: ease of access, comprehensive information, website design and navigation, and help/assistance features. The Index highlights considerable variation among the States/UTs in terms of the facilities offered to ease user access and navigability on their websites. This Accessibility Index also demonstrates the fact that even though some States/UTs have scored well on the N-LRSI, their efforts in ensuring better access to users have considerable scope for improvement.

9.2. Prospects

The two rounds of constructing the N-LRSI have highlighted the promise inherent in this exercise while simultaneously exposing some limitations that will need to be addressed, if the Index is to be of value in the long run.

The States/UTs have exhibited significant interest in making an improvement from one round to the next. At the very least, reporting by States on the DoLR website is a far more accurate reflection of the actual status of the digitisation effort. On the index, the improvement has been most visible in the measurement of the extent of digitisation of the records and registration process, which are areas that can be achieved relatively swiftly but have finite limits.

**N-LRSI
2020-21
highlights the
shortcomings
in ease of
access to and
navigability
on websites
- these can
be addressed
expeditiously
to benefit
users.**

**Govt. of India
may explore
approaches
for rewarding
States/UTs
that perform
well on this
Index, and
promote all
States/UTs
to race to the
top.**

Another sphere that the current year's exercise has highlighted pertains to shortcomings in ease of access and navigability on websites, for users. These gaps can also be addressed relatively quickly and enable improved user experience.

The pandemic has delayed the addition of a third dimension in the Index, that is, client surveys, for understanding the value and utility of digitised records and processes for the public. It is likely that when this survey is done, it will underscore the importance of progress on the most difficult area of improvement in relation to the Index: increasing the real-time accuracy and comprehensiveness of land records.

A comparison of the results of two rounds of the N-LRSI on parameters related to the quality of the records shows both the extent of territory that still needs to be covered in this regard and the examples that are worth emulating for the States/UTs lagging behind:

- i) Real-time attestation of mutations for property-related transactions is still to be achieved by any State/UT.
- ii) Linking databases like birth and death registers and genealogical tables (attached to RoRs in some States/UTs) in order to bring the requirement for inheritance-related mutations into real-time notice, is still in the realm of ideas only.
- iii) The issue of recording tenant possession of rented built-up properties is still pending discussion.
- iv) Building plan approvals need to be linked to land records so that the

latter reflect changes in land use as well as the extent of the proposed built-up properties.

- v) Databases such as the Official Gazettes that record the start of land acquisition proceedings or the introduction of town planning-related land use, need to be linked to the land records database so that these restrictions can be recorded in real time.
- vi) Recording all ownership in built-up vertical spaces, like apartment blocks, as is being attempted in Maharashtra, is still awaiting action in most States/UTs. Linking records of cooperative societies or drawing on municipal property tax records can make this task easier.
- vii) The excellent initiative to create a record for inhabited rural areas under the Pradhan Mantri Swamitva Yojana needs to be planned and monitored properly.
- viii) States/UTs need to consider ways to accord legal legitimacy to the area actually recorded in the digitised CMs, where it shows greater congruence with the on-ground situation as compared to the area noted in the RoR.
- ix) Some States and UTs appear to have made progress in linking the institution of court cases with the textual records. These actions are worth emulating by other States/UTs at the earliest.
- x) For the Government of India, the N-LRSI offers a great opportunity

in many aspects. At the minimum, it can help the Government seek better quality while the States/UTs attempt to update information on the DoLR websites by the States/UTs. The States/UTs can be requested to make updating a real-time exercise by standardising the links to relevant databases. States/UTs can also be requested to carry out more quality checks of their records. Most important, the Government of India can explore approaches for rewarding and recognising the States/UTs that perform better on this Index so that the others are incentivised to improve and race beyond the front-runners.

Going forward, it is evident that there is reason to continue bringing out the N-LRSI while at the same time considering ways to amend its composition in order to achieve even more meaningful results in the future. The areas of change in the N-LRSI have been the subject of discussion earlier in this chapter.

Weightage accorded to the accessibility

parameters will increase attention towards improving the digital experience for the user. The client survey will act as a reality check while examining the value of the digitisation efforts for the public and will further highlight matters requiring greater attention. A progressive reduction in the weight attached to the extent of digitisation (as States/UTs reach close to a 100 per cent achievement) while maintaining the emphasis on quality parameters, may also merit consideration.

These issues have been raised in discussions held with some States during the last year. The general consensus has been to continue with the current composition of the Index for another year while reducing its overall weight to accommodate the results from the client survey. According some weight to the Accessibility Index can also be considered. While the incorporation of these changes could be examined a third edition of the Index, further changes to reduce the inter se weight to digitisation vis-à-vis the quality of the record should possibly be kept in mind for the fourth year of computation of the Index.



ANNEXURES

Table AI: Terms used for Textual Land Records across States/UTs

	States/UTs	Official Term for RoR	Locally Preferred Term or Documents*
1	Andaman & Nicobar Islands	Form F	Form F called patta or khatuni slip locally
2	Andhra Pradesh	1 B	Adangal copy
3	Assam	Jamabandi	Jamabandi
4	Bihar	Adhikar Abilekh	Khatian and Jamabandi
6	Chandigarh	Jamabandi	Jamabandi
5	Chhattisgarh	Form B1	Khasra
7	Dadra & Nagar Haveli and Daman & Diu	Sat Bara (7-12) for D&NH; I - XIV for D&D	Sat Bara (7-12) for D&NH; I - XIV for D&D
8	Delhi (NCT)	Form P-6A (Khatauni)	Jamabandi / Khatauni
9	Goa	I - XIV	I - XIV
10	Gujarat	Village Form 7	Sat Bara (7-12)
11	Haryana	Jamabandi	Jamabandi
12	Himachal Pradesh	Jamabandi	Jamabandi
13	Jammu & Kashmir	Jamabandi	Jamabandi
14	Jharkhand	Adhikar Abilekh	Khatian
15	Karnataka	RTC Form No. 16	Pahani
16	Kerala	Thandaper	Thandaper – the extract is Thandaper pakarpp
17	Ladakh	Jamabandi	Jamabandi
18	Lakshadweep	Land Register	Land Register
19	Madhya Pradesh	Form B-1	Khatauni / khasra
20	Maharashtra	Sat Bara (7-12)	Sat Bara (7-12)
21	Manipur	Jamabandi	Jamabandi / patta
22	Odisha	Khatian	Khatian
23	Puducherry	Settlement Register	Chitta/Patta
24	Punjab	Jamabandi	Jamabandi
25	Rajasthan	Jamabandi	Jamabandi
26	Sikkim	Parcha	Parcha
27	Tamil Nadu	Chitta	Chitta is extract of Patta register supplemented by adangal
28	Telangana	RoR 1B	Copy of Patta Register & Pahani
29	Tripura	Form 1	Khatian
31	Uttar Pradesh	Khata Vivran	Khatauni
30	Uttarakhand	Account Statement	Khatauni
32	West Bengal	Khatian	Khatian

Source: N-LRSI 2020-21, NCAER.

Table All: Terms used for Circle Rates across States/UTs

States/UTs	Terms Used
1 Andaman & Nicobar Islands	Circle Rates
2 Andhra Pradesh	Unit Rates
3 Bihar	Minimum Value Register (MVR)
4 Chandigarh	Collector Rates
5 Chhattisgarh	Market Price Rate Guideline
6 Dadra & Nagar Haveli and Daman & Diu	Circle Rates
7 Goa	Minimum Land Rates
8 Gujarat	Jantri Rates
9 Haryana	Collector Rates
10 Himachal Pradesh	Circle Rates
11 Jammu & Kashmir	Land Rates
12 Jharkhand	Minimum Value of Land (Valuation)
13 Karnataka	Market Value
14 Kerala	Fair Value of Land
15 Madhya Pradesh	Guideline Value
16 Maharashtra	Ready Reckoner Rates
17 Odisha	Benchmark Valuation (BMV)
18 Puducherry	Guideline Register Value
19 Punjab	Collector Rates
20 Rajasthan	District Level Committee Rates (DLC)
21 Sikkim	Block Rates
22 Tamil Nadu	Guideline Value
23 Telangana	Unit Rate
24 Uttar Pradesh	Evaluation List
25 Uttarakhand	Circle Rates
26 West Bengal	Market Value of Land

Source: N-LRSI 2020-21, NCAER.

Table AIII: Textual Record Portal Details

	States	Land Records Portal: Status
1	Andaman & Nicobar Islands	http://db.and.nic.in/ROR/view1/formf.aspx
2	Andhra Pradesh	https://meebhoomi.ap.gov.in/
3	Arunachal Pradesh	Not Available
4	Assam	http://revenueassam.nic.in/dhar/index.php/Welcome/SelectLOC
5	Bihar	http://lrc.bih.nic.in/ ; http://biharbhumi.bihar.gov.in/Biharbhumi/
6	Chandigarh	Not Available
7	Chhattisgarh	https://bhuiyan.cg.nic.in/
8	Dadra & Nagar Haveli and Daman & Diu	http://117.202.16.169/avanika/Print712common1.aspx ; http://dd.nlrm.in/lrc/form114.aspx
9	Delhi (NCT)	https://dlrc.delhigovt.nic.in/
10	Goa	https://egov.goa.nic.in/dslr/f114new.aspx
11	Gujarat	https://anyror.gujarat.gov.in/Info712Page.aspx
12	Haryana	https://jamabandi.nic.in/
13	Himachal Pradesh	http://lrc.hp.nic.in/lrc/Revenue/viewlandrecords.aspx
14	Jammu & Kashmir	Not Available
15	Jharkhand	https://jharbhoomi.nic.in/jhrlrmsmis/
16	Karnataka	https://landrecords.karnataka.gov.in/rtconline/
17	Kerala	Accessibility Issue (http://erekha.kerala.gov.in/newsurvey.php)
18	Ladakh	Not Available
19	Lakshadweep Islands	https://land.utl.gov.in/Process/Login-Page
20	Madhya Pradesh	https://mpbhulekh.gov.in/mpbhulekh.do
21	Maharashtra	https://bhulekh.mahabhumi.gov.in/
22	Manipur	https://louchapathap.nic.in/MIS/frmROR45
23	Meghalaya	Not Available
24	Mizoram	Not Available
25	Nagaland	Not Available
26	Odisha	http://bhulekh.ori.nic.in/RoRView.aspx
27	Puducherry	http://www.pon.nic.in/nilamagal/
28	Punjab	http://jamabandi.punjab.gov.in/
29	Rajasthan	http://apnakhata.raj.nic.in/LRCLLogin.aspx
30	Sikkim	Not Available
31	Tamil Nadu	https://eservices.tn.gov.in/eservicesnew/land/chitta.html?lan=en
32	Telangana	https://dharani.telangana.gov.in/
33	Tripura	https://jami.tripura.gov.in/Citizen_Service/citiz_ror.aspx
34	Uttar Pradesh	http://upbhulekh.gov.in/public/public_ror/Public_ROR.jsp
35	Uttarakhand	http://bhulekh.uk.gov.in/public/public_ror/Public_ROR.jsp
36	West Bengal	http://www.banglarbhumi.gov.in/

