REPORT 04/2019





FIT-FOR-PURPOSE LAND ADMINISTRATION IN A POST DISASTER CONTEXT

LESSONS AND APPLICATIONS FROM NEPAL

A WORLD IN WHICH EVERYONE ENJOYS SECURE LAND RIGHTS

UN-HABITAT
FOR A BETTER URBAN FUTURE

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GLTN
GLOBAL LAND TOOL NETWORK

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Fit-For-Purpose Land Administration in a Post Disaster Context: Lessons and Applications from Nepal

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ACRONYMS AND ABBREVIATIONS

CBOs	Community-Based Organizations
CSO	Civil society organization
CSRC	Community Self Reliance Centre
DRM	Disaster risk management
DUDBC	Department of Urban Development & Building Construction
FFP LA	Fit-For-Purpose Land Administration
FIG	International Federation of Surveyors
FIG YSN	International Federation of Surveyors Young Surveyors Network
GLTN	Global Land Tool Network
GoN	Government of Nepal
GPS	Global Positioning System
GEC	Gender Evaluation Criteria
HH	Household
HURADEC	Human Rights Awareness and Development Centre
ILC	International Land Coalition
INGO	International non-governmental organization
ISP	Integrated settlement plan
ITC	Faculty of Geo-Information Science and Earth Observation, University of Twente
IVR	Identification, verification, recordation
KU	Kathmandu University
LA	Land administration
LADM	Land Administration Domain Model
LAS	Land administration system
MoLRM	Ministry of Land Reform and Management
MoALMC	Ministry of Agriculture, Land Management and Cooperatives
MoLMCPA	Ministry of Land Management, Cooperatives and Poverty Alleviation
NLRF	National Land Rights Forum
NGO	Non-governmental organization
NRA	National Reconstruction Authority
NUA	New Urban Agenda
PDNA	Post-disaster needs assessment
PDRF	Post-disaster recovery framework
PILaR	Participatory and Inclusive Land Readjustment
QGIS	Quantum Geographic Information System
SD	Survey Department
SDGs	Sustainable Development Goals
SLAS	School of Land Administration Studies
STDM	Social Tenure Domain Model
TRLUP	Tenure Responsive Land Use Planning
VCSP	Volunteer Community Surveyor Programme
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests

ACKNOWLEDGMENTS

This Report is a summarized documentation of the application of Fit-For-Purpose Land Administration (FFP LA) in a post disaster context in Dolakha District of Nepal, undertaken by Kadaster and GLTN in partnership with the Human Rights Awareness and Development Centre (HURADEC) and the UN-Habitat, Nepal Country Office.

We are grateful to Eva-Maria Unger (Kadaster) and Raja Ram Chhatkuli (UN-Habitat, Nepal Country Office), the principal authors of this Report. The Project and the Report benefited from relevant inputs and contributions from Bishnu Khadka (HURADEC), Jagat Deuja (Community Self Reliance Center-CSRC), Uma Shankar Panday (Department of Civil & Geomatics Engineering, Kathmandu University), Janak Raj Joshi (Ministry of Land Reform and Management-MoLRM[1]), Paula Dijkstra and Christiaan Lemmen (Kadaster), Shristee Singh Shrestha (UN-Habitat, Nepal Country Office), Danilo Antonio, John Gitau, Paul Gathogo, Wondimagegen Beshah and Agatha Wanyonyi (UN-Habitat/GLTN), Divyani Kohli and Rohan Bennett (Swinburn University), Shristi Paudel, Jordan Friis, Biplov Bhandari and Shivajee KC (FIG Young Surveyor Network Volunteer Community Surveyor Programme - FIG YSN VCSP), and Louise Friis-Hansen and Maria Bargholz (International Federation of Surveyors-FIG)

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Last but not least, we would like to acknowledge and appreciate all stakeholders engaged in this Project in the three sites of Phulappa, Bulungkhani and Jilu including all the local municipality officials and the community members for their collaborative spirit during the Project implementation.

[1] The Ministry of Land Reform and Management (MoLRM). It was reorganized as the Ministry of Agriculture, Land Management and Cooperatives (MoALMC) during the later stage of the project. The ministry is currently reorganized as Ministry of Land Management, Cooperatives and Poverty Alleviation (MoLMCPA).

EXECUTIVE SUMMARY

Information on people-to-land relationships that is documented in a land administration system is crucial to any recovery from a natural disaster. Fit-For-Purpose Land Administration (FFP LA), with special attention given to the poor and vulnerable in disaster risk management, plays an important role in the recognition of human rights by the governments and local communities before, during and post disaster. This would serve to create resilience of the people affected and to prepare for, mitigate and respond to natural disasters more proactively. This report presents the findings on the implementation of a FFP LA approach aimed at improved earthquake recovery and resilience, specifically for affected communities in four villages in the Dolakha District in Nepal.

The Project 'Support for Land Reform in Nepal and Land Tenure Initiative' (SILTIP) implemented tools developed by the Global Land Tool Network (GLTN) that were derived from the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT), the Sustainable Development Goals (SDGs), the New Urban Agenda (NUA) and the Sendai Framework for Disaster Risk Reduction (UN, 2015) in a post-disaster environment. The 2030 Agenda for Sustainable Development, with its defined goals, and the New Urban Agenda together with the Sendai Framework for Disaster Risk Reduction stimulate transformative approaches to secure land and property rights for all - especially with regard to land tenure and disaster risk management. This report shows the application of land tools and the development of land administration strategies for disaster risk management in a post-earthquake context which aim to:

On 25 April 2015, a massive earthquake measuring 7.6 magnitude struck Nepal, and this was followed by a number of subsequent aftershocks, including one measuring 6.8 magnitude with epi-centre at Sunkhani of Dolkaha. At least 14 districts were severely hit and more than 900,000 houses destroyed - 600,000 completely and another 300,000 partially. Nearly 9,000 people were killed and more than 23,000 people were injured. Due to landslides, ruptures and destabilization, approximately 475 settlements were predicted for relocation needs.

1) support the implementation of GLTN's FFP LA tool and approaches in Nepal;
2) enable the management and recordation of customary and informal land rights for communities;
3) pilot the use and application of the GLTN tools and approaches, and other related tools in the context of disaster risk management in a post-earthquake, peri-urban and rural setting; and
4) document the processes, lessons learnt and build capacity on its use and capabilities.

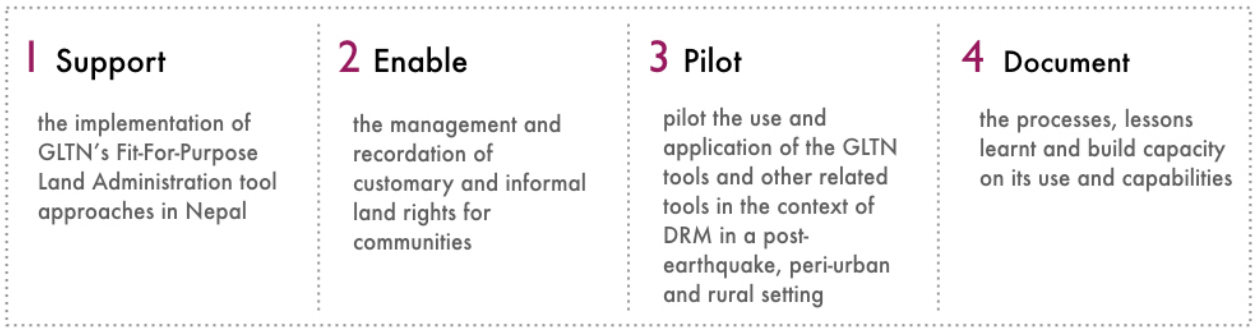


Figure 1: Objectives of the application of land tools in post-earthquake context in Nepal.

EXECUTIVE SUMMARY

A village in Dolakha District in the aftermath of the earthquake. Photo ©UN-Habitat

The Nepal Government grappled with providing recovery and reconstruction assistance to earthquake victims, particularly housing-affected communities and especially poor and vulnerable people with insecure land tenure. The pre-conditions for securing housing grants[2] for the affected households were:

(1) a citizenship certificate,
(2) an identity document granted through a household survey, which identifies beneficiaries due to the loss/destruction of their houses, and
(3) proof of land-ownership.

Many earthquake victims could not meet one or more of these pre-conditions and were unable to access reconstruction grants.

As a response to this and other problems, the land management authorities in Nepal considered incorporating the spatial, institutional and legal frameworks of the GLTN Fit-For-Purpose Land Administration tool. These changes would secure the tenure rights of the poor and vulnerable and allow for government agencies and other stakeholders, including non-governmental and community-based organizations, donors and development partners, to work cohesively towards a common goal: complete geographic coverage of a land administration system. This would increase the communities' resilience to natural disasters. The Ministry of Land Reform and Management (MoLRM), currently known as the Ministry of Land Management, Cooperatives and Poverty Alleviation (MoLMCPA), and the National Reconstruction Authority (NRA) of Nepal, different non-governmental organizations, academic institutions and United Nations agencies collaborated to explore

2 Work Procedure for Private Housing Grant to the Earthquake Victims, 2015 (in Nepali)

EXECUTIVE SUMMARY

possible FFP LA tools to improve land tenure security and land governance in Nepal.

> *The key finding of the report confirmed that a third of the earthquake victims in the project area could not access grants because their land title documents were missing. This highlights that currently not all land rights are recognized in the land administration system and this delays post-disaster recovery and reconstruction processes.*

The selected pilot sites, the methodologies used and the applied inclusive and participatory approaches (including the questionnaires and handbooks) and results are described in detail. The key finding of the report in the project area confirmed that a third of the earthquake victims could not access the reconstruction grants because the land title was missing. In Nepal, not all land rights are recognized and recorded in a land administration system and this delays post-disaster recovery and reconstruction processes. The Nepal Government has reacted positively to fast-track access to reconstruction grants. Important initiatives undertaken include:

(1) an expedited process of land registration of non-formal tenure holders; and
(2) the provision of land procurement grants to identified landless people and squatters on government and public land.

Further, the project has contributed to the formulation of National Land Policy[3] and the development of the Fit-For-Purpose Land Administration Strategy.

It may be important for GLTN to use report and to combine the outcomes of this project with those of other countries in a new edition of the FFP LA guidelines, and to show how FFP LA can contribute to disaster risk management.

TARGET GROUP

The primary target group for this report consists of government authorities (national and local), civil society organizations (CSOs) and development partners. The secondary target group consists of land professionals (lawyers, surveyors, tax specialists, etc.), disaster risk professionals, donors (bilateral and multilateral, foundations) and United Nations agencies, policy and strategy makers, NGOs (international and national), community based organizations (CBOs), academic, research and advisory services (universities, training institutions, consultants, etc.) and, through them, the general public in developed and developing countries, local people and communities.