Source: N-LRSI 2020-21, NCAER

Table AIV: Spatial Record Portal Details

States	Land Records Portal: Status	Remarks
1 Andhra Pradesh	https://bhunaksha.ap.gov.in/bhunaksha/28/indexmain.jsp	
2 Andaman & Nicobar Islands	Not Available	
3 Arunachal Pradesh	Not Available	
4 Assam	http://revenueassam.nic.in/bhunakshag2c/	Accessibility Issue
5 Bihar	http://bhunaksha.bih.nic.in/bhunaksha/ ; http://hccl.bih.nic.in/map/searchviewmap.aspx	First link doesn't have complete information. Second link has scanned PDF
6 Chandigarh	Not Available	
7 Chhattisgarh	https://bhunaksha.cg.nic.in/	
8 D&N and D&D*	Not Available	
9 Delhi (NCT)	http://gsdl.org.in/revenue/index.aspx	Not recognised by the government
10 Goa	http://www.dstegoa.gov.in/Goa_Structures1.pdf	PDF and Not amenable to a plot wise search
11 Gujarat	https://revenue department.gujarat.gov.in/village-map	
12 Haryana	https://hsac.org.in/eodb/	The State's Revenue Department has not recognized these digitized CMs
13 Himachal Pradesh	https://bhunakshahp.nic.in/	
14 Jammu & Kashmir	Not Available	
15 Jharkhand	https://jharbhunaksha.nic.in/	
16 Karnataka	https://www.landrecords.karnataka.gov.in/service3/	Not amenable to a plot wise search
17 Kerala	http://erekha.kerala.gov.in/newsurvey.php ; https://emaps.kerala.gov.in/	Payment required for the first link ; Information for all the districts is not available
18 Ladakh	Not Available	
19 Lakshadweep	http://bhunaksha.utl.gov.in/	
20 Madhya Pradesh	https://mpbhulekh.gov.in/mpbhulekh.do	
21 Maharashtra	https://mahabhunakasha.mahabhumi.gov.in/27/index.jsp	
22 Manipur	Not Available	
23 Meghalaya	Not Available	
24 Mizoram	Not Available	
25 Nagaland	Not Available	
26 Odisha	http://bhunakshaodisha.nic.in/	
27 Puducherry	Not Available	
28 Punjab	http://jamabandi.punjab.gov.in/CadastralMap.aspx	Not amenable to a plot wise search
29 Rajasthan	http://bhunaksha.raj.nic.in/bhunaksha/	
30 Sikkim	Not Available	
31 Tamil Nadu	https://eservices.tn.gov.in/eservicesnew/land/chitta.html?lan=en	
32 Telangana	Not Available	
33 Tripura	https://jami.tripura.gov.in/Citizen_Service/map_view.aspx	Not amenable to a plot wise search
34 Uttar Pradesh	http://upbhunaksha.gov.in/bhunaksha/09/index.html	
35 Uttarakhand	Not Available	
36 West Bengal	http://www.banglarbhumi.gov.in/	

Source: N-LRSI 2020-21, NCAER

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A2.1: State-wise Sample Summary for Extent of Digitisation of Textual Records N-LRSI 2020-21 and N-LRSI 2019-20

S.No.	State/UT	Sample Details for N-LRSI 2020-21				Total Sample N-LRSI 2019-20
		Available Cases	New Cases	Not Available Cases	Total Sample N-LRSI 2020-21	
1	Andaman & Nicobar Islands	24	-	7	31	72
2	Andhra Pradesh	130	-	31	161	777
3	Assam	267	47	108	422	1,154
4	Bihar	377	-	312	689	2,280
5	Chhattisgarh	354	12	62	428	1,435
6	Dadra & Nagar Haveli and Daman & Diu	30	-	-	30	54
7	Delhi (NCT)	36	-	5	41	134
8	Goa	30	-	3	33	120
9	Gujarat	473	-	64	537	1,893
10	Haryana	174	0	260	434	1,104
11	Himachal Pradesh	173	48	119	340	696
12	Jharkhand	195	0	426	621	1,440
13	Karnataka	231	11	484	726	1,608
14	Lakshadweep	8	-	3	11	19
15	Madhya Pradesh	471	-	198	669	2,890
16	Maharashtra	338	-	156	494	2,039
17	Manipur	39	-	27	66	183
18	Odisha	435	-	3	438	1,752
19	Puducherry	21	-	6	27	73
20	Punjab	228	-	89	317	927
21	Rajasthan	441	-	74	515	1,961
22	Tamil Nadu	303	-	130	433	1,797
23	Telangana	296	-	315	611	1,936
24	Tripura	102	-	39	141	430
25	Uttar Pradesh	724	-	201	925	3,750
26	Uttarakhand	192	-	28	220	768
27	West Bengal	202	-	121	323	1,284
All States/UTs		6,294	118	3,271	9,683	32,576

Source: N-LRSI 2020-21 and 2019-20, NCAER

Annexure Table A2.2: State-wise Sample Summary for Extent of Digitisation of Spatial Records N-LRSI 2020-21 and 2019-20

S.No.	State/UT	Sample Details for N-LRSI 2020-21				Total Sample N-LRSI 2019-20
		Available Cases	New Cases	Not Available Cases	Total Sample N-LRSI 2020-21	
1	Andhra Pradesh	15	183	-	198	36
2	Bihar	-	2,280	-	2,280	-
3	Chhattisgarh	220	24	163	407	1,338
4	Himachal Pradesh	103	-	433	536	636
5	Jharkhand	210	-	437	647	1,344
6	Karnataka	-	1,608	-	1,608	-
7	Kerala	72	-	32	104	105
8	Lakshadweep	6	-	4	10	19
9	Madhya Pradesh	403	-	576	979	2,602
10	Maharashtra	100	-	1,583	1,683	711
11	Odisha	435	-	2	437	1,752
12	Rajasthan	29	480	121	630	281
13	Tamil Nadu	271	-	148	419	1,545
14	Telangana	296	-	319	615	1,884
15	Tripura	-	-	141	141	-
16	Uttar Pradesh	115	234	117	466	702
17	West Bengal	198	-	194	392	1,272
All States/UTs*		2,473	4,809	4,270	11,552	14,227

Source: N-LRSI 2020-21 and 2019-20, NCAER

Annexure Table A2.3: State-wise Sample Summary for Circle Rates (Registration Process) N-LRSI 2020-21 and N-LRSI 2019-20

S.No.	State/UT	Sample Details for N-LRSI 2020-21				Total Sample N-LRSI 2019-20
		Available Cases	New Cases	Not Available Cases	Total Sample N-LRSI 2020-21	
1	Andaman & Nicobar Islands	-	72	-	72	-
2	Andhra Pradesh	130	-	82	212	777
3	Bihar	367	-	278	645	2,280
4	Chandigarh	-	6	-	6	-
5	Chhattisgarh	144	-	601	745	1,435
6	Dadra & Nagar Haveli and Daman & Diu	-	54	-	54	-
7	Goa	30	-	8	38	120
8	Gujarat	226	-	568	794	1,893
9	Haryana	182	-	69	251	1,104
10	Himachal Pradesh	168	-	166	334	696
11	Jammu & Kashmir	145	-	108	253	253
12	Jharkhand	188	-	474	662	1,440
13	Karnataka	256	12	329	597	1,512
14	Kerala	96	-	50	146	422
15	Madhya Pradesh	482	-	304	786	2,890
16	Maharashtra	342	-	146	488	2,039
17	Odisha	383	-	940	1,323	1,752
18	Puducherry	21	-	14	35	73
19	Punjab	233	-	267	500	927
20	Rajasthan	324	-	140	464	1,961
21	Sikkim	39	-	3	42	149
22	Tamil Nadu	493	-	691	1,184	1,797
23	Telangana	296	-	316	612	1,936
24	Uttar Pradesh	525	-	730	1,255	3,750
25	Uttarakhand	129	-	79	208	768
26	West Bengal	193	-	359	552	1,284
All States/UTs*		5,392	144	6,722	12,258	31,258

Source: N-LRSI 2020-21 and 2019-20, NCAER

Annexure Table A2.4: State-wise Sample Summary for the Quality of Land Records (No. of Owners) N-LRSI 2020-21 and N-LRSI 2019-20

S.No.	State/UT	Total Sample for N-LRSI 2020-21				Total sample plots N-LRSI 2020-21	Total sample plots N-LRSI 2019-20
		60% Same <i>tehsils</i> with same headquarter villages	30% Same <i>tehsils</i> with new adjacent villages	New <i>tehsils</i> with new headquarter villages	Total sample <i>tehsils</i> /villages		
1	Andaman & Nicobar Islands	4	2	-	6	30	35
2	Andhra Pradesh	39	20	59	118	590	325
3	Assam	58	29	3	90	450	485
4	Bihar	114	57	29	200	1,000	950
5	Chhattisgarh	72	36	2	110	550	600
6	Dadra & Nagar Haveli and Daman & Diu	6	4	2	12	50	30
7	Delhi (NCT)	13	6	2	21	105	105
8	Goa	6	3	2	11	55	50
9	Gujarat	95	47	10	152	755	790
10	Haryana	55	28	8	91	425	460
11	Himachal Pradesh	35	17	2	54	300	290
12	Jharkhand	72	36	14	122	610	600
13	Karnataka	83	42	4	129	640	695
14	Lakshadweep	3	2	2	7	35	25
15	Madhya Pradesh	145	72	2	219	85	1,205
16	Maharashtra	103	52	10	165	870	860
17	Manipur	10	5	19	34	1,135	80
18	Odisha	88	44	17	149	745	730
19	Puducherry	4	2	-	6	30	35
20	Punjab	47	23	2	72	360	390
21	Rajasthan	98	49	14	161	805	820
22	Tamil Nadu	91	46	15	152	755	760
23	Telangana	99	50	29	178	890	825
24	Tripura	22	11	2	35	175	185
25	Uttar Pradesh	188	94	3	285	1,425	1,565
26	Uttarakhand	38	19	6	63	315	320
27	West Bengal	64	32	24	120	600	535
All States/UTs		1,652	828	281	2,761	13,785	13,750

Source: N-LRSI 2020-21 and 2019-20, NCAER

Note: In N-LRSI 2021, out of 13,785 sample plots, test checks were conducted for 12,315 plots, whereas in N-LRSI 2020, out of 13,750 sample plots, 12,405 sample plots were tested.

Annexure Table A2.5: State-wise Sample Summary for the Land Use N-LRSI 2020-21 and N-LRSI 2019-20

No. of CMs Checked

States	2020-21	2019-20
Andhra Pradesh	365	
Bihar	337	
Chhattisgarh	403	424
Goa	50	
Himachal Pradesh	126	30
Jharkhand	355	300
Karnataka	575	
Madhya Pradesh	905	631
Maharashtra	102	101
Orissa	715	695
Rajasthan	79	75
Telangana	608	571
Tripura	90	
Uttar Pradesh	130	121
West Bengal	484	334
Total	5,324	3,282

Source: N-LRSI 2021 and 2020, NCAER

Annexure Table A2.6: State-wise Sample Summary for the Land Extent N-LRSI 2020-21 and N-LRSI 2019-20

Sample

States	2020-21	2019-20
Andhra Pradesh	458	9
Bihar	170	
Chhattisgarh	401	427
Himachal Pradesh	118	103
Jharkhand	355	300
Lakshwadeep	32	23
Madhya Pradesh	815	631
Maharashtra	101	
Orissa	715	695
Rajasthan	79	75
Tamil Nadu	361	426
Total	3,605	2,689

Source: N-LRSI 2021 and 2020, NCAER

Annexure Table A2.7: Challenges faced during Sample Selection and Test Checks in N-LRSI 2020-21



Updations on DOLR

The major challenge was to locate state-wise updation that have taken place on DOLR portal with respect to digitization status of States/UTs. Due to continuously ongoing updations, a cut-off date of mid-Sept 2020 was set for extracting samples.



Discrepancy between updation of data in the State/UT and DoLR websites

In the case of a few States/UTs, inconsistency was also observed between the data available on the DoLR and the State/UT portals. For example, according to the DOLR portal, CM website is not available for Delhi but on state website, it is available. In case of Assam, the DoLR reports digitization of CMs and that a portal also exists for CMs, but this website never opens.



Inconsistencies in data and organisation of data between the DoLR and the State/UT websites

There were cases of inconsistency between the aggregate data at the level of the districts/tehsils and the actual village-level information, as reported on the DoLR website and state/UT website. For example, in case of Telangana circle rates, there were a lot of mismatches in village/tehsil names between the two websites.



Mismatch in the spellings of sampling units

There were certain cases where the tehsil/ village names as given on the DOLR portal were not matching with those given in respective States/UT website. This required an extra effort to cross-check tehsil/ village names using search-engines and with the help of KCs. For instance, in case of Telangana, testing for circle rates faced these problems. On state website, the circle rates for Telangana are given according to the SRO names that makes it difficult to locate in village level file. Moreover, villages are found only according to zones and not by districts. Mismatches in names also was noted.

Annexure Table A2.7: Challenges faced during Sample Selection and Test Checks in N-LRSI 2020-21



Difficulties in tracking transactions over time: Some examples of these difficulties are as follows:

- Server speed: This is especially true in the case of Assam, Jharkhand and Haryana RORs, where server was very slow. There are problems in HP CMs server as well.
- Portals were not available in some States/UTs for dipstick test-checks. For example, the CMs for Haryana and Puducherry have been digitised but the portals were not available for dipstick test checks. In addition to this, portals for test checks of following states are also not available: Delhi circle rates, Punjab cadastral maps and circle rates and cadastral maps for Manipur.
- Changes in portals in some States/UTs for test-checks. Delhi's portal changed completely (along with this, now it is not possible to access digitized PDFs of ROR), Madhya Pradesh ROR and CM websites have changed completely, and minor changes in the appearance of Punjab ROR website was recorded. In case of Tripura the dropdown for RORs is now available in English language for villages, districts, khatiyan number and plot number.
- The language used in the States/UTs for various registers and matters that are part of land record management varies considerably across the States/UTs. In few states, records and websites are only available in regional languages like Punjabi, Odiya, Ahomiya, etc. Sometimes, the same term or description have a different meaning in different States/UTs. These factors further confounded the efficiency of test-checks.



Server problems:

Other factors that affected the work timings for the entire exercise were related to access to the servers including slow speed for accessing or downloading files, unresponsive websites, re-starting due to unresponsiveness of the query, multiple attempts etc. All this resulted in a decision to dedicate a separate chapter of the report to discuss access issues.



Drop-down lists for khasra/plot numbers:

While identifying the khasra /plot number ranges for each headquarter village, the problem of having to repeatedly enter Captcha codes was reported in some States/UTs that resulted in substantial delays.

Annexure Table A3.1. Area with Land Records and Variations in Proportionate Area with Digitised Textual Records computed on the basis of reported achievement on DOLR website during N-LRSI 2020-21 and N-LSRI 2019-20

S. No.	States/ UTs	Area with Land Records (same as N-LRSI 2019-20)		ROR digitisation (DOLR adjusted for area with land records) 2020-21		ROR digitisation (DOLR adjusted for area with land records) 2019-20		ROR digitisation (DOLR adjusted for area with land records)	
		Prop %	Scores out of 15	%		%			
1	A&N Islands**	96.9	<div><div></div></div> 14.5	96.5	<div><div></div></div>	95.1	<div><div></div></div>		1.4
2	Andhra Pradesh	100.0	<div><div></div></div> 15.0	97.2	<div><div></div></div>	97.2	<div><div></div></div>		0.0
3	Assam	100.0	<div><div></div></div> 15.0	67.7	<div><div></div></div>	58.3	<div><div></div></div>		9.4
4	Bihar	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div>	52.4	<div><div></div></div>		47.6
5	Chhattisgarh	100.0	<div><div></div></div> 15.0	84.7	<div><div></div></div>	100.0	<div><div></div></div>		-15.3
6	D&N and D&D*	100.0	<div><div></div></div> 15.0	94.0	<div><div></div></div>	94.0	<div><div></div></div>		0.0
7	Delhi (NCT)	25.3	<div><div></div></div> 3.8	24.0	<div><div></div></div>	24.0	<div><div></div></div>		0.0
8	Goa	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div>	97.0	<div><div></div></div>		3.0
9	Gujarat	100.0	<div><div></div></div> 15.0	94.7	<div><div></div></div>	96.4	<div><div></div></div>		-1.7
10	Haryana	100.0	<div><div></div></div> 15.0	92.8	<div><div></div></div>	92.9	<div><div></div></div>		-0.1
11	Himachal Pradesh	100.0	<div><div></div></div> 15.0	98.9	<div><div></div></div>	100.0	<div><div></div></div>		-1.1
12	Jharkhand	100.0	<div><div></div></div> 15.0	99.5	<div><div></div></div>	99.1	<div><div></div></div>		0.4
13	Karnataka	100.0	<div><div></div></div> 15.0	99.6	<div><div></div></div>	99.6	<div><div></div></div>		0.0
14	Kerala	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div>	100.0	<div><div></div></div>		0.0
15	Lakshadweep	100.0	<div><div></div></div> 15.0	99.4	<div><div></div></div>	100.0	<div><div></div></div>		-0.6
16	Madhya Pradesh	100.0	<div><div></div></div> 15.0	98.8	<div><div></div></div>	100.0	<div><div></div></div>		-1.2
17	Maharashtra	89.0	<div><div></div></div> 13.3	13.9	<div><div></div></div>	13.9	<div><div></div></div>		0.0
18	Manipur	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div>	100.0	<div><div></div></div>		0.0
19	Odisha	100.0	<div><div></div></div> 15.0	91.5	<div><div></div></div>	100.0	<div><div></div></div>		-8.5
20	Puducherry	100.0	<div><div></div></div> 15.0	93.0	<div><div></div></div>	93.6	<div><div></div></div>		-0.6
21	Punjab	98.1	<div><div></div></div> 14.7	92.0	<div><div></div></div>	94.9	<div><div></div></div>		-3.0
22	Rajasthan	100.0	<div><div></div></div> 15.0	99.7	<div><div></div></div>	100.0	<div><div></div></div>		-0.3
23	Tamil Nadu	100.0	<div><div></div></div> 15.0	99.4	<div><div></div></div>	99.4	<div><div></div></div>		0.0
24	Telangana	100.0	<div><div></div></div> 15.0	99.9	<div><div></div></div>	99.9	<div><div></div></div>		0.0
25	Tripura	100.0	<div><div></div></div> 15.0	96.3	<div><div></div></div>	96.2	<div><div></div></div>		0.0
26	Uttar Pradesh	100.0	<div><div></div></div> 15.0	94.6	<div><div></div></div>	94.4	<div><div></div></div>		0.3
27	Uttarakhand	100.0	<div><div></div></div> 15.0	98.7	<div><div></div></div>	98.1	<div><div></div></div>		0.6
28	West Bengal								

Source: N-LRSI 2020-21 and 2019-20, NCAER.

* Dadra & Nagar Haveli and Daman & Diu. ** Andaman & Nicobar Islands.