> *Governments need information to govern. Disaster risk management requires information about people, the built environment/infrastructure and its resources. Who (people)? Where (land)? What (livelihood, buildings, infrastructure)? Those are questions that governments want to foresee, know and answer in case of natural disasters. This report confirms the claim that in addition to responsible land policy, there is a need for links between disaster risk management and reliable land information provision.*
>
> *Complete land information is key for disaster risk management.*

3 'National Land Policy' was adopted in March 2019

CHAPTER I

INTRODUCTION

INTRODUCTION

"More effective [disaster] prevention strategies would not only save tens of billions of dollars, but hundreds of thousands of lives as well. Funds currently spent on intervention and relief could be devoted to enhancing equitable and sustainable development instead, which would further reduce the risks of war and disaster. Building a culture of prevention is not easy, however. While the costs of prevention have to be paid in the present, its benefits lie in the distant future. Moreover, the benefits are not tangible; they are the wars and disasters that do not happen."

Kofi Annan[4]

4 United Nations (1999). Report of the United Nations Secretary-General on the work of the organization. General Assembly, Official Records Fifty-fourth Session. Supplement No. 1 (A/54/1). Available at: http://www.un.org/Docs/SG/Report99/a541e.pdf

1.1. BACKGROUND

Following two severe earthquakes and subsequent aftershocks in 2015, Nepal still faces reconstruction challenges: shelter needs to be provided for the affected population, infrastructure needs to be rebuilt, and urban and rural livelihoods need to be re-established. The Government of Nepal recognized the need to prepare a comprehensive reconstruction plan after assessing the damage, loss and recovery needs. This led to the Post Disaster Needs Assessment (PDNA) soon in 2015 and a Post Disaster Recovery Framework (PDRF) in May 2016. The assessments indicated that access to land was a major concern before the earthquakes and is still a concern after them. Funds have been mobilized by the (inter)national donor community and the government for post-disaster reconstruction and the NRA provides some grants to the victims to support the reconstruction of their houses. The reconstruction or relocation of houses requires information about people (citizenship certificates), the damaged property (surveys) and information about the ownership of land (ownership certificates). The NRA reports that reconstruction and relocation is hampered in most cases because many people do not have a certificate of ownership of their houses or land or any other official registration in government records.

The FFP LA approach can support the Government of Nepal in the recovery from the earthquakes as well as future disaster preparation and mitigation processes by addressing informal, non-formal tenures and encroachment (Unger, Zevenbergen, & Bennett, 2017). In order to explore and build knowledge related to FFP LA in which all people-to-land relationships are recognized, a team from the UN-Habitat Nepal Country Office, Kadaster International (the international branch of the Netherlands' Cadastre, Land Registry and Mapping Agency - Kadaster), the Human Rights Awareness and Development Centre (HURADEC) and the Secretariat of the Global Land Tool Network (GLTN) as facilitated by UN-Habitat, implemented this pilot project. The project involved trialling and demonstrating the application of relevant land tools specific to tenure security provision and the relocation and reconstruction of settlements in the Dolakha District in Nepal.

1.2. LAND POLICY NEPAL

Governance can be strengthened using the FFP LA approach, which ensures cost-effective, timebound results and inclusivity through the recognition of the continuum of land rights. Information about affected people can be used in enumeration and mapping processes, which will further enhance capacity at scale,

and to achieve complete administrative coverage in a participatory and inclusive manner.

The Constitution of Nepal advocates ending all forms of discrimination and the creation of an egalitarian society, which is closely linked to equity in citizens' access to land. Further, there is a comprehensive attempt to link the policy to national land needs and concerns and to recognize the complexity and plurality of land tenures that exist. To enhance tenure security, ways to systemize land ownership are outlined. The land policy recognizes citizens' current challenges, especially for vulnerable groups, regarding access to land and security of tenure through informal occupation, dual ownership, unregistered peasants and tenancies, and it outlines ways to formalize property rights for these groups. Likewise, the gender strategy to enhance womens access and ownership of land is boosted. In line with the provisions of the constitution, the national land policy in Nepal has six key pillars:

(1) security of tenure and land ownership, and protection of land rights,
(2) equitable access to land,
(3) optimal use and management of land,
(4 land valuation, taxation and formalization of the land market,
(5) land acquisition, and
(6) modernization of land administration services.

The policy adheres to the basic principles of pro-poor, gender-responsive, environmental sustainability, food security, safe human settlement and infrastructure development.

1.3. LAND TENURE IN NEPAL

Land tenure in Nepal (UN-Habitat, 2018) is either statutory or non-statutory. Statutory, or formal land tenure, can be private (*raikar*), state (government and public) and trust (*guthi*). Non-statutory tenure on land may further be categorized as non-formal (land on which rights are socially and legally recognized but not registered), informal (land on which rights are socially recognized but neither legally recognized nor registered) and customary (de-legalized after the 1964 land reform process, but the remnants are still existing in practice). Further illegal holding over private or public land which is neither socially nor legally recognized is considered to be encroachments. The current land administration system of Nepal does not record such non-statutory land holdings and informality and therefore cannot deal with it (MoALMC *et al*., 2018). This results in poor land management and, thus, increases vulnerability, exposure and lack of preparedness for natural disasters (Mitchell, 2011).

1.4. LAND ADMINISTRATION IN NEPAL

The current land administration system (LAS) in Nepal only deals with the formal or statutory land tenure and is mostly paper-based. The LAS does not deal with non-formal or informal land tenure, which is crudely estimated to affect around 25 per cent of the total arable land and settlements. This is estimated to be a gross figure of around 10 million physical parcels on the ground. A significant amount of the Nepalese population lives informally, without any documented recognition (UN-Habitat, 2018).

The people who do not have formal land records hesitate to rebuild and invest in the land, and without investment productivity cannot be increased. Unrecognized land tenure restricts settlers from getting any government support or compensation following disasters. All these consequences show that land under informal tenure affects the economy.

Cadastral surveys under the current LAS mostly use traditional approaches (plane table) and the principle

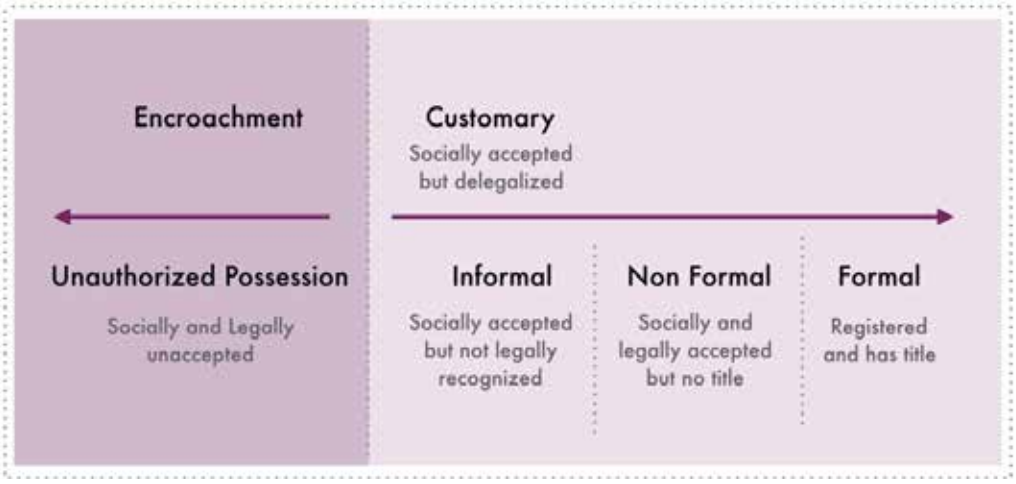


Figure 2: Existing land tenure typologies in Nepal.

of general boundaries.[5] The accuracy varies depending on the scale, which is from 1:500 for urban and dense settlement areas to 1:2,500 for rural and large parcel areas. Subdivisions of parcels are generally done according to the descriptions provided by the parties, without any field verifications or surveys on the ground.

Digital transaction processes run parallel to paper-based processes. Paper-based processes have priority because the digital equivalent does not have full legal recognition. Also, because of limited human resources, the digital data set is not uniformly maintained and the synchronization between paper and digital data sets has inconsistencies. This means the digital database is not reliable and cannot provide sufficient information in a post disaster context.

Resurveys have been initiated with a high accuracy but these cover a limited number of parcels in a few areas in the country. The Survey Department under the Ministry of Land Management, Cooperatives and Poverty Alleviation (MoLMCPA) focuses on improving the accuracy of formal tenures and not so much on the inclusion or representation of all people-to-land relationships. Awareness of this incongruence is growing with the emergence of FFP LA.

1.5. LAND & DISASTER RISK MANAGEMENT IN NEPAL

Many land issues after the earthquakes are related to accessibility, resettlement processes, recognition of unrecorded tenure types and disputes (landlord-tenant disputes). The growing demand for land and natural resources, and poorly developed land-use planning boosts the number of disputes.

Grants for reconstruction have been provided by national and international donors and by the Nepalese Government. The provision of grants in support of reconstruction efforts focused on households that could prove their land ownership with official title documents, whereas vulnerable groups with tenure insecurity (especially woman, squatters, agrarian bonded labourers) were further disadvantaged and excluded from the benefits of the reconstruction programme. Hence, there was an urgent need to understand and

5 Contrary to fixed boundary systems, where survey markers are placed at the corners of the parcel and the actual boundary is a straight line between survey markers, a general boundary is determined in relation to the physical features visible on the ground, also called a visible boundary, and must be maintained by the owners.

to discuss an effective and efficient way to address land tenure issues in Nepal. The understanding and discussion were also relevant to the formulation and implementation of a national land policy.

1.6. POST-DISASTER LAND CHALLENGES IN NEPAL

The three most important post-disaster land challenges in Nepal are disputes over land holdings, displacement and landlessness, and lack of documentation and records. These challenges can be addressed by introducing a FFP Land Administration approach in a post-disaster context, which aims for complete coverage by documenting all people-to-land relationships.

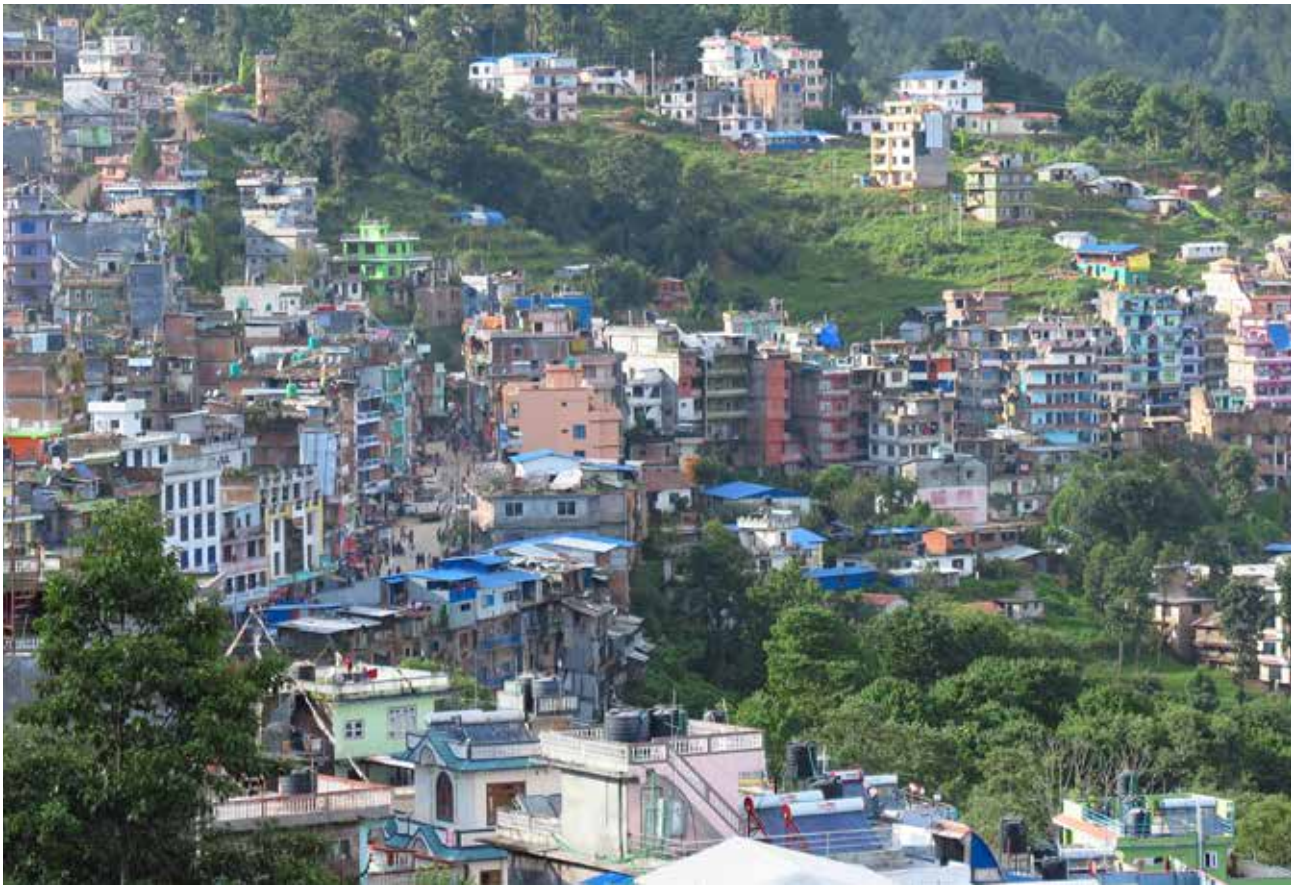
1. Disputes over land holdings
   In Nepal, the number of disputes over land is high with almost 47.5 per cent of all civil cases pending in the courts related to land (Chhatkuli, 2013). Earthquakes or any other natural disasters generally increase the number of disputes because of the lack of documentation.
2. Displacement and landlessness
   Households with informal tenure (informal and non-formal) face the greatest impact from natural disasters. This impact may result in displacement, resettlement or even eviction.
3. Lack of documentation and records
   The loss of documents through a natural disaster can increase vulnerability extensively, especially when the land administration system is only paper based. Further, the lack of documentation on inheritance, tenancy or shared ownership can result in the loss of land and/or shelter.

Securing the tenure of vulnerable groups and granting access to land for housing and resettlement is one of the major issues in the post-earthquake stage (Mitchell, Myers, &Grant, 2014: Zevenbergen, Kerle &Tuladhar,2014: Unger *et.al.*, 2019). Addressing these issues enables vulnerable groups to respond and mitigate against aftershocks and secondary hazards, such as landslides and avalanches. The lessons contained in this report provide the Nepalese land agencies with a summary of the challenges the rural communities face in the aftermath of the disaster. In addition, the results show the link between security of tenure, vulnerability, exposure and hazard of natural disasters, by assessing and analysing the collected information on tenure and basic household economies. The results also inform the current development of the national land policy and related changes in the regulatory frameworks (UN-Habitat, 2018).

1.7. DESCRIPTION OF THE DOLAKHA REGION

The Dolakha District in Nepal was selected as a study area. The area is highly vulnerable to natural disasters and risks such as floods, drought, landslide, intensified through ecological disruptions, fluctuating temperatures, and heavy rainfall etc. Sunkhani of Dolakha District was the epi-centre of the 6.8 magnitude earthquake which occurred on 12 May 2015 and which was the second largest after the 7.6 magnitude Gorkha earthquake of 25 April 2015. Dolakha District, with a population of approximately 281,000 and approximately 60,000 households, is in the mountains of central east Nepal. Altitudes in this region range from 650 metres to 7,134 metres. The district is covered by high Himalayas (35 per cent), high mountains (40 per cent) and middle mountains (25 per cent), with the population mostly concentrated in the middle mountains (Khezri, 2018). In addition, 27 per cent of the area is covered by agricultural land and human settlements with different ethnicities, including Brahmin, Chhetri, Newar, different Indigenous Peoples and Dalits. This is also the home to the local indigenous

population - Thami and Jirel. In the district, the 2015 earthquake destroyed 49,992 private houses, 63 health facilities, 1,095 schools and 54 temples as well as numerous other properties and infrastructure. It was estimated that 98 per cent of all buildings collapsed and there were 178 fatalities, 8 people missing and 662 injuries. The whole population in the district was affected.[6]



A view of Charikot in Bhimeshwor Municipality. Photo ©Kadaster International/Paula Dijkstra

6 Dolakha and the Earthquake (Nepal Journalists Federation, Dolakha District, 2016)

CHAPTER 2

CONCEPTS AND TOOLS

The overall objectives of the project were to:

1. Support land reform interventions in Nepal, including:
   (a) land policy development and consultations process; and
   (b) strategy development for Fit-For-Purpose Land Administration;
2. Support interventions towards the improvement of earthquake recovery and resilience for affected communities in four villages in Dolakha District, within international frameworks such as the SDGs, NUA, VGGT and the Sendai Framework, and combined with the FFP LA objectives.

Based on the overall objectives, the focus of this report is on the FFP LA in Disaster Risk Management (DRM) and not on other aspects of the project such as the detailed steps in the design for an integrated settlement. This is because:[7]

- The project focused on land rights for all – including the poor and vulnerable;
- The project focused on tenure security issues in a post-earthquake context;
- The project focused on FFP LA in DRM

The project focused on identifying and documenting legitimate beneficiaries to enable and complete the access to reconstruction grants in the following pilot areas in Dolakha District, and to inform policy and the FFP LA strategy development more broadly:

- **Phulappa** does not have good basic infrastructure as the settlement is located in an area with terrain that makes it difficult to access. Many of the households are from the indigenous Thami tribe or are Dalits,[8] who are still living in temporary shelters after the earthquake destroyed their houses. Most of the farmers in this community have been engaged in subsistence farming based on a feudal tenancy system as unregistered tenants for many decades and have no written agreements or documentation. Therefore, the project aims to strengthen the community's capacity to record and map all people-to-land relationships using Fit-For-Purpose approaches to promote tenure security and to facilitate access to government grants and support for housing reconstruction.
- **Jilu** consists of two settlements - Dihi and Phasimai. All of the approximately 220 households were affected by the earthquake and most of the population is still living in temporary shelter. Since most households hold land titles, they intend to develop an integrated settlement plan as part of their post-earthquake recovery. The project aims to support the community to implement participatory and inclusive land re-adjustment processes and the issuance of new titles in accordance to the approved integrated settlement plan. This support also facilitates access to additional government grants for civil infrastructure development.
- **Bulungkhani,** a village in Bigu Rural Municipality Ward no 3, was left vulnerable due to land ruptures resulting from the aftermath of the earthquakes. The residents were displaced and forced to move to nearby land in Cheptedhunga, which many of them own, although some do not. They proposed developing an integrated settlement plan in the resettlement area. This was a unique case - a combination of the Integrated Settlement Plan (ISP), like in Jilu, and a resettlement process, like in Panipokhari.
  The work here facilitates access to additional government grants for civil infrastructure development

7 The design of relocation strategies and integrated settlement planning are not discussed further in this study; their impact on the study results and on the overall objectives is limited.

8 Dalits are considered to be lower in the social caste system

by the community. The NRA has approved the draft plan and the community wants to finalise the ISP of the Cheptedhunga according to the guideline and policy of the NRA.

Figure 2 shows an overview of the three pilot areas and the households and farms enumerated and recorded:

- 485 households enumerated;
- 421 houses recorded; and:
- 1369 farms georeferenced.

In all pilot areas, community and district meetings were held as part of the FFP approach.

Additional technical support and awareness-raising campaigns through visits and meetings were organized in an additional pilot area, Panipokhari. In this area, no spatial and administrative data was collected but the community was assisted in the development of an integrated settlement plan.

- **Panipokhari** in Chhemawati was government land which was left vacant and was only used by the local community. The nearby village of **Boshimpa** consisting of 84 HHs of mostly indigenous *Thami* people was displaced due to landslides and ruptures caused by the aftermath of the earthquake.

PILOT AREA OVERVIEW

The three pilot areas were selected with care by NRA and UN-Habitat. While the three pilot areas experienced common problems after the earthquake, they also had varying degrees of tenure security and have unique requirements for appropriate land governance interventions.

Phulapa	Bulungkhani	Jilu
Number of Households: 322	Number of Households: 80	Number of Households: 83
Number of Houses: 281	Number of Houses: 76	Number of Houses: 64
Number of Farms: 1008	Number of Farms: 84	Number of Farms: 277
Community Meeting: Done	Community Meeting: Done	Community Meeting: Done
District Meeting: Done	District Meeting: Done	District Meeting: Done

Figure 3: Overview of the pilot area.

A community meeting in Jilu, one of the project sites. ©HURADEC/Bishnu Khadka

The residents had land and title certificates for their land but were temporarily settled in Panipokhari. The residents sought a plot of land as well as a title certificate for each HH. They plan to develop an integrated settlement plan as part of their resettlement and post-earthquake recovery. The project supported the community to implement participatory and inclusive land re-allocation processes and the issuance of new titles in accordance with the approved integrated settlement plan. This support also facilitated access to additional government grants for civil infrastructure development.

2.1. PARTNERS

The project was a joint effort by various institutions and organizations which are illustrated in the graphic along with the implementing organizations, implementing partners and key stakeholders.