Annexure Table A3.2: Extent of Digitised Textual Records after Verification by Test Checks: Comparison of N-LRSI 2020-21 and N-LRSI 2019-20

Extent of Digitisation of Textual Records (%)

S.No.	State/UT	Test Checks 2020-21	Test Checks 2019-20	Difference (2020-21- 2019-20)	
1	Andaman & Nicobar Islands	87.1	85.8	1.2	●
2	Andhra Pradesh	94.2	93.3	0.9	●
3	Assam	43.7	52.8	-9.1	●
4	Bihar	97.5	45.3	52.1	●
5	Chhattisgarh	82.5	95.7	-13.2	●
6	Dadra & Nagar Haveli and Daman & Diu	94.0	94.0	0.0	
7	Delhi (NCT)	23.1	23.1	0.0	
8	Goa	97.5	94.5	3.0	●
9	Gujarat	91.6	93.1	-1.5	●
10	Haryana	76.9	71.1	5.8	●
11	Himachal Pradesh	82.8	83.0	-0.2	●
12	Jharkhand	72.4	69.8	2.6	●
13	Karnataka	76.8	73.8	3.0	●
14	Lakshadweep	89.5	84.2	5.3	●
15	Madhya Pradesh	93.3	93.2	0.1	●
16	Maharashtra	95.4	93.3	2.2	●
17	Manipur	11.9	11.8	0.1	●
18	Odisha	99.9	99.8	0.1	●
19	Puducherry	87.8	91.8	-4.0	●
20	Punjab	86.9	84.6	2.2	●
21	Rajasthan	91.2	91.3	-0.2	●
22	Tamil Nadu	99.0	92.8	6.2	●
23	Telangana	83.6	83.3	0.3	●
24	Tripura	99.7	90.8	8.8	●
25	Uttar Pradesh	91.9	91.1	0.8	●
26	Uttarakhand	92.4	90.9	1.5	●
27	West Bengal	98.0	88.9	9.2	●

Source: N-LRSI 2020-21 and 2019-20, NCAER

Annexure Table A3.3: Reasons for Failure in the RoR Test-Checks

Percentage of sampled plots not available

States/UTs	Tehsil not available in dropdown	Village not available in dropdown	Plot no./ khasra no. not available in dropdown	Accessibility Issues	Others
Andaman & Nicobar Islands	100 <div></div>	0	0	0	0
Andhra Pradesh	16.7 <div></div>	70.8 <div></div>	12.5 <div></div>	0	0
Assam	26.7 <div></div>	49.2 <div></div>	0	24.1 <div></div>	0
Bihar	0	100 <div></div>	0	0	0
Chhattisgarh	0	100 <div></div>	0	0	0
Delhi (NCT)	0	75 <div></div>	25 <div></div>	0	0
Goa	0	100 <div></div>	0	0	0
Gujarat	0	95.2 <div></div>	4.8 <div></div>	0	0
Haryana	0	68.8 <div></div>	2.1 <div></div>	28.6 <div></div>	0.5 <div></div>
Himachal Pradesh	0	100 <div></div>	0	0	0
Jharkhand	0	8.9 <div></div>	0	91.1 <div></div>	0
Karnataka	0	28.5 <div></div>	70.7 <div></div>	0.8 <div></div>	0
Lakshadweep	0	100 <div></div>	0	0	0
Madhya Pradesh	7.3 <div></div>	89.3 <div></div>	2.2 <div></div>	1.1 <div></div>	0
Maharashtra	0	47.1 <div></div>	52.9 <div></div>	0	0
Manipur	0	48.4 <div></div>	0	0	51.6 <div></div>
Odisha	0	100 <div></div>	0	0	0
Puducherry	0	100 <div></div>	0	0	0
Punjab	0	91.8 <div></div>	0	0	8.2 <div></div>
Rajasthan	0	100 <div></div>	0	0	0
Tamil Nadu	0	15.4 <div></div>	84.6 <div></div>	0	0
Telangana	33.3 <div></div>	61.5 <div></div>	5.2 <div></div>	0	0
Tripura	0	0	0	100 <div></div>	0
Uttar Pradesh	0	42.4 <div></div>	2.3 <div></div>	0	55.2 <div></div>
Uttarakhand	0	83.3 <div></div>	16.7 <div></div>	0	0
West Bengal	0	0	0	0	100 <div></div>

Source: N-LRSI 2020-21, NCAER.

Notes: Accessibility issues includes factors like non-appearance of RoR copy or Server Issue

Annexure Table A3.4: Scores for Extent of Proportionate Area with digitised RoRs and Legally Usable Copies (out of 20) for N-LRSI 2020-21 and 2019-20

Total score (out of 20) 0 to 5 5 to 10 10 to 15 15 to 20

States /UTs	ROR Digitisation (out of 15)		Legal copies (out of 5)		Total Score (out of 20)	
	N-LRSI 2020-21	N-LRSI 2019-20	N-LRSI 2020-21	N-LRSI 2019-20	N-LRSI 2020-21	N-LRSI 2019-20
Andaman & Nicobar Islands	13.1	12.9	0.0	0.0	13.1	12.9
Andhra Pradesh	14.1	14.0	2.5	2.5	16.6	16.5
Assam	6.6	7.9	0.0	0.0	6.6	7.9
Bihar	14.6	6.8	0.0	0.0	14.6	6.8
Chhattisgarh	12.4	14.4	5.0	5.0	17.4	19.4
Dadra & Nagar Haveli and Daman & Diu	14.1	14.1	3.8	3.8	17.9	17.9
Delhi (NCT)	3.5	3.5	5.0	5.0	8.5	8.5
Goa	14.6	14.2	5.0	5.0	19.6	19.2
Gujarat	13.7	14.0	2.5	2.5	16.2	16.5
Haryana	11.5	10.7	0.0	0.0	11.5	10.7
Himachal Pradesh	12.4	12.5	2.5	2.5	14.9	15.0
Jharkhand	10.9	10.5	0.0	0.0	10.9	10.5
Karnataka	11.5	11.1	5.0	5.0	16.5	16.1
Lakshadweep	13.4	12.6	0.0	0.0	13.4	12.6
Madhya Pradesh	14.0	14.0	5.0	5.0	19.0	19.0
Maharashtra	14.3	13.9	5.0	5.0	19.3	18.9
Manipur	1.8	1.8	0.0	0.0	1.8	1.8
Odisha	15.0	15.0	2.5	0.0	17.5	15.0
Puducherry	13.2	13.8	2.5	2.5	15.7	16.3
Punjab	13.0	12.7	2.5	2.5	15.5	15.2
Rajasthan	13.7	13.7	2.5	2.5	16.2	16.2
Tamil Nadu	14.9	13.9	5.0	5.0	19.9	18.9
Telangana	12.5	12.5	2.5	2.5	15.0	15.0
Tripura	14.9	13.6	2.5	2.5	17.4	16.1
Uttar Pradesh	13.8	13.7	5.0	5.0	18.8	18.7
Uttarakhand	13.9	13.6	0.0	0.0	13.9	13.6
West Bengal	14.7	13.3	5.0	0.0	19.7	13.3











Source: N-LRSI 2020-21 and 2019-20, NCAER.

Annexure Table A4.1. Area with Land Records and Variations in Proportionate Area with Digitised Textual Records computed on the basis of reported achievement on DOLR website during N-LRSI 2020-21 and N-LSRI 2019-20

States /UTs		Area with Land Records (same as N-LRSI 2019-20)		CM digitisation (DOLR adjusted for area with land records) 2021	CM digitisation (DOLR adjusted for area with land records) 2020	Difference (2021 - 2020)	
		Prop %	Scores out of 15	%	%		
1	Andhra Pradesh	100.0	<div><div></div></div> 15.0	87.2	<div><div></div></div> 1.3	85.9	↑
2	Bihar	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div> 71.9	28.1	↑
3	Chhattisgarh	100.0	<div><div></div></div> 15.0	90.8	<div><div></div></div> 100.0	-9.2	↓
4	Himachal Pradesh	100.0	<div><div></div></div> 15.0	89.8	<div><div></div></div> 88.2	1.6	↑
5	Jharkhand	100.0	<div><div></div></div> 15.0	98.7	<div><div></div></div> 76.8	21.9	↑
6	Karnataka	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div> 0.0	100.0	↑
7	Kerala	100.0	<div><div></div></div> 15.0	94.5	<div><div></div></div> 7.0	87.5	↑
8	Lakshadweep	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div> 100.0	0.0	↔
9	Madhya Pradesh	100.0	<div><div></div></div> 15.0	97.8	<div><div></div></div> 100.0	-2.2	↓
10	Maharashtra	100.0	<div><div></div></div> 15.0	68.2	<div><div></div></div> 76.9	-8.7	↓
11	Odisha	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div> 100.0	0.0	↔
12	Rajasthan	98.1	<div><div></div></div> 14.7	44.0	<div><div></div></div> 9.1	34.9	↑
13	Tamil Nadu	100.0	<div><div></div></div> 15.0	98.5	<div><div></div></div> 50.4	48.2	↑
14	Telangana	100.0	<div><div></div></div> 15.0	86.5	<div><div></div></div> 80.6	5.8	↑
15	Tripura	100.0	<div><div></div></div> 15.0	100.0	<div><div></div></div> 77.2	22.8	↑
16	Uttar Pradesh	100.0	<div><div></div></div> 15.0	32.7	<div><div></div></div> 11.8	20.9	↑
17	West Bengal	100.0	<div><div></div></div> 15.0	93.7	<div><div></div></div> 92.3	1.4	↑

Source: N-LRSI 2020-21 and 2019-20, NCAER.

Annexure Table A4.2: Extent of Digitised Spatial Records after Verification by Test Checks: Comparison of N-LRSI 2020-21 and 2019-20

Extent of Digitisation of Spatial Records [%]					
S. No.	States/UTs	Test Checks 2020-21	Test Checks 2019-20	Difference (Latest- Previous) (percentage points)	
1	Andhra Pradesh	86.8	1.3	85.5	
2	Bihar	90.1	0.0	90.1	
3	Chhattisgarh	88.7	88.0	0.7	
4	Himachal Pradesh	53.3	36.3	16.9	
5	Jharkhand	81.4	57.3	24.1	
6	Karnataka	86.5	0.0	86.5	
7	Kerala	72.6	4.8	67.9	
8	Lakshadweep	78.9	78.9	0.0	
9	Madhya Pradesh	82.7	77.9	4.8	
10	Maharashtra	53.5	49.3	4.2	
11	Odisha	99.9	99.9	0.0	
12	Rajasthan	32.7	5.2	27.5	
13	Tamil Nadu	95.2	45.5	49.7	
14	Telangana	74.0	66.9	7.1	
15	Tripura	96.5	0.0	96.5	
16	Uttar Pradesh	29.4	9.8	19.6	
17	West Bengal	92.2	79.0	13.2	

Source: N-LRSI 2020-21 and 2019-20, NCAER.

Annexure Table A4.3: Reasons for Failure in the CM Test-Checks

Percentage of sampled plots not available

S. No.	States/UTs	District not available in dropdown	Tehsil not available in dropdown	Village not available in dropdown	Plot no./ khasra no. not available in dropdown	Accessibility Issues
1	Andhra Pradesh	0	0	100	0	0
2	Bihar	0	81.4	18.6	0	0
3	Chhattisgarh	0	0	100	0	0
4	Himachal Pradesh	21.2	42.4	36.4	0	0
5	Jharkhand	0	18.7	48.4	32.9	0
6	Karnataka	0	0	100	0	0
7	Kerala	0	0	58.3	41.7	0
8	Lakshadweep	0	0	25	0	75
9	Madhya Pradesh	0	0	94.5	5.5	0
10	Maharashtra	0	37.4	60.3	2.3	0
11	Odisha	0	0	100	0	0
12	Rajasthan	0	68.2	31.8	0	0
13	Tamil Nadu	0	0	7.7	17.3	75
14	Telangana	0	27.2	65.4	0	7.4
15	Tripura	0	0	0	20	80
16	Uttar Pradesh	0	9.5	78.9	11.6	0
17	West Bengal	0	0	0	0	100

Source: N-LRSI 2020-21 and 2019-20, NCAER.