2.1.1 Kadaster International and Global Land Tool Network

Kadaster International and the Global Land Tool Network, as facilitated by UN-Habitat, provided financial and technical assistance and facilitation in consultation with local- and national-level stakeholders. The UN-Habitat Country Office in Nepal provided the overall coordination, expertise and technical assistance, while GLTN and Kadaster International experts

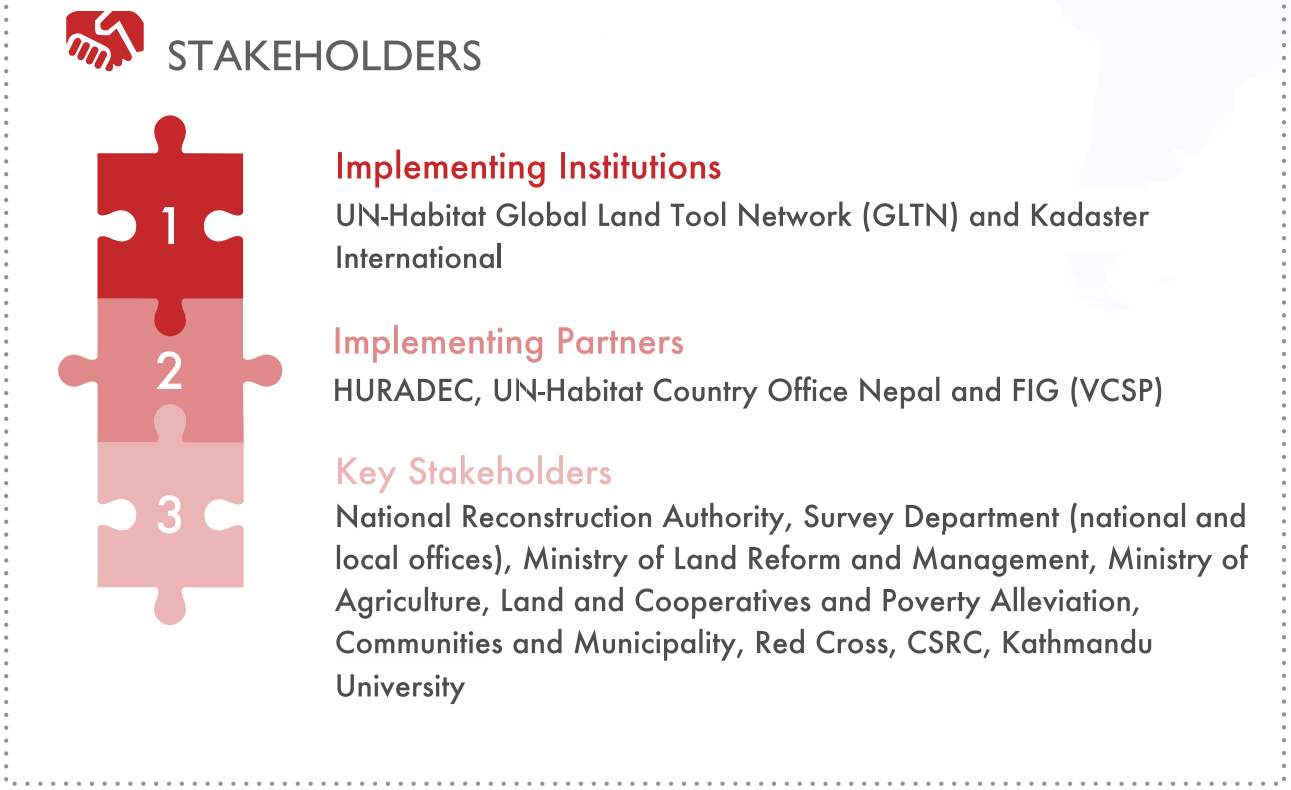


Figure 4: Project stakeholders.

provided in-situ expertise and support from a distance. Additionally, the FIG Volunteer Community Surveyor Programme (VCSP) supported the project with four volunteers under the guidance of the team.

2.1.2 Main partner organization

The Human Rights Awareness and Development Centre (HURADEC), a local NGO in Dolakha is one of the lead human right organizations in Dolakha and was contracted as a local partner. The organization aims to *"contribute to establishing a peaceful and developed society through ensured human rights by empowering right holders and stakeholders"*. Since 1990, the organization has worked on human rights protection, promotion and governance reform, empowerment of marginalized and deprived people, conflict mitigation, peace building and policy advocacy campaigns in Dolakha District. At present, HURADEC has more than 10 working networks at community and district level, where more than 1,000 households are organized.

2.1.3 Government agencies

The local offices NRA, MoLRM, MoUD and SD provided support; they are leading agencies in land-related issues for relocation, integrated settlement planning and registration or retitling of land in the post-earthquake context. The local- and national-level consultations indicated that the key activities of the project, such as tenure security, relocation and integrated settlement planning, are the priorities in speeding up the process of recovery. The local GoN agencies worked together with the team and obtained necessary plans, data and information to facilitate "build back better" settlements, assess their tenure as necessary, support

the reconstruction of houses in the pilot areas. The experience gained through piloting the FFP LA spatial framework and addressing tenure issues in post-earthquake disasters are examples to roll-out in similar projects in other areas of Nepal.

2.2. LAND TOOLS FOR FIT-FOR-PURPOSE APPROACHES AND DISASTER RISK MANAGEMENT

The Global Land Tool Network[9] is a coalition of global, regional and national allies contributing to poverty alleviation through land reform, improved land management and security of tenure. GLTN has developed a series of land tools (GLTN, 2012) which can be used to implement the legal, institutional and spatial framework for FFP LA. A land tool is a pragmatic way to address land administration issues and consists of a wide range of methods, from checklists to conduct surveys, or a set of software and associated protocols, to guidelines and approaches. For land tools to provide benefits to poor, vulnerable and marginalized groups, they need to have features which are affordable, equitable and gender-responsive, that promote good governance, subsidiarity, and are sustainable, systematic, large-scale and pro-poor. Within this project the following land tools were used to link land administration and disaster risk management:

2.2.1 Continuum of land rights

The GLTN promotes the concept of the continuum of land rights, which includes rights that are documented as well as undocumented, formal as well as informal, it includes individuals and groups, and includes pastoralists, slums and settlements, which are legal as well as not legal (Barry & Augustinus, 2015). The continuum of land rights is operationalized at country level in some developing countries. The process of implementation of the continuum can be formulated as "recognizing, recording and administering a variety of appropriate and legitimate land tenure forms"(Du Plessis, Augustinus and Barry et.al 2016). This concerns a better recordation and recognition of a diversity of land rights, (social) tenures and resources in integrated information systems.

2.2.2 Fit-For-Purpose Land Administration

The International Federation of Surveyors (FIG)[10] argues for the need to move beyond mere advocacy of the accepted continuum concept and to focus on embedding it into real land administration solutions. In practice, this translates and expands into applying and, where needed, developing a series of adjudication and demarcation methods, a series of appropriate surveying technologies and techniques, and so on. The World Bank and FIG jointly promote the FFP LA approach that enables appropriate land administration systems to be built within a relatively short time, at an affordable cost, and with the opportunity to upgrade when required. The FFP LA approach recommends the use of "visible boundaries" to identify the delineation of land rights and to achieve first complete coverage and, at a later stage, an incremental improvement of quality. While conventional cadastral systems use the documentation of the surveyed parcel as a basis for entering rights into a land registry, the FFP LA also uses aerial or satellite imagery in the field to identify, delineate and adjudicate the visible parcel boundaries, and the rights (whether legal or legitimate) are determined. This is a participatory approach undertaken by locally trained land officers and involves all stakeholders. Furthermore, while conventional cadastral systems are highly standardized, the FFP LA is flexible in terms of accuracy and also in relation to the variety of tenure types to be secured.

9 www.gltn.net

10 FIG/WB, publication 60 + guidelines

2.2.3 Social Tenure Domain Model

The Social Tenure Domain Model (STDM) (Lemmen, Augustinus, Haile, & van Oosterom, 2009) was initiated by the GLTN and is based on the Land Administration Domain Model (LADM) (Lemmen, Oosterom, & Bennett, 2015). The GLTN designed and developed the pro-poor and gender-sensitive land information management system in close cooperation with the University of Twente/ITC. The STDM (GLTN, 2014) can be used to support land administration of the poor in urban and rural areas, which can later also be linked or converted to the cadastral and land registry system. This is in support of the formal recognition of land rights and the integration of information into one system.

The STDM (GLTN, 2018) as a concept may be very useful in Nepal. Currently, the GoN does not have a complete overview of all people-to-land relationships in the country and, as the existing cadastre and land registry cover formal rights only, the STDM could be used to create and add information on informal and non-formal tenures (Joshi *et al*, 2017), including information on encroachment onto private, government and public land.

The lack of formal recognition of many tenure types causes problems, for example in cities where many people live in slums without proper water, sanitation, community facilities, security of tenure or quality of life. The same is valid for the rural areas, where many people have informal crop-sharing land tenures based on feudal associations with the landlords; in this situation, tenants give half of the crop yields to the landlord. In many cases, the tenancy is undocumented due to a lack of awareness of the need for documentation, but mainly because landlords are not willing to support the provision of documentation. Instead of having a formal contract with the tenants, landlords are more likely to leave their land vacant, especially in rural mountainous areas, because of a fear of dual ownership. There is an increase in abandoned land caused by the migration of rich landlords to cities and to other countries.

The new land policy intends to change this situation. Informal and customary tenure is intended to be recognized – as far as it is legitimate and socially accepted. To implement this, an overview of all people-to-land relationships is needed; this can be created with STDM as a foundation for decision making in the conversion of legitimate and socially accepted rights to formal rights with formal rights holders, and linked to parcels in the cadastral and land registry systems.

2.2.4 Gender Evaluation Criteria

The Gender Evaluation Criteria (GEC) is the framework which helps to design gender-responsive land tools or to evaluate whether existing land tools are gender sensitive and inclusive. Thus, this framework guides the design of tools and ensures the perspective and requirements for both women and men. The tool is flexible so that criteria and questions can be modified depending on the context, and it provides a quantitative and qualitative assessment to check to what extent existing land tools and land governance are pro-poor and gender-responsive. The GEC is a set of 22 questions classified into six criteria enabling a detailed assessment. Each criterion includes questions from a gender perspective to ensure the participation of both women and men, in the process of preparing participatory enumeration questionnaires, laws and policies. The following six main areas are covered by the GEC:

i. Equal participation by women and men and gender-responsive governance;
ii. Capacity-building, organization and empowerment of women and men to use, access and benefit from the tool;
iii. Legal and institutional considerations of women and men;

iv. Social and cultural considerations with regard to women and men's access to land;
v. Economic considerations with regard to women and men's access to land; and
vi. Aimed at scale, coordination and sustainability to reach more women and men.

Nepal is a patriarchal society so it is very important to prioritize gender issues. Although the situation is changing slowly, women have historically been excluded and disadvantaged with regard to access, ownership and control over productive resources such as land. In most cases, women usually have secondary and deprived rights to land, and their rights are obtained through their relationship with male family members, such as their father, brother, husband or son.

Men usually work outside of the home in non-agricultural activities, whereas women are directly engaged in taking care of their houses and farms, so it is important that they are involved during the collection of information. Further, women were more vulnerable than men after the earthquakes with regard to receiving the grant because of their lack of access to and control over land, so it was necessary to make sure that all the information on their status, their priorities

Local Nepali women work as labourers, carrying bricks in a traditional style. Khokhana village in the southern part of Kathmandu was very badly damaged by the earthquake. Photo @UN Women/Piyavit Thongsa-Ard

Community-led enumerations in Bulungkhani. The participatory enumerations involved collecting and analyzing information, and devising, debating and agreeing on possible solutions as part of the post-earthquake recovery project. ©UN-Habitat/ Shristee Singh Shrestha

and their needs was incorporated into the project to assist the government with taking appropriate decisions related to women's needs. The GEC was used not only in the development of the questionnaire but it helped to engage both women and men while collecting information about households and farms, consultations at different levels and also in capacity development activities.