Notes: Accessibility issues includes factors like non-appearance of CM copy or Server Issue

Annexure Table A4.4: Scores for Extent of Proportionate Area with digitised CMs and Legally Usable Copies (out of 20) for N-LRSI 2021 and 2020












































































Total score (out of 20) 0 to 5 5 to 10 10 to 15 15 to 20

States /UTs	CM Digitisation (out of 15)		Legal copies (out of 5)		Total Score (out of 20)	
	N-LRSI 2020-21	N-LRSI 2019-20	N-LRSI 2020-21	N-LRSI 2019-20	N-LRSI 2020-21	N-LRSI 2019-20
Andhra Pradesh	13	0.2	2.5	2.5	15.5	2.7
Bihar	13.5	0	0	2.5	13.5	2.5
Chhattisgarh	13.3	13.2	2.5	2.5	15.8	15.7
Himachal Pradesh	8	5.4	2.5	0	10.5	5.4
Jharkhand	12.2	8.6	0	0	12.2	8.6
Karnataka	13	0	0	0	13.0	0.0
Kerala	10.9	0.7	0	0	10.9	0.7
Lakshadweep	11.8	11.8	5	5	16.8	16.8
Madhya Pradesh	12.4	11.7	5	5	17.4	16.7
Maharashtra	8	7.5	0	0	8.0	7.5
Odisha	15	15	0	0	15.0	15.0
Rajasthan	4.9	0.8	2.5	2.5	7.4	3.3
Tamil Nadu	14.3	6.8	5	5	19.3	11.8
Telangana	11.1	10	0	0	11.1	10.0
Tripura	14.5	0	0	0	14.5	0.0
Uttar Pradesh	4.4	1.5	0	0	4.4	1.5
West Bengal	13.8	11.8	5	0	18.8	11.8

Source: N-LRSI 2020-21 and 2019-20, NCAER.

Annexure Table A5.1: Percentage of Villages with Digitised Circle Rates: Variations in N-LRSI 2020-21 and N-LRSI 2019-20

% Villages with Digitised CRs

S. No.	States/UTs	N-LRSI 2020-21	N-LRSI 2019-20	Difference (percentage points)
1	Andhra Pradesh	97.0 	89.4 	7.6 
2	Andaman & Nicobar Islands	91.7 	-	91.7 
3	Bihar	90.9 	87.8 	3.1 
4	Chandigarh	100.0 	-	100.0 
5	Chhattisgarh	72.4 	67.9 	4.5 
6	D&N and D&D*	98.1 	-	98.1 
7	Goa	96.7 	93.3 	3.3 
8	Gujarat	92.1 	67.1 	25.0 
9	Haryana	93.8 	93.8 	0.1 
10	Himachal Pradesh	84.4 	73.9 	10.6 
11	Jammu & Kashmir	75.5 	57.3 	18.2 
12	Jharkhand	83.5 	73.9 	9.6 
13	Karnataka	93.4 	78.0 	15.4 
14	Kerala	99.3 	88.2 	11.1 
15	Madhya Pradesh	96.3 	89.5 	6.8 
16	Maharashtra	96.7 	92.8 	3.8 
17	Odisha	96.0 	80.4 	15.6 
18	Puducherry	93.2 	80.8 	12.3 
19	Punjab	68.1 	71.2 	-3.1 
20	Rajasthan	93.2 	92.9 	0.3 
21	Sikkim	100.0 	98.0 	2.0 
22	Tamil Nadu	100.0 	62.7 	37.3 
23	Telangana	84.0 	83.7 	0.3 
24	Uttarakhand	94.1 	89.7 	4.4 
25	Uttar Pradesh	92.7 	80.5 	12.1 
26	West Bengal	72.0 	72.0 	0.0 

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A5.2: Reasons for Failure in Test-checks for Online Availability of Circle Rates (% Distribution)

S. No.	States/UTs	District Not Available in Dropdown	Tehsil Not Available in Dropdown	Village Not Available in Dropdown	Plot No./ Khasra No. Not Available in Dropdown	Accessibility Issues
1	Andaman & Nicobar Islands	0	0	0	0	100
2	Andhra Pradesh	0	0	100	0	0
3	Bihar	26.1	10.1	58.9	0	4.8
4	Chhattisgarh	13.8	86	0.2	0	0
5	D&N and D&D*	0	0	100	0	0
6	Goa	0	0	100	0	0
7	Gujarat	0	8.2	21.3	70.5	0
8	Haryana	7.4	0	70.6	0	22.1
9	Himachal Pradesh	0	0	100	0	0
10	Jammu & Kashmir	14.5	0	85.5	0	0
11	Jharkhand	0	23.6	76.4	0	0
12	Karnataka	60	0	40	0	0
13	Kerala	0	0	100	0	0
14	Madhya Pradesh	0	0	100	0	0
15	Maharashtra	0	0	80.9	0	19.1
16	Odisha	0	65.5	23.6	10.9	0
17	Puducherry	0	0	100	0	0
18	Punjab	0	15.5	73.5	0	11.1
19	Rajasthan	0	0	100	0	0
20	Telangana	0	26.8	72.9	0.3	0
21	Uttar Pradesh	0	81.5	18.5	0	0
22	Uttarakhand	0	0	100	0	0
23	West Bengal	8.6	0	59.3	0	32

Source: N-LRSI 2020-21, NCAER.

Note: Accessibility issues include non-appearance of the circle rate on the web and server issues.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A5.3: Status of Digitisation of Registration (All Stages)

S. No.	States/UTs	Payment			Circle Rates Availability	Verification	Delivery
		Data Entry	E-Stamps	Online			
1	Andhra Pradesh	✓	✗	✓	✓	✗	✓
2	Andaman & Nicobar Islands	✗	✓	✗	✓	✗	✗
3	Arunachal Pradesh	✗	✗	✗	✗	✗	✗
4	Assam	✗	✓	✗	✗	✗	✗
5	Bihar	✓	✗	✓	✓	✓	✓
6	Chandigarh	✗	✓	✗	✓	✗	✓
7	Chhattisgarh	✗	✓	✗	✓	✗	✗
8	D&N and D&D*	✗	✓	✗	✓	✗	✗
9	Goa	✓	✗	✗	✓	✗	✗
10	Gujarat	✗	✓	✗	✓	✗	✗
11	Haryana	✓	✗	✓	✓	✗	✗
12	Himachal Pradesh	✗	✗	✓	✓	✗	✗
13	Jammu & Kashmir	✗	✗	✗	✓	✗	✗
14	Jharkhand	✓	✓	✗	✓	✗	✗
15	Karnataka	✓	✓	✗	✓	✓	✗
16	Kerala	✗	✓	✗	✓	✗	✗
17	Ladakh	✗	✗	✗	✗	✗	✗
18	Lakshadweep	✗	✗	✗	✗	✗	✗
19	Madhya Pradesh	✓	✗	✓	✓	✓	✓
20	Maharashtra	✓	✗	✓	✓	✓	✓
21	Manipur	✓	✓	✗	✗	✓	✓
22	Meghalaya	✗	✗	✗	✗	✗	✗
23	Mizoram	✗	✗	✗	✗	✗	✗
24	Nagaland	✗	✗	✗	✗	✗	✗
25	NCT of Delhi	✗	✗	✓	✗	✗	✗
26	Odisha	✓	✗	✓	✓	✓	✓
27	Puducherry	✗	✓	✗	✓	✗	✗
28	Punjab	✓	✗	✓	✓	✗	✓
29	Rajasthan	✓	✗	✓	✓	✗	✗
30	Sikkim	✗	✗	✗	✓	✗	✗
31	Tamil Nadu	✓	✗	✓	✓	✗	✓
32	Telangana	✓	✓	✗	✓	✗	✗
33	Tripura	✗	✗	✓	✗	✗	✗
34	Uttarakhand	✓	✓	✗	✓	✓	✓
35	Uttar Pradesh	✓	✓	✗	✓	✗	✓
36	West Bengal	✓	✗	✓	✓	✓	✓
Total N-LRSI 2020-21		17	14	13	26	8	12
Total N-LRSI 2019-20		15	18	9	23	8	11

Source: N-LRSI 2020-21 and 2019-20, NCAER.

Note: In the column of payment mode for registration fees, the option on the basis of which points have been allocated has been ticked in the table. For online payment option, full marks have been given, whereas for e-stamps, 2 out of max 4 scores have been given.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A5.4: Scores for Extent of Digitisation of Registration Process, N-LRSI 2020-21 and N-LRSI 2019-20