2.2.5 Participatory enumeration

The development of the questionnaires for the participatory enumeration (UN-Habitat, 2010) was a key milestone in the project. Initially two questionnaires were prepared, a formal and a separate informal tenure questionnaire were later merged into one. The GEC was applied during the formulation of questions and the evaluation and testing of the questionnaire.

The main contents of the draft questionnaires were:

- Standard household enumeration questions that can collect socio-economic information about a household;
- Issues, situations and cases specifically reflecting on issues in the three project sites observed through community meetings and background studies;
- With regard to gender issues, it was ensured that both women and men were engaged in the whole process from the collection to the validation of their information and their tenure relationship with land; and:
- Inputs from the GLTN, HURADEC, Kadaster International and UN-Habitat Nepal experts.

Photo ©Kadaster International/Paula Dijkstra

Once the draft questionnaires were finalized, the project team and community representatives carried out reviews and updates. Another review and test was done with the community itself to make sure all issues were covered and women's participation was ensured. Consequently, the updated questionnaires were tested in six days for all three sites. The field testing helped the enumerators and the project team to identify gaps and issues in the questionnaires and, based on this testing, the two questionnaires were merged into one that combined both formal and informal tenure.

The finalized questionnaire had the following characteristics:

- ❑ Participatory approach that accommodated the data collection by a group of local enumerators from the communities;
- ❑ Well-structured design from a multi-disciplinary perspective. The team that prepared the questionnaire consisted of surveyors, land tenure experts, disaster risk managers, gender specialists, system developers and geographic information professionals; and:
- ❑ Inclusion of the STDM concepts provided by the project team that facilitated easy data entry into the STDM.

The cooperation resulted in a questionnaire that captured all types of land tenure in a post-earthquake context for Nepal, including all the complexities.

The following description shows the major aspects captured by the questionnaire:

1. Enumeration – basic information about the enumeration such as questionnaire code, enumerator details and date of enumeration;
2. Respondent – basic information about the person responding to the questionnaire;
3. Household – information about the basic economic unit;
4. Household members – details of all household members, including the respondent;
5. House – details of the house of the household;
6. House tenure – tenure information of the land on which the house was built;
7. Farm – the farm details; and
8. Farm tenure – the tenure details of the farm land.

Additionally, the questionnaire captures post-earthquake issues such as:

- ❑ Pre and post-earthquake land tenure information;
- ❑ Grant-related information;
- ❑ Priority areas – to identify vulnerabilities; and:
- ❑ Land tenure issues such as tenancy registry, production share, issues of land ownership.

2.2.6 Visible boundaries

Usually, boundaries between properties in Nepal are visible on the ground through physical features like hedges, fences, terraces, mud partitions or other natural markers. Such boundaries can be easily identified on high-resolution imagery in the field using participatory mapping approaches. In some countries, members of local communities have been successfully trained to become "grassroots surveyors" within a few weeks. The required human resources for collecting evidence from the field can be effectively organized and scaled up by grassroot surveyors. Based on briefings with neighbours and community members, the boundaries of spatial units can be identified and drawn on top of an image using a pen. This may be done on site at the spatial unit or within the village centre. The community "sits around the map", which is a social process through which people determine and validate their own rights to land, guided by a grassroots surveyor and/or land professional. Administrative data, such as names and personal identities, can be linked on site during this

process using preliminary reference identifiers for the spatial units. If boundaries are not visible either in the field or on the image, some simple field surveys may be needed for data completion. It is important in this process that the local community verifies and agrees on the data, preferably immediately after its collection. In this project, the geodata was not collected on the site of the spatial unit but remotely near the field area (in the communities), due to the steep, mountainous landscape.

2.2.7 Other tools

While not directly applied in the three pilot sites, the Tenure Responsive Land-Use Planning (TRLUP) tool and the Participatory and Inclusive Land Re-adjustment (PILaR) tool were mainstreamed by the pilot communities in the planning, design and development of their settlement plans through various inputs, consultations and discussions with UN-Habitat Country Office in Nepal, GLTN and Kadaster International. The design and development of settlement plans adopted an inclusive and participatory approach, which is the key cornerstone of these tools.

A local grassroot surveyor delineating boundaries of spatial units on top of satellite images. Photo ©Kadaster International/ Paula Dijkstra

CHAPTER 3

METHODOLOGY

The methodology of the field pilot started by agreeing among the community and stakeholders on an approach which focused on capacity building and the use of the Fit-For-Purpose Land Administration tool. During the household enumeration, the village residents' current house was mapped with a point using GPS devices. The visible boundary approach was used in the presence of the farmers associated with farms as well as the other community members. The process involved the enumerators meticulously checking with and guiding the farmers to identify different landmarks in order to plot the farm boundaries. By linking this with the household questionnaire, the people-to-land relationship using the satellite imagery was established. The link was established through a Unique Parcel Identifier (UPI) for households and farms, e.g. H1PHU33 for the household and F1PHU33 for the correlated farm. In case there were x number of farms related to the household, F1 was changed to F2 and so on. In order to establish the link, the images were printed at A0 paper with a scale of 1:750, which was sufficient to allow the community to easily understand the images and identify their generally terraced farmland, which were approximately 3 metres wide in most cases. HURADEC, its team and the local community performed the data collection in the field. The collected data was then entered, analysed and validated by using STDM.

This project included giving attention to issues such as the information needs for disaster management; the general or visible boundary approaches; quality improvement of the existing cadastral maps using imagery; introduction of linked data between the formal registry and cadastre and land conflict and dispute resolution. Based on these, the pilot focused on the following issues:

- To determine the priorities and needs of people living in the pilot areas with regard to tenure security and disaster risk measures;
- To determine if relocation/resettlement has already taken place;
- To determine the status of the residents' current houses;
- To determine the success of the grant's allocation for reconstruction;
- To determine whether or not policy changes are needed to support tenure security considering that one of the most important measures is to increase the resilience of communities and individuals;
- To determine the number of people who cannot prove their land tenure; and
- To determine the number of people living under crop-share tenancy relationships.

3.1. PLANNING & PREPARATION

As a first step, the availability of base materials, such as satellite imagery, cadastral maps and hardware, from our stakeholders was investigated. The base material that was not available, such as cloud-free satellite imagery from the pilot area, an elevation model, and hardware and software, had to be organized or purchased. Site visits were arranged to manage expectations, introduce the project team to the community and investigate if the intended approach is feasible. During these site visits, the basic decision of choosing a paper or digital based approach had to be made. Due to the local circumstances (low level of literacy, low internet reception and regular power cuts) the paper-based approach was chosen. Subsequently, training for the enumerators and field officers had to be prepared, organized and conducted. The questionnaire and queries were designed. A query plan in coherence with the main results was prepared so that it could be applied to the database after conversion to a computerized form. Further, to link the administrative and spatial data, a unique identification system had to be defined and agreed on by the team.

The methodology follows these steps:[11]

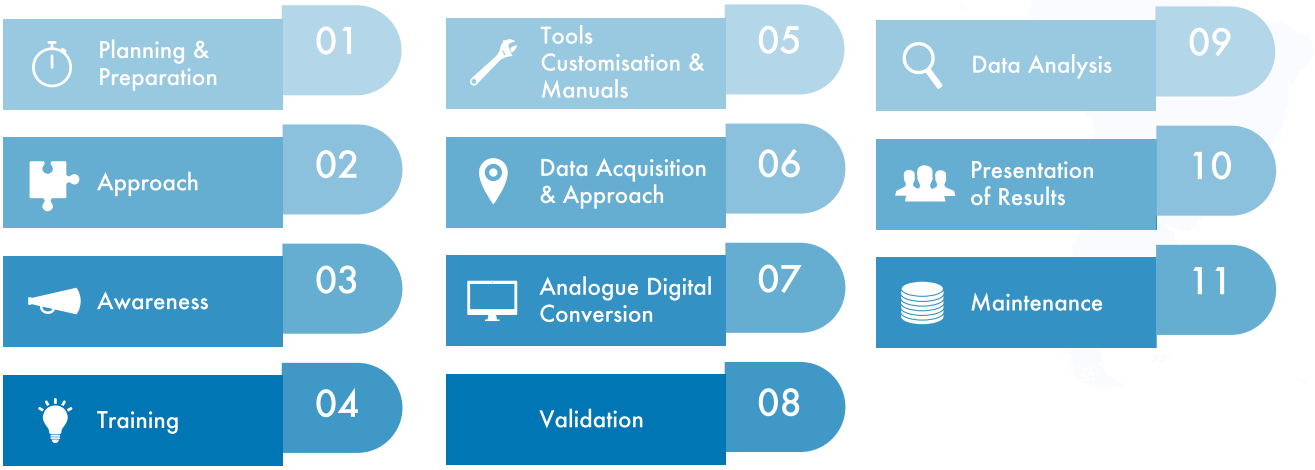


Figure 5: The methodology of the field pilot.

3.2. SELECT APPROACH

An inclusive approach was followed that documented all household members, with special attention given to women and household members working abroad. Household members from abroad were included because they often contribute to the household income, which was identified as an important factor in the scale of vulnerability and exposure. The approach was transparent and special attention was paid to the definition of the identifier because the aim was to identify households. Within this project, a household-based approach was chosen based on the focus of the recovery from the earthquake and therefore one of the indicators is based on the economic unit.

Table 1: The Unique Parcel Identifiers used in the project.

Table	Example	Comment
Household	PHU* PHU33	PHU… indicates that the pilot area is Phulappa *… indicates the household number
House	H**PHU* H1PHU33	**… indicates the house number
Farm	F**PHU* F1PHU33 F2PHU33	**… indicates the farm number

3.3. AWARENESS RAISING

Awareness raising was conducted at various levels: community level, municipality level and national level. A special focus of awareness was at community level, which resulted, for example, in information plates and folders with drawings to inform the community on how to access the reconstruction grants. Further meetings and awareness campaigns for community leaders were organized as communication with the community members was important. Stakeholder meetings with the Charikot Mayor, the Survey Department in Dolakha, and local NRA offices were also conducted. All stakeholders were updated about the project development and the subsequent steps. Local youths (women and men) of Phulappa were organized to establish a 15-member Concern Committee, and they are continuing to work with stakeholders for land management and tenure security beyond the project. Concern committees are special groups, loosely formed (not officially registered) by landless and informal tenure holder youth, women and peasants in Phulappa to discuss on their land rights. Similarly, the capacity of local committees in other project areas was also enhanced.

11 These identified steps were also later used to define the role of the professional and the grassroot surveyor.

3.4. TRAINING

Special attention and a lot of effort was given to the training of enumerators and field officers. The training included participatory enumeration, basic understanding of coordinate systems, handheld GPS, and the visible boundary approach. Also, the enumerators were sensitized on different language issues and on how to conduct interviews with and on behalf of women and other vulnerable groups. Special attention during the training was paid to the Unique Parcel Identifiers (UPIs), which were written on the forms but also on the satellite image. This was important as the numbers in Nepali are different from those in English. It was stressed that the UPIs are the link between the administrative data and the spatial data. The Unique Parcel Identifier (UPI) was easy to understand and that also lead to a sense of identity among community members. In general, the inscription of the ID in the field was challenging, but with guidance during the training, no mistakes occurred.

> *The Unique Parcel Identifiers (UPIs) are important as they are the links between the administrative data and the spatial data.*

3.5. TOOLS CUSTOMIZATION & MANUALS

The STDM was originally designed to link one or multiple people to one spatial unit. It had to be customized to include documentation of the farm tenant relationship,

Local community members from the settlements participate in delineating settlement boundaries during one of the training sessions. Photo ©UN-Habitat/Shristee Singh Shrestha

A community meeting in Phulappa. Community meetings enabled the local people share and articulate their needs while at the same time engaging with other project stakeholders in identifying options and strategies to improve post-earthquake recovery. Photo ©HURADEC/Bishnu Khadka

which implies multiple spatial units connected to one household. The profile with all the specific attributes had to be defined. For future applications and in order to ensure sustainability in capacity building, various manuals for each exercise were developed. These manuals ensure that the knowledge gained can be used in future applications. During this project, following manuals were developed:

- ❑ Handbook for Visible Boundaries;
- ❑ Handbook for Handheld GPS;
- ❑ Handbook on Georeferencing;
- ❑ Handbook for Household Questionnaire; and:
- ❑ Handbook for Farm Questionnaire.

Each of the handbooks explains the steps to be taken before going to the field, in the field and after the field collection, and it describes points for attention.

3.6. DATA ACQUISITION & APPROACH

To ensure all the community members could attend the meetings, a schedule for data acquisition was established and various communication approaches and announcements were used. The field officers made sure that all households were visited and that their documents were printed. Also, the field officers, who were used to the local circumstances and habits, decided how the paperwork was organized. It took seven weeks to complete the data collection process

in Phulappa area and additional four weeks for the bulungkhani and Jilu areas. Additionally, some days were allocated to train the local enumerators; 14 local enumerators participated in the process of training, data collection and validation.

3.7. ANALOGUE TO DIGITAL CONVERSION

After data acquisition in the field was completed, all the analogue information had to be digitized. The forms were converted to digital data by typing the data into the STDM. For the spatial information, the printed satellite images were photographed, georeferenced using a QGIS Plugin and then digitized. With the STDM, the link between the administrative data and the spatial data, that is the social tenure relationship, was established. Therefore, the unique ID is important. The GPS data for the houses/constructions was imported directly using the STDM.

3.8. VALIDATION

A comprehensive validation at four levels was conducted. Those four levels involved validation by the community during the data acquisition, validation of selected forms and digitized farms before the data entry by the enumerators, validation during the data entry by data entry experts, and validation of data after digitization in each of the communities. Data validation was also seen as validation of the approach and therefore a four-level validation was chosen with no difference of weighting between the four levels. In disputes, the community leaders negotiated with the affected parties and in case no consensus could be achieved the overlap of the contested land was documented. The final information on landless HHs and HHs with no legal documents was derived as a result of the data validation and was submitted to the NRA local office and the district Land Revenue Office.

3.9. DATA ANALYSIS

When the data collection, digitization and validation were completed, the next step was to analyse the data. The main purpose of this was to identify the level of tenure security; the scale of vulnerability, exposure and hazard; their grant status; basic household economy; and all related to the people-to-land relationship. Various queries could be generated with the data collected but for this report the main results of four queries were chosen to show the project's potential.

3.10. PRESENTATION OF RESULTS

An important step in the methodology is the presentation of the results to the community and all relevant stakeholders, including the deputy mayor of the local municipality and the Director General of Surveys. This was conducted in November 2018 in Charikot.

3.11. MAINTENANCE

Maintenance of the data is required until all grants are provided as people may pass away or leave the area. Special attention was devoted to enabling HURADEC employees to have good STDM knowledge to perform maintenance work and keep the data up to date. The local committees of the project areas were strengthened; for example, in Phulappa, where locals were not organized prior to the project, a 'Concern Committee' was established.

CHAPTER 4

KEY FINDINGS AND RESULTS

This Project is the first application of FFP LA in a post disaster context. It was also the first application of the FFP LA approach, which facilitated an inclusive, gender-sensitive, participatory and transparent approach in Nepal. The project identified formal and informal people-to-land relationships in earthquake-affected areas and investigated further issues related to access to land in the recovery from disasters and providing grants for the reconstruction of houses.

The following are the key findings from the most relevant analysis of the project with regard to status of land tenure and recovery, relevance of farm tenure for DRM, post-disaster priority assessment and vulnerability of women. Many more detailed conclusions could be derived from the data collected and the STDM database created. The project team did a comprehensive analysis and the results were presented to the community and all the stakeholders.

4.1. STATUS OF LAND TENURE AND RECOVERY

In order to describe the scale of vulnerability with the link to tenure security of the affected communities the house status was merged with the information of the existing land documents. To underline this result, the grant status was also analysed.

4.1.1 Key Finding 1A: House Status and Land Document

The first result focuses on the house status, which can be:

a) Permanent and newly built;
b) Permanent and unaffected;
c) Permanent but partly destroyed; or
d) Temporary;

and on the land documents, which can be:

a) Land title ownership certificate;
b) No document;
c) Contract;
d) Lease;
e) Temporary land ownership certificate;
f) Receipt of land tax; and/or:
g) Registered tenancy document.

The maps show the households, georeferenced through a point collected on site in the field with a handheld GPS device. For each of the pilot sites, maps were

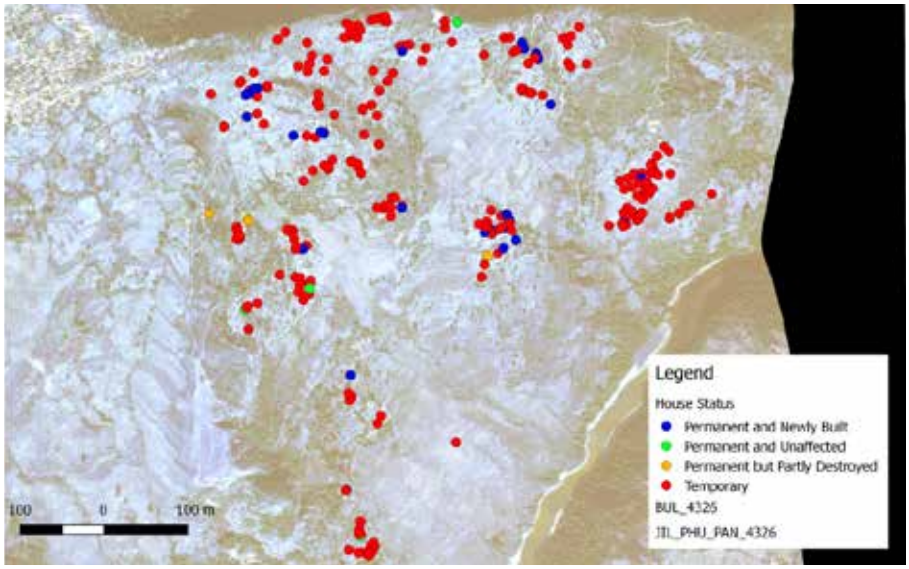


Figure 6: Map showing the Phulappa house status.

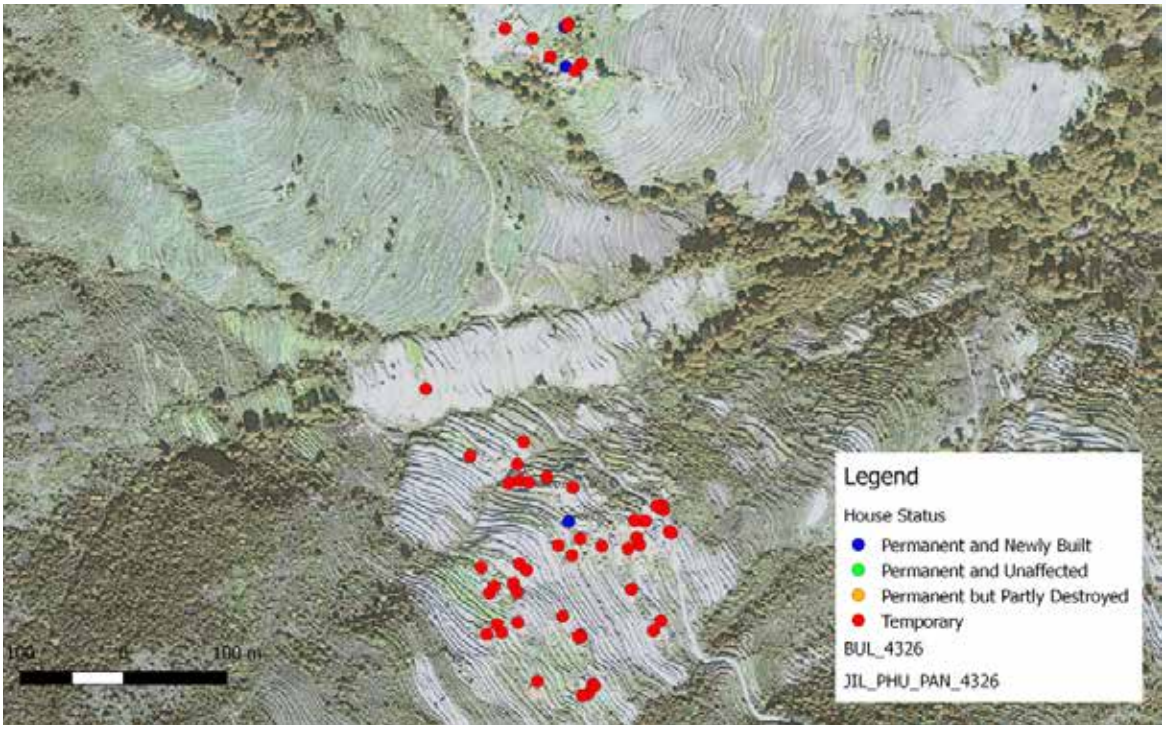


Figure 7: Map showing Bulungkhani house status.