Scores for Extent of Digitisation of Registration N-LRSI 2020-21

S. No.	States/UTs	Entry of Data (out of 4)	Stamp Duty Payment (out of 4)		Delivery of Registered Document (out of 4)	Score 2020-21 (out of 20)	Score 2019-20 (out of 20)	Difference (2020-21 minus 2019-20) (points)				
		Digitised Circle Rates (out of 4)	Verification of Document by SRO (out of 4)									
1	Andhra Pradesh	4	3.9	4	0	2	13.9	<div><div></div></div>	13.6	<div><div></div></div>	0.3	<div><div></div></div>
2	Andaman & Nicobar Islands	0	3.7	2	0	0	5.7	<div><div></div></div>	2.0	<div><div></div></div>	3.7	<div><div></div></div>
3	Assam	0	0.0	2	0	0	2.0	<div><div></div></div>	2.0	<div><div></div></div>	0.0	<div><div></div></div>
4	Bihar	4	3.6	4	2	2	15.6	<div><div></div></div>	7.5	<div><div></div></div>	8.1	<div><div></div></div>
5	Chandigarh	0	4.0	2	0	2	8.0	<div><div></div></div>	4.0	<div><div></div></div>	4.0	<div><div></div></div>
6	Chhattisgarh	0	2.9	2	0	0	4.9	<div><div></div></div>	4.7	<div><div></div></div>	0.2	<div><div></div></div>
7	D&N and D&D*	0	3.9	2	0	0	5.9	<div><div></div></div>	2.0	<div><div></div></div>	3.9	<div><div></div></div>
8	Goa	4	3.9	0	0	0	7.9	<div><div></div></div>	7.7	<div><div></div></div>	0.2	<div><div></div></div>
9	Gujarat	0	3.7	2	0	0	5.7	<div><div></div></div>	4.7	<div><div></div></div>	1.0	<div><div></div></div>
10	Haryana	4	3.8	4	0	0	11.8	<div><div></div></div>	11.8	<div><div></div></div>	0.0	<div><div></div></div>
11	Himachal Pradesh	0	3.4	4	0	0	7.4	<div><div></div></div>	5.0	<div><div></div></div>	2.4	<div><div></div></div>
12	Jammu & Kashmir	0	3.0	0	0	0	3.0	<div><div></div></div>	2.3	<div><div></div></div>	0.7	<div><div></div></div>
13	Jharkhand	4	3.3	2	0	0	9.3	<div><div></div></div>	9.0	<div><div></div></div>	0.3	<div><div></div></div>
14	Karnataka	4	3.7	2	2	0	11.7	<div><div></div></div>	11.1	<div><div></div></div>	0.6	<div><div></div></div>
15	Kerala	0	4.0	2	0	0	6.0	<div><div></div></div>	5.5	<div><div></div></div>	0.5	<div><div></div></div>
16	Madhya Pradesh	4	3.9	4	2	2	15.9	<div><div></div></div>	15.6	<div><div></div></div>	0.3	<div><div></div></div>
17	Maharashtra	4	3.9	4	2	2	15.9	<div><div></div></div>	15.7	<div><div></div></div>	0.2	<div><div></div></div>
18	Manipur	4	0.0	2	2	2	10.0	<div><div></div></div>	10.0	<div><div></div></div>	0.0	<div><div></div></div>
19	NCT of Delhi	0	0.0	4	0	0	4.0	<div><div></div></div>	2.0	<div><div></div></div>	2.0	<div><div></div></div>
20	Odisha	4	3.8	4	2	2	15.8	<div><div></div></div>	11.2	<div><div></div></div>	4.6	<div><div></div></div>
21	Puducherry	0	3.7	2	0	0	5.7	<div><div></div></div>	5.2	<div><div></div></div>	0.5	<div><div></div></div>
22	Punjab	4	2.7	4	0	2	12.7	<div><div></div></div>	10.8	<div><div></div></div>	1.9	<div><div></div></div>
23	Rajasthan	4	3.7	4	0	0	11.7	<div><div></div></div>	11.7	<div><div></div></div>	0.0	<div><div></div></div>
24	Sikkim	0	4.0	0	0	0	4.0	<div><div></div></div>	3.9	<div><div></div></div>	0.1	<div><div></div></div>
25	Tamil Nadu	4	4.0	4	0	2	14.0	<div><div></div></div>	12.5	<div><div></div></div>	1.5	<div><div></div></div>
26	Telangana	4	3.4	2	0	0	9.4	<div><div></div></div>	9.3	<div><div></div></div>	0.1	<div><div></div></div>
27	Tripura	0	0.0	4	0	0	4.0	<div><div></div></div>	4.0	<div><div></div></div>	0.0	<div><div></div></div>
28	Uttarakhand	4	3.8	2	2	2	13.8	<div><div></div></div>	13.6	<div><div></div></div>	0.2	<div><div></div></div>
29	Uttar Pradesh	4	3.7	2	0	2	11.7	<div><div></div></div>	11.2	<div><div></div></div>	0.5	<div><div></div></div>
30	West Bengal	4	2.9	4	4	4	18.9	<div><div></div></div>	14.9	<div><div></div></div>	4.0	<div><div></div></div>

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A6.1: Scores for Updating Ownership for N-LRSI 2020-21 and N-LRSI 2019-20

S. No.	States/UTs	SROs can check RoR online while carrying out registration	Information by SMS/e-mail to the revenue office responsible for entering mutation	On registration, automatic note is sent to RoR	Mutation attested same day
1	Andaman & Nicobar Islands	✗	✗	✗	✗
2	Andhra Pradesh	✓	✗	✗	✗
3	Assam	✓	✗	✗	✗
4	Bihar	✓	✓	✓	✗
5	Chhattisgarh	✓	✓	✗	✗
6	D&N and D&D*	✓	✓	✗	✗
7	Goa	✓	✓	✗	✗
8	Gujarat	✓	✓	✗	✗
9	Haryana	✓	✓	✓	✗
10	Himachal Pradesh	✓	✓	✓	✗
11	Jharkhand	✓	✓	✓	✗
12	Karnataka	✓	✓	✗	✗
13	Kerala	✓	✓	✗	✗
14	Lakshadweep	✗	✗	✗	✗
15	Madhya Pradesh	✓	✓	✗	✗
16	Maharashtra	✓	✓	✓	✗
17	Manipur	✗	✗	✗	✗
18	NCT of Delhi	✗	✗	✗	✗
19	Odisha	✓	✓	✓	✗
20	Puducherry	✗	✗	✗	✗
21	Punjab	✓	✓	✗	✗
22	Rajasthan	✓	✓	✓	✗
23	Sikkim	✓	✓	✓	✗
24	Tamil Nadu	✓	✓	✓	✗
25	Telangana	✓	✓	✗	✗
26	Tripura	✓	✗	✗	✗
27	Uttarakhand	✓	✓	✗	✗
28	Uttar Pradesh	✓	✓	✓	✗
29	West Bengal	✓	✓	✗	✗

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER, and States/UTs sources.

Note: Dadra & Nagar Haveli reflect no linkage between the revenue department and registration, Daman & Diu has a provision for sending information by SMS/e-mail to the revenue office responsible for entering mutation.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A6.2: Scores for Extent of Joint Ownership for N-LRSI 2020-21 and N-LRSI 2019-20

Score (out of 10)

S. No.	States/UTs	N-LRSI 2020-21	N-LRSI 2019-20	Change (points)
1	Andaman & Nicobar Islands	9.36	9.53	↓
2	Andhra Pradesh	9.69	9.64	↑
3	Assam	6.65	6.25	↑
4	Bihar	9.79	9.73	↑
5	Chhattisgarh	9.58	8.98	↑
6	D&N and D&D*	9.32	9.20	↑
7	Delhi (NCT)	8.99	8.60	↑
8	Goa	8.40	8.91	↓
9	Gujarat	7.90	8.38	↓
10	Haryana	6.85	5.12	↑
11	Himachal Pradesh	7.84	6.96	↑
12	Jharkhand	9.40	9.64	↓
13	Karnataka	9.23	9.20	↑
14	Lakshadweep	8.69	8.80	↓
15	Madhya Pradesh	9.31	9.16	↑
16	Maharashtra	8.10	7.99	↑
17	Manipur	9.48	9.69	↓
18	Odisha	9.28	9.20	↑
19	Puducherry	9.87	9.83	↑
20	Punjab	7.61	6.95	↑
21	Rajasthan	8.59	8.08	↑
22	Tamil Nadu	9.29	9.39	↓
23	Telangana	10.00	10.00	↔
24	Tripura	9.47	10.00	↓
26	Uttar Pradesh	8.79	8.25	↑
25	Uttarakhand	5.16	5.35	↓
27	West Bengal	8.35	8.55	↓

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A6.3: Scores for Land Use for N-LRSI 2020-21 and N-LRSI 2019-20

Score (out of 10)

S.No.	States	2020-21	2019-20
1	Andhra Pradesh	6.93	-
2	Bihar	6.91	-
3	Chhattisgarh	9.48	6.46
4	Goa	8.00	
5	Himachal Pradesh	9.29	8.00
6	Jharkhand	8.06	9.20
7	Karnataka	10.00	-
8	Madhya Pradesh	9.13	4.87
9	Maharashtra	8.73	8.71
10	Odisha	9.55	8.73
11	Rajasthan	6.46	7.07
12	Telangana	8.37	7.41
13	Tripura	9.11	-
14	Uttar Pradesh	8.31	7.85
15	West Bengal	9.26	7.72

Source: N-LRSI 2019-20 and N-LRSI 2020-21, NCAER.

Annexure Table A6.4: Scores for Land Extent for N-LRSI 2020-21 and N-LRSI 2019-20

Score (out of 10)

S.No.	States	2020-21	2019-20
1	Andhra Pradesh	3.07	8.22
2	Bihar	0.60	-
3	Chhattisgarh	4.16	5.03
4	Himachal Pradesh	3.46	1.46
5	Jharkhand	3.23	5.59
6	Lakshadweep Islands	6.81	8.35
7	Madhya Pradesh	5.00	5.12
8	Maharashtra	4.10	-
9	Orissa	5.33	5.55
10	Rajasthan	4.25	5.36
11	Tamil Nadu	4.17	6.62

Source: N-LRSI 2019-20 and N-LRSI 2020-21, NCAER.

Annexure Table A6.5: Scores for Quality of Land Records & Services N-LRSI 2020-21 and N-LRSI 2019-20

Quality of Land Records & Services 2020-21

S. No.	States/UTs	Updating Ownership (out of 5)	No of Owners (out of 10)	Land Use (out of 10)	Land Extent (out of 10)	Encumbrances (out of 5)	Total Scores 2020-21 (out of 40)	Total Scores 2019-20 (out of 40)
1	Andhra Pradesh	1.3	9.7	6.9	3.1	2.0	22.9	21.1
2	Andaman & Nicobar Islands	0.0	9.4	0.0	0.0	1.0	10.4	10.5
3	Arunachal Pradesh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Assam	1.3	6.6	0.0	0.0	2.0	9.9	9.5
5	Bihar	3.8	9.8	6.9	0.6	0.0	21.1	12.0
6	Chandigarh	0.0	0.0	0.0	0.0	2.0	2.0	2.0
7	Chhattisgarh	2.5	9.6	9.5	4.2	1.0	26.7	24.3
8	D&N and D&D*	1.3	9.3	0.0	0.0	1.5	12.1	12.0
9	Goa	2.5	8.4	8.0	0.0	3.0	21.9	14.4
10	Gujarat	2.5	7.9	0.0	0.0	3.0	13.4	13.9
11	Haryana	3.8	6.9	0.0	0.0	2.0	12.6	10.9
12	Himachal Pradesh	3.8	7.8	9.3	3.5	2.0	26.3	22.2
13	Jammu & Kashmir	0.0	0.0	0.0	0.0	2.0	2.0	2.0
14	Jharkhand	3.8	9.4	8.1	3.2	3.0	27.4	31.2
15	Karnataka	2.5	9.2	10.0	0.0	2.0	23.7	13.7
16	Kerala	2.5	0.0	0.0	0.0	2.0	4.5	4.5
17	Ladakh	0.0	0.0	0.0	0.0	2.0	2.0	2.0
18	Lakshadweep	0.0	8.7	0.0	6.8	1.0	16.5	18.4
19	Madhya Pradesh	2.5	9.3	9.1	5.0	2.0	27.9	23.7
20	Maharashtra	3.8	8.1	8.7	4.1	3.0	27.7	23.5
21	Manipur	0.0	9.5	0.0	0.0	1.0	10.5	10.1
22	Meghalaya	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	Mizoram	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Nagaland	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	NCT of Delhi	0.0	9.0	0.0	0.0	3.0	12.0	11.6
26	Odisha	3.8	9.3	9.6	5.3	1.0	28.9	26.3
27	Puducherry	0.0	9.9	0.0	0.0	1.0	10.9	10.8
28	Punjab	2.5	7.6	0.0	0.0	2.0	12.1	11.5
29	Rajasthan	3.8	8.6	6.5	4.3	1.0	24.1	25.3
30	Sikkim	3.8	0.0	0.0	0.0	1.0	4.8	2.0
31	Tamil Nadu	3.8	9.3	0.0	4.2	0.0	17.2	19.8
32	Telangana	2.5	10.0	8.4	0.0	1.0	21.9	20.9
33	Tripura	1.3	9.5	9.1	0.0	1.0	20.8	13.3
34	Uttarakhand	2.5	5.2	0.0	0.0	1.0	8.7	8.9
35	Uttar Pradesh	3.8	8.8	8.3	0.0	1.0	21.8	20.9
36	West Bengal	2.5	8.4	9.3	0.0	1.0	21.1	21.8

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A7.1: Scores for Extent of Digitisation and Registration Process (out of 60) for N-LRSI 2020-21 and N-LRSI 2019-20

Score for Extent of Digitisation (out of 60)

S. No.	States/UTs	N-LRSI 2020-21	N-LRSI 2019-20	Difference 2020-21 minus 2019-20 (points)
1	Andhra Pradesh	46.0	32.8	13.2
2	Andaman & Nicobar Islands	18.7	14.9	3.8
3	Arunachal Pradesh	0.0	0.0	0.0
4	Assam	8.6	9.9	-1.3
5	Bihar	43.8	16.8	27.0
6	Chandigarh	8.0	4.0	4.0
7	Chhattisgarh	38.1	39.8	-1.7
8	D&N and D&D*	23.8	19.9	3.9
9	Goa	27.5	26.9	0.6
10	Gujarat	21.9	21.2	0.7
11	Haryana	23.3	22.5	0.8
12	Himachal Pradesh	32.8	25.4	7.4
13	Jammu & Kashmir	3.0	2.3	0.7
14	Jharkhand	32.4	28.1	4.3
15	Karnataka	41.2	27.2	14.0
16	Kerala	16.9	6.2	10.7
17	Ladakh	0.0	0.0	0.0
18	Lakshadweep	30.3	29.4	0.9
19	Madhya Pradesh	52.2	51.3	0.9
20	Maharashtra	43.2	42.1	1.1
21	Manipur	11.8	11.8	0.0
22	Meghalaya	0.0	0.0	0.0
23	Mizoram	0.0	0.0	0.0
24	Nagaland	0.0	0.0	0.0
25	NCT of Delhi	12.5	10.5	2.0
26	Odisha	48.3	41.2	7.1
27	Puducherry	21.4	21.5	-0.1
28	Punjab	28.3	26.0	2.3
29	Rajasthan	35.3	31.2	4.1
30	Sikkim	4.0	3.9	0.1
31	Tamil Nadu	53.1	43.2	9.9
32	Telangana	35.5	34.3	1.2
33	Tripura	35.9	20.1	15.8
34	Uttarakhand	27.6	27.2	0.4
35	Uttar Pradesh	34.9	31.4	3.5
36	West Bengal	57.4	40.0	17.4

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A7.2: Scores for Quality of Land Records and Services (out of 40) for N-LRSI 2020-21 and N-LRSI 2019-20

Score for Quality of Land Records and Services (out of 40)

S. No.	States/UTs	N-LRSI 2020-21	N-LRSI 2019-20	Difference 2020-21 minus 2019-20 (points)
1	Andhra Pradesh	22.9	21.1	1.8
2	Andaman & Nicobar Islands	10.4	10.5	-0.1
3	Arunachal Pradesh	0.0	0.0	0.0
4	Assam	9.9	9.5	0.4
5	Bihar	21.1	12.0	9.1
6	Chandigarh	2.0	2.0	0.0
7	Chhattisgarh	26.7	24.3	2.4
8	D&N and D&D*	12.1	12.0	0.1
9	Goa	21.9	14.4	7.5
10	Gujarat	13.4	13.9	-0.5
11	Haryana	12.6	10.9	1.7
12	Himachal Pradesh	26.3	22.2	4.1
13	Jammu & Kashmir	2.0	2.0	0.0
14	Jharkhand	27.4	31.2	-3.8
15	Karnataka	23.7	13.7	10.0
16	Kerala	4.5	4.5	0.0
17	Ladakh	2.0	2.0	0.0
18	Lakshadweep	16.5	18.4	-1.9
19	Madhya Pradesh	27.9	23.7	4.2
20	Maharashtra	27.7	23.5	4.2
21	Manipur	10.5	10.1	0.4
22	Meghalaya	0.0	0.0	0.0
23	Mizoram	0.0	0.0	0.0
24	Nagaland	0.0	0.0	0.0
25	NCT of Delhi	12.0	11.6	0.4
26	Odisha	28.9	26.3	2.6
27	Puducherry	10.9	10.8	0.1
28	Punjab	12.1	11.5	0.6
29	Rajasthan	24.1	25.3	-1.2
30	Sikkim	4.8	2.0	2.8
31	Tamil Nadu	17.2	19.8	-2.6
32	Telangana	21.9	20.9	1.0
33	Tripura	20.8	13.3	7.5
34	Uttarakhand	8.7	8.9	-0.2
35	Uttar Pradesh	21.8	20.9	0.9
36	West Bengal	21.1	21.8	-0.7

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Note: Corrections done in scores for Punjab, Haryana, and Maharashtra (in indicators number of owners) for N-LRSI 2019-20.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A7.3: Overall Scores for N-LRSI 2020-21 and N-LRSI 2019-20 (out of 100)

Score for Quality of Land Records and Services (out of 40)

S. No.	States/UTs	Overall score (out of 100)		Difference 2020-21 minus 2019-20	
		N-LRSI 2020-21	N-LRSI 2019-20	Points	%
1	Andhra Pradesh	69.0	53.9	15.1	27.9
2	Andaman & Nicobar Islands	29.1	25.4	3.7	14.5
3	Arunachal Pradesh	0.0	0.0	-	-
4	Assam	18.5	19.4	-0.9	-4.9
5	Bihar	64.8	28.8	36.0	125.1
6	Chandigarh	10.0	6.0	4.0	66.7
7	Chhattisgarh	64.8	64.1	0.7	1.1
8	D&N and D&D*	35.8	31.8	4.0	12.7
9	Goa	49.4	41.3	8.1	19.6
10	Gujarat	35.3	35.1	0.2	0.6
11	Haryana	35.9	35.4	0.5	1.4
12	Himachal Pradesh	59.1	47.6	11.5	24.2
13	Jammu & Kashmir	5.0	4.3	0.7	16.7
14	Jharkhand	59.8	59.3	0.5	0.9
15	Karnataka	65.0	40.9	24.1	58.8
16	Kerala	21.4	10.7	10.7	99.7
17	Ladakh	2.0	2.0	0.0	0.0
18	Lakshadweep	46.8	47.8	-1.0	-2.2
19	Madhya Pradesh	80.2	75.0	5.2	6.9
20	Maharashtra	70.9	65.3	5.6	8.6
21	Manipur	22.3	21.9	0.4	1.7
22	Meghalaya	0.0	0.0	-	-
23	Mizoram	0.0	0.0	-	-
24	Nagaland	0.0	0.0	-	-
25	NCT of Delhi	24.5	22.1	2.4	10.6
26	Odisha	77.2	67.5	9.7	14.4
27	Puducherry	32.3	32.3	0.0	-0.13
28	Punjab	40.4	40.4	0.0	-0.08
29	Rajasthan	59.4	56.5	2.9	5.1
30	Sikkim	8.8	5.9	2.9	48.3
31	Tamil Nadu	70.3	63.0	7.3	11.7
32	Telangana	57.4	55.2	2.2	3.9
33	Tripura	56.7	33.4	23.3	69.9
34	Uttarakhand	36.3	36.1	0.2	0.5
35	Uttar Pradesh	56.7	52.3	4.4	8.5
36	West Bengal	78.5	61.8	16.7	27.1

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

Note: Corrections have been carried out in scores for Punjab, Haryana, and Maharashtra (in indicators 'number of owners' under the quality component) for N-LRSI 2019-20. While in Punjab it was a calculation error, in Maharashtra and Haryana, there was an over-estimation of the number of owners in the joint ownership element in the quality of records due to mistaken assumptions about those constituting current owners in possession of the relevant plots.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A7.4: Changes in States/UTs Ranking in N-LRSI 2020-21 over N-LRSI 2019-20