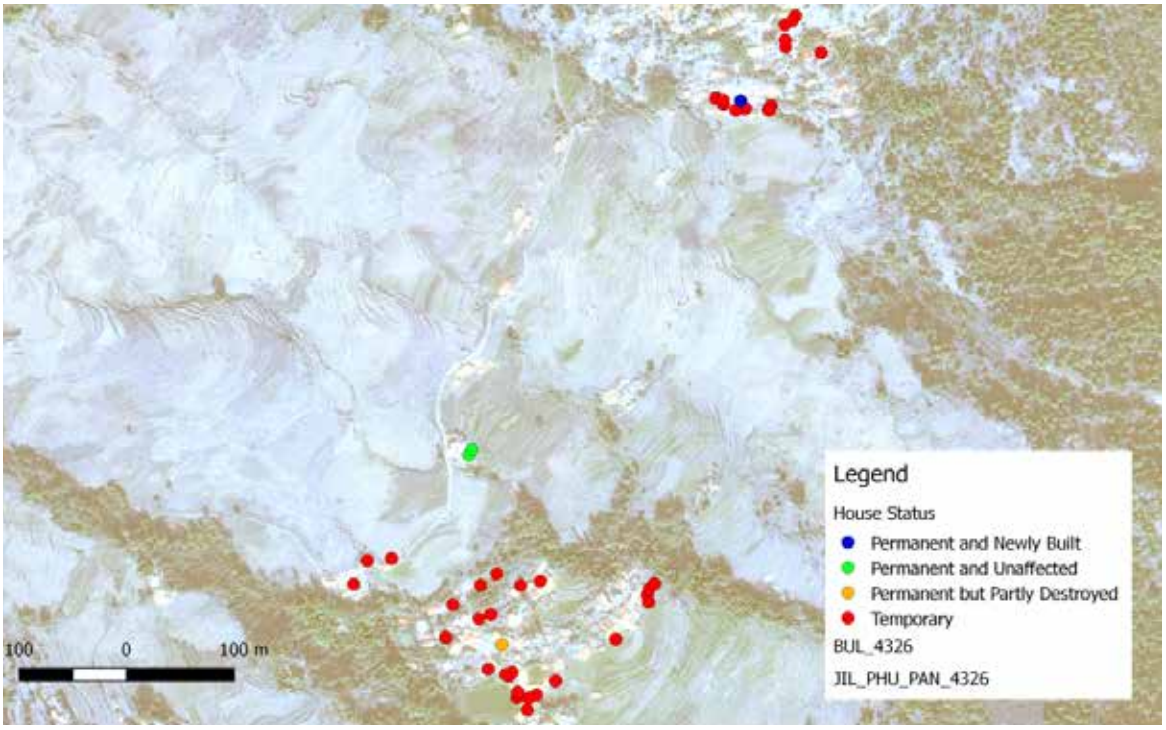


Figure 8: Map showing Jilu house status.

generated using the STDM. To guarantee a speedy and cost-effective assessment, one point to locate the location of the house was used. Especially with regard to DRM, in the first stages of recovery one point per house, farm or parcel is more useful, easier and quicker to generate.

As shown in all the maps, most of the houses are temporary and living in such houses increases vulnerability and exposure. Households were waiting to receive reconstruction grants but were either not aware of the procedures to obtain them or they lacked the required documents. Both are issues, which can be visualized through the location and which can be

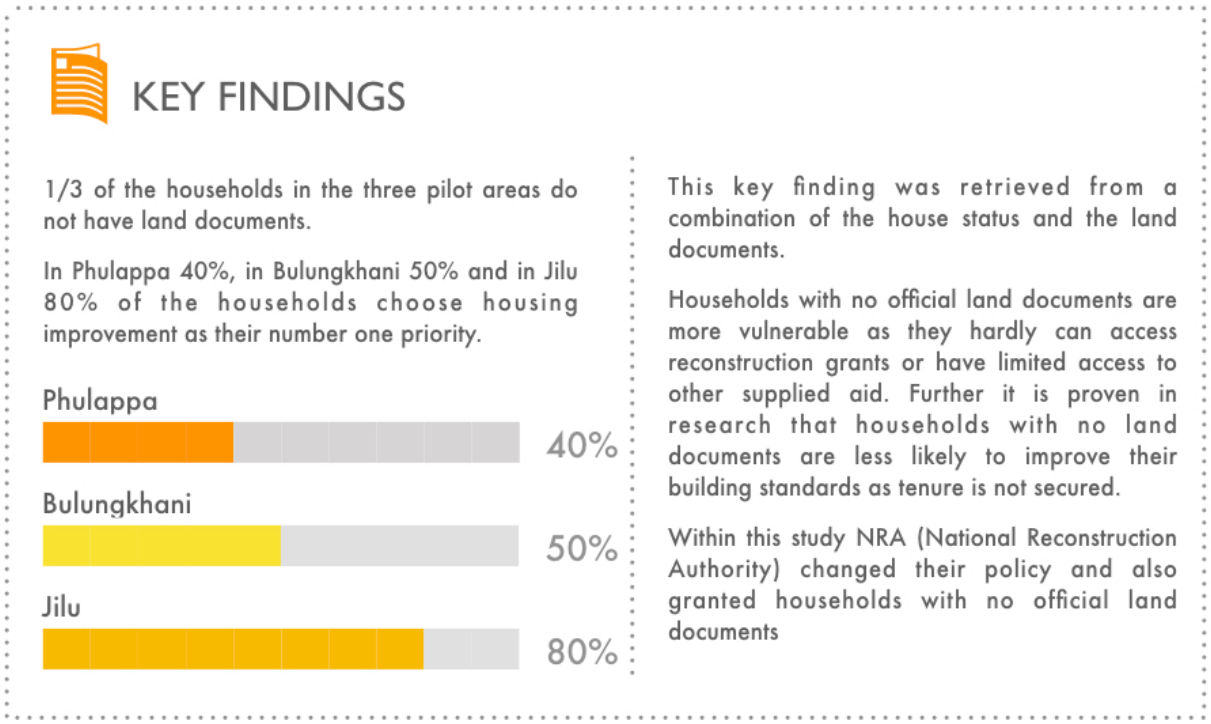


Figure 9: Analysis on housing status and availability of land documents in the project sites.

Figure 10: Analysis of eligibility to reconstruction grant.

addressed through a link between land administration and disaster risk management.

The lack of documents is borne out by the analysis, which shows that approximately one third of HHs had no land documents. Some of those households have lived there for generations but were not aware of their non-existing land documents.

4.1.2 Key Finding 1B: Status of Grant and Land Document

To underline the results, the status of the reconstruction grant in relation to the land document was analysed.

4.2. RELEVANCE OF FARM TENURE FOR DISASTER RISK MANAGEMENT

To describe the scale of vulnerability and exposure, the farm tenure gives an important indication on pre- or post-disaster food security, which is based on farm production and is therefore crucial to maintain the livelihood.

4.2.1 Key Finding 2: Farm Tenure

The farm tenure, can be:

a) Registered tenancy;
b) Unregistered tenancy;
c) Single ownership;
d) Joint ownership with others;
e) Inheritance ownership;
f) Contract; or
g) Communal ownership.

Unregistered farm tenure is under constant threat of either eviction or unequal (insufficient) share compensation of crops.

These maps show that there was a clear difference in the project sites; whereas in Bulungkhani and in Jilu there

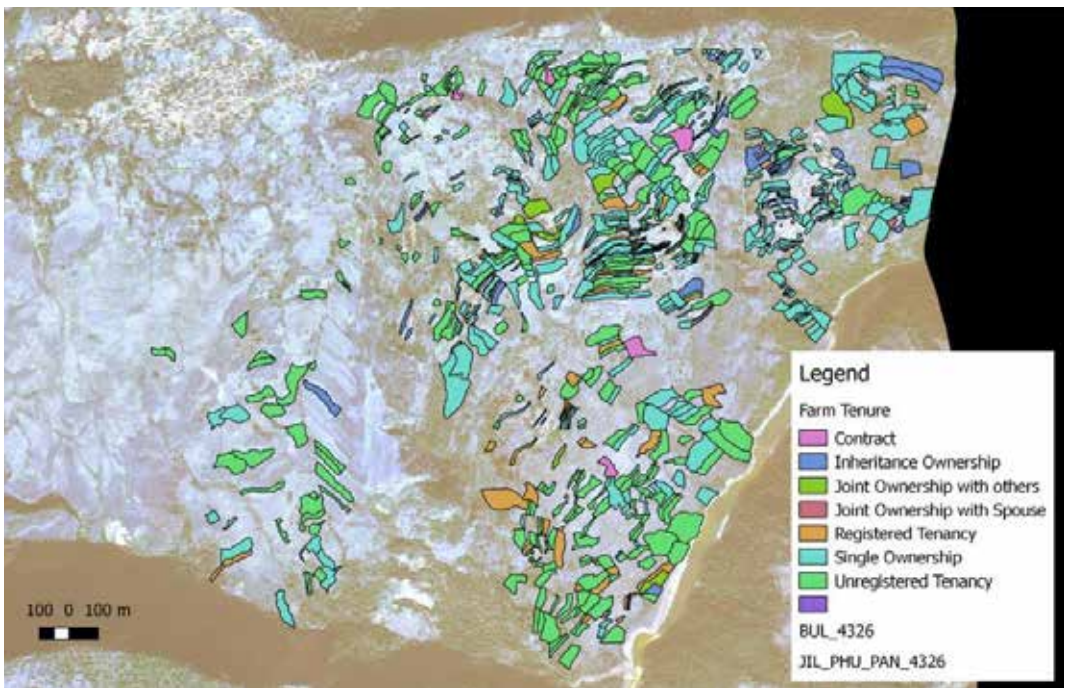


Figure 11: Map showing Phulappa farm tenure.

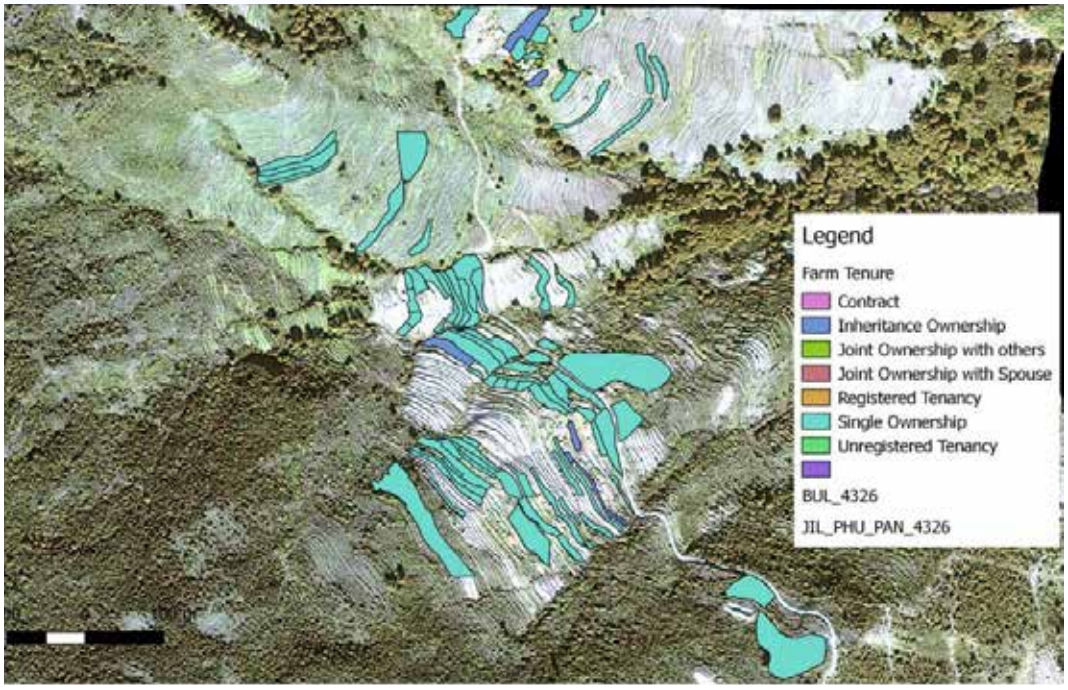


Figure 12: Map showing Bulungkhani farm tenure.

were mainly single-ownership farmers, in Phulappa, a lot of unregistered tenancy is shown. People whose tenure or tenancy is not secure are the most vulnerable, as these HHs do not officially exist. Further, the result shows that the visible boundary approach is working and that these huge areas can be covered with spatial data without walking through and surveying the boundaries in the field.