S. No.	States/UTs	Scores N-LRSI 2020-21	Rank N-LRSI 2020-21	Rank N-LRSI 2019-20	Change in Ranking in N-LRSI 2020-21 over N-LRSI 2019-20
1	Madhya Pradesh	80.2	1	1	↔
2	West Bengal	78.5	2	6	↑
3	Odisha	77.2	3	2	↓
4	Maharashtra	70.9	4	3	↓
5	Tamil Nadu	70.3	5	5	↔
6	Andhra Pradesh	69.0	6	10	↑
7	Karnataka	65.0	7	15	↑
8	Bihar	64.8	8	23	↑
9	Chhattisgarh	64.8	9	4	↓
10	Jharkhand	59.8	10	7	↓
11	Rajasthan	59.4	11	8	↓
12	Himachal Pradesh	59.1	12	13	↑
13	Telangana	57.4	13	9	↓
14	Tripura	56.7	14	20	↑
15	Uttar Pradesh	56.7	15	11	↓
16	Goa	49.4	16	14	↓
17	Lakshadweep	46.8	17	12	↓
18	Punjab	40.4	18	16	↓
19	Uttarakhand	36.3	19	17	↓
20	Haryana	35.9	20	18	↓
21	D&N and D&D*	35.8	21	22	↑
22	Gujarat	35.3	22	19	↓
23	Puducherry	32.3	23	21	↓
24	Andaman & Nicobar Islands	29.1	24	24	↔
25	Delhi (NCT)	24.5	25	25	↔
26	Manipur	22.3	26	26	↔
27	Kerala	21.4	27	28	↑
28	Assam	18.5	28	27	↓
29	Chandigarh	10.0	29	29	↔
30	Sikkim	8.8	30	30	↔
31	Jammu & Kashmir	5.0	31	31	↔
32	Ladakh	2.0	32	32	↔
33	Arunachal Pradesh	0.0	33	33	↔
34	Meghalaya	0.0	34	34	↔
35	Mizoram	0.0	35	35	↔
36	Nagaland	0.0	36	36	↔

Source: N-LRSI 2020-21 and N-LRSI 2019-20, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A7.5: Sensitivity Analysis: Rankings of States/UTs Rankings with Scores for Scenario 1

S. No.	States/UTs	N-LRSI 2020-21 score (out of 100)	
1	Madhya Pradesh	78.5	<div></div>
2	Odisha	76.4	<div></div>
3	West Bengal	74.2	<div></div>
4	Maharashtra	70.6	<div></div>
5	Andhra Pradesh	67.0	<div></div>
6	Tamil Nadu	65.8	<div></div>
7	Chhattisgarh	65.1	<div></div>
8	Karnataka	64.0	<div></div>
9	Bihar	62.8	<div></div>
10	Jharkhand	61.3	<div></div>
11	Himachal Pradesh	60.2	<div></div>
12	Rajasthan	59.5	<div></div>
13	Telangana	56.9	<div></div>
14	Uttar Pradesh	56.4	<div></div>
15	Tripura	56.0	<div></div>
16	Goa	50.3	<div></div>
17	Lakshadweep	45.8	<div></div>
18	Punjab	38.7	<div></div>
19	Haryana	35.2	<div></div>
20	Gujarat	35.0	<div></div>
21	D&N and D&D*	34.9	<div></div>
22	Uttarakhand	33.8	<div></div>
23	Puducherry	31.4	<div></div>
24	Andaman & Nicobar Islands	28.6	<div></div>
25	Delhi (NCT)	25.4	<div></div>
26	Manipur	22.9	<div></div>
27	Kerala	19.7	<div></div>
28	Assam	19.5	<div></div>
29	Sikkim	9.3	<div></div>
30	Chandigarh	9.2	<div></div>
31	Jammu & Kashmir	5.0	<div></div>
32	Ladakh	2.5	<div></div>
33	Arunachal Pradesh	0.0	<div></div>
34	Meghalaya	0.0	<div></div>
35	Mizoram	0.0	<div></div>
36	Nagaland	0.0	<div></div>

Source: N-LRSI 2020-21, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A7.6: Sensitivity Analysis-States/UTs Rankings with Scores for Scenario 2

S. No.	States/UTs	N-LRSI 2020-21 score (out of 100)	
1	Madhya Pradesh	83.5	<div></div>
2	West Bengal	80.9	<div></div>
3	Odisha	80.5	<div></div>
4	Andhra Pradesh	72.3	<div></div>
5	Maharashtra	71.1	<div></div>
6	Tamil Nadu	71.1	<div></div>
7	Chhattisgarh	69.0	<div></div>
8	Bihar	66.9	<div></div>
9	Karnataka	66.9	<div></div>
10	Rajasthan	61.0	<div></div>
11	Tripura	60.7	<div></div>
12	Himachal Pradesh	60.2	<div></div>
13	Jharkhand	60.0	<div></div>
14	Telangana	60.0	<div></div>
15	Uttar Pradesh	57.7	<div></div>
16	Lakshadweep	50.9	<div></div>
17	Goa	49.4	<div></div>
18	Punjab	38.4	<div></div>
19	D&N and D&D*	36.2	<div></div>
20	Puducherry	34.5	<div></div>
21	Uttarakhand	34.5	<div></div>
22	Gujarat	32.5	<div></div>
23	Haryana	32.4	<div></div>
24	Andaman & Nicobar Islands	31.2	<div></div>
25	Delhi (NCT)	24.4	<div></div>
26	Manipur	24.4	<div></div>
27	Assam	17.4	<div></div>
28	Kerala	16.9	<div></div>
29	Chandigarh	8.0	<div></div>
30	Sikkim	4.0	<div></div>
31	Jammu & Kashmir	3.0	<div></div>
32	Arunachal Pradesh	0.0	<div></div>
33	Ladakh	0.0	<div></div>
34	Meghalaya	0.0	<div></div>
35	Mizoram	0.0	<div></div>
36	Nagaland	0.0	<div></div>

Source: N-LRSI 2020-21, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A7.7: Sensitivity Analysis-States/UTs Rankings with Scores for Scenario 3

S. No.	States/UTs	N-LRSI 2020-21 score (out of 100)	
1	Madhya Pradesh	77.1	<div></div>
2	Odisha	74.5	<div></div>
3	West Bengal	74.4	<div></div>
4	Maharashtra	69.3	<div></div>
5	Tamil Nadu	63.7	<div></div>
6	Andhra Pradesh	63.7	<div></div>
7	Chhattisgarh	60.9	<div></div>
8	Karnataka	60.6	<div></div>
9	Bihar	58.8	<div></div>
10	Himachal Pradesh	57.4	<div></div>
11	Jharkhand	56.5	<div></div>
12	Rajasthan	55.9	<div></div>
13	Uttar Pradesh	52.3	<div></div>
14	Telangana	51.3	<div></div>
15	Tripura	51.1	<div></div>
16	Goa	45.5	<div></div>
17	Lakshadweep	40.7	<div></div>
18	Punjab	34.3	<div></div>
19	Uttarakhand	32.3	<div></div>
20	Haryana	31.0	<div></div>
21	Gujarat	29.3	<div></div>
22	D&N and D&D*	27.4	<div></div>
23	Kerala	22.9	<div></div>
24	Puducherry	22.7	<div></div>
25	Andaman & Nicobar Islands	20.1	<div></div>
26	Delhi (NCT)	16.5	<div></div>
27	Manipur	13.1	<div></div>
28	Assam	12.9	<div></div>
29	Chandigarh	10.7	<div></div>
30	Sikkim	10.3	<div></div>
31	Jammu & Kashmir	5.7	<div></div>
32	Ladakh	2.7	<div></div>
33	Arunachal Pradesh	0.0	<div></div>
34	Meghalaya	0.0	<div></div>
35	Mizoram	0.0	<div></div>
36	Nagaland	0.0	<div></div>

Source: N-LRSI 2020-21, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

Annexure Table A7.7: Sensitivity Analysis-States/UTs Rankings with Scores for Scenario 3

S. No.	States/UTs	N-LRSI 2020-21 score (out of 100)	
1	Madhya Pradesh	80.5	<div></div>
2	Odisha	78.1	<div></div>
3	West Bengal	75.9	<div></div>
4	Maharashtra	68.9	<div></div>
5	Andhra Pradesh	66.0	<div></div>
6	Chhattisgarh	65.4	<div></div>
7	Tamil Nadu	61.5	<div></div>
8	Karnataka	61.2	<div></div>
9	Bihar	58.8	<div></div>
10	Himachal Pradesh	58.3	<div></div>
11	Rajasthan	56.7	<div></div>
12	Jharkhand	55.0	<div></div>
13	Tripura	54.1	<div></div>
14	Telangana	52.2	<div></div>
15	Uttar Pradesh	51.5	<div></div>
16	Lakshadweep	43.9	<div></div>
17	Goa	43.5	<div></div>
18	Punjab	28.3	<div></div>
19	Uttarakhand	27.6	<div></div>
20	D&N and D&D*	23.8	<div></div>
21	Haryana	23.3	<div></div>
22	Gujarat	21.9	<div></div>
23	Puducherry	21.4	<div></div>
24	Andaman & Nicobar Islands	18.7	<div></div>
25	Kerala	16.9	<div></div>
26	Delhi (NCT)	12.5	<div></div>
27	Manipur	11.8	<div></div>
28	Assam	8.6	<div></div>
29	Chandigarh	8.0	<div></div>
30	Sikkim	4.0	<div></div>
31	Jammu & Kashmir	3.0	<div></div>
32	Arunachal Pradesh	0.0	<div></div>
33	Ladakh	0.0	<div></div>
34	Meghalaya	0.0	<div></div>
35	Mizoram	0.0	<div></div>
36	Nagaland	0.0	<div></div>

Source: N-LRSI 2020-21, NCAER.

* Dadra & Nagar Haveli and Daman & Diu.

SELECT BIBLIOGRAPHY

CBDT. (2012). Black Money Committee Report on “Measures to Tackle Black Money in India and Abroad”, New Delhi: Central Board of Direct Taxation, Ministry of Finance, Government of India.

Government of India. (2020). “Data on Fund Sanctioned, Released and Expenditure (in Rs crores)”, Available online at: <http://dilrmp.gov.in>, Accessed on 19 February 2021.

India Corruption Survey. (2019). A study conducted by Local Circles and the Transparency International India, Available online at: <https://transparencyindia.org/wp-content/uploads/2019/11/India-Corruption-Survey-2019.pdf>, Accessed on 19 February 2021.

Mishra, P. and R. Suhag. (2017). “Land Records and Titles in India.” New Delhi: PRS Legislative Research, Centre for Policy Research.

NCAER. (2017). Report on ‘A Pilot Impact Assessment of the Digital-India Land Records Modernisation Programme Himachal Pradesh’, supported by Omidyar Networks, New Delhi: National Council of Applied Economic Research, November.

Wahi, N. (2019). “Understanding Land Conflict in India and Suggestions for Reform”, Published online on 10 June 2019. Available online at: <https://www.cprindia.org/policy-challenge/7872/regulation-and-resources>, Accessed on 19 February 2021.

World Bank. 2020. “Doing Business 2020: Comparing Business Regulations in 190 Economies”, Washington D.C.: World Bank. Available at: <http://documents1.worldbank.org/curated/en/688761571934946384/pdf/Doing-Business-2020-Comparing-Business-Regulation-in-190-Economies.pdf>, Accessed on 19 February 2021.