4.2.2 Key Finding 2B: Landless or near landless

Land is one of the most significant assets in the Nepalese rural-agrarian economy and is one of the prime sources of livelihood for many rural households. More than 83 per cent of Nepalese live in the rural area (CBS, 2014) and nearly 75 per cent of them depend on agriculture for their livelihood (CBS,2006). Landlessness or near landlessness is defined as having less than 0.5ha of land, which impacts the social stability and

KEY FINDING

62

households out of 442 in Phulappa are landless or near landless*

*landless or near landless is defined as having less than 0.5ha of land by the Ministry of Agricultural Development, 2015.

Figure 13: Analysis of the landless or near landless households in Phulappa.

economic development of individuals. Phulappa is the pilot area with the highest number of non-statutory tenure relationships and therefore it was suspected to have the highest number of landless or near-landless households.

The result showed that 62 households out of 442 in Phulappa are landless or near landless. Landlessness influences food security, housing, access to drinking water, health and work, and therefore increases the vulnerability of individuals.

4.3. POST-DISASTER PRIORITY ASSESSMENT

A common post-disaster activity in disaster risk management is damage assessment and the identification of priorities for recovery (van Westen, 2009). We collected data on the priorities at household level to describe the scale of vulnerability. The priorities were defined at an initial community meeting.

4.3.1 Key Finding 3: Priorities at Household Level

The priorities at household level, can be:

a) Housing improvement;
b) Drinking water;
c) Education;
d) Electricity;
e) First aid kit; or
f) Toilet.

The result clearly shows the need for improved housing. This result is in line with the other results, which shows that most of the households live in temporary houses and did not receive reconstruction grants. It also shows that the reconstruction grants, which are based on houses/constructions per household, may not be enough. The real needs are based on household sizes.

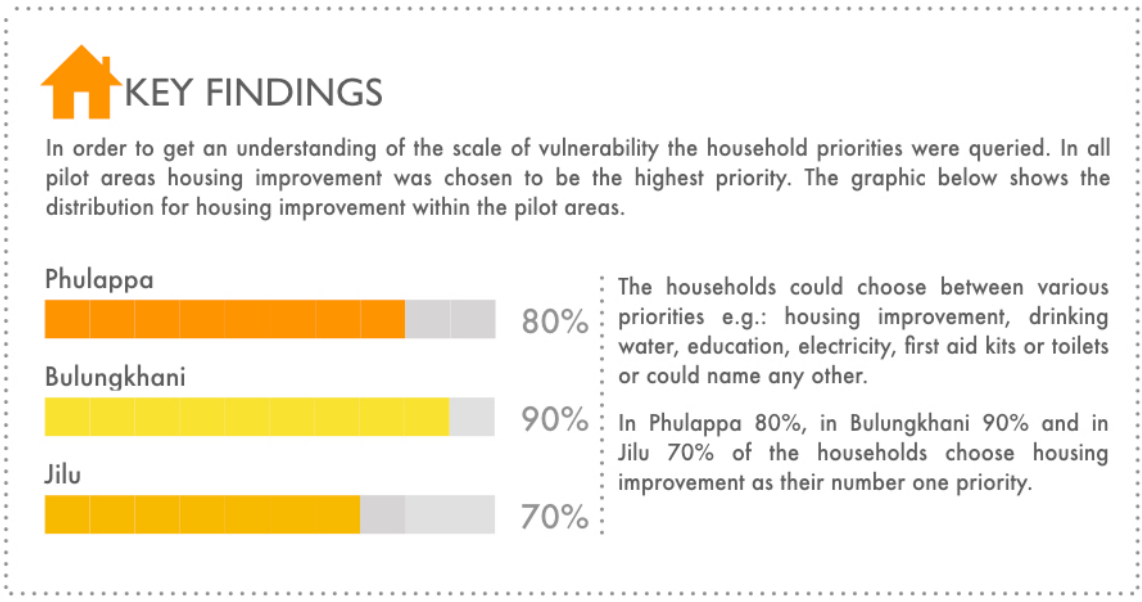


Figure 14: Housing Improvement preference in the three project sites.

4.4. VULNERABILITY OF WOMEN

In 2011, the Government of Nepal introduced joint ownership to empower women in a clear step towards gender equality, but men still own most of the productive land resources. Studies show that only approximately 20 per cent of women own land, therefore in this project the number of joint ownership certificates was also collected and analysed, (UN-Habitat, 2018)..

4.4.1 Key Finding 4A: Gender and Joint Ownership

This result focuses on the number of joint ownerships within the pilot sites. During the participatory enumeration the community members were asked about their tenure status, which can be:

a) Registered tenancy;
b) Unregistered tenancy;
c) Single ownership;
d) Joint ownership with spouse;
e) Inheritance ownership;
f) Contract; or:
g) Communal ownership.

Note: There are several gender-responsive provisions in the Financial Act 2072 BS (2015/16 AD) according to which women receive tax breaks of from 25 to 50 per cent depending on the geographical region, 35 per cent in the case of single woman, 25 per cent in the case of senior citizens above 70 years, and 50 per cent while transferring land to daughters or grand-daughters within three generations. Joint land registration between husband and wife can be done by paying a fee of NPR 100 (Approximately USD 1).

The results showed that there is a clear need to promote joint ownership in accordance with government policy. Many people were not aware of this policy and especially among women awareness and knowledge of it needs to increase. Interestingly, most men did appear to agree to joint ownership but, again, a lack of knowledge prevented them from applying for it.

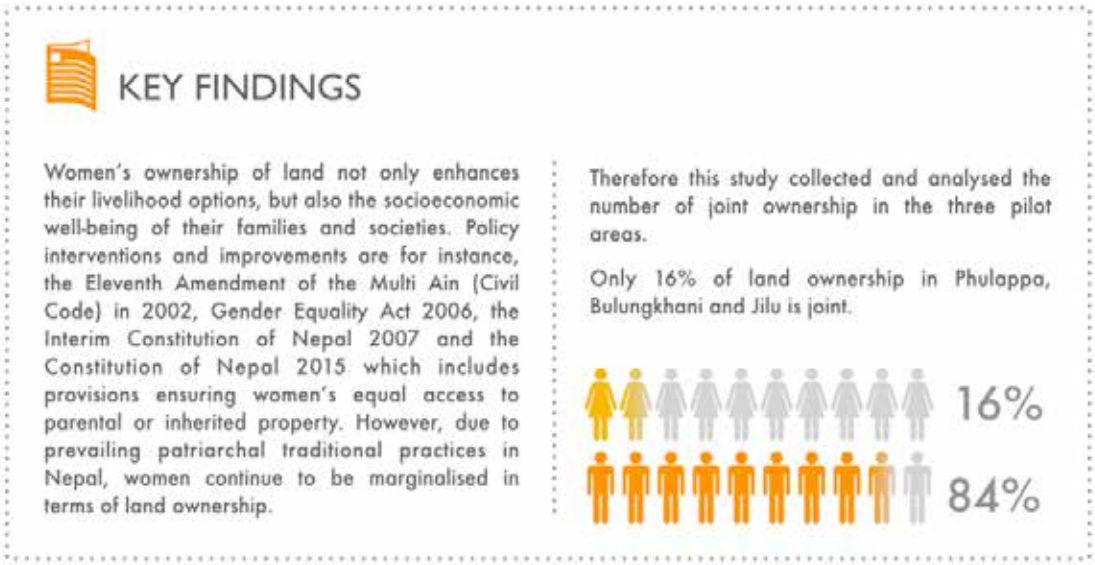


Figure 15: Analysis of joint ownership status in the three project sites.

Realizing how important joint ownership is to securing access to and control over land and the house for both spouses, the government has also established a mandatory provision on this in a government-led initiative. Joint ownership issuance is mandatory for the beneficiary who will receive a land purchase grant from the government or receive government land for relocation as per the NRA guideline of 2017 on Relocation of Risk-prone settlement.

Figure 16: Analysis on the importance of farm tenure for women.

Rural women form a large proportion of the agricultural labour force in Nepal and play a vital yet unrecognized role in agriculture that sustains nearly 80 percent of the population. Photo ©Community Self Reliance Center

4.4.2 Key Finding 4B: Gender and Farm Tenure

To underline the importance of complete land administration coverage and the recordation of all people-to-land relationships, the project analysed the importance of farm tenure for women. In rural areas, where farming is the main source of income, more than 73 per cent of women is engaged in agricultural production but despite their major contribution to farming, only approximately 20 per cent of land ownership is in the woman's name, according to CBS data, 2011.[12]

Women were found to be more vulnerable than men before and even in the post-earthquake context. Due to their lack of access to land, they were even more vulnerable to not receiving the grant as earthquake victims. The findings confirmed the importance of tenure security for women who farm for their livelihoods, but also for children, the elderly, people with disabilities, women, the poor and marginalized groups.

4.5. ADDITIONAL RESULTS

The project results have contributed to the following outcome:

- Advocacy and awareness-building work contributed in the change of the regulation of NRA to allow non-holders of titles or ownership of land to receive land grants of USD 2,000 per HH;
- Experience and lessons learned contributed to the land policy development process addressing issues around tenancy, landlessness, gender and Fit-For-Purpose solutions;
- Experience and lessons learned contributed in the design and development of a FFP LA strategy for Nepal, which was recognized by the government as a tool to implement its land policy. The FFP LA country level implementation strategy for Nepal is published (UN-Habitat, 2018);
- Interventions resulted in the final integrated settlement plans of Panipokhari and Jilu, and a preliminary plan of Bulungkhani. As a result of the interventions, additional housing grants and government investments for physical infrastructures in the two communities Jilu and Panipokhari were leveraged to an amount of USD 2 million;
- The NRA and land authorities were sensitized to provide support to identified landless and HHs without land documents. Applications for land grant or land documents from 62 landless or near landless HHs of Phulappa were submitted to the concerned authorities.

> *"GLTN's relevance in Nepal is reinforced by the broad land governance and capacity development needs of 753 new municipal governments. The piloting of the STDM in rural villages of Nepal that were devastated by the 2015 earthquake has demonstrated a cheaper and more effective method for registering land occupancy, enabling farmers to apply for reconstruction grants with greater expediency.*
>
> GLTN Phase 2 End-of-Phase Evaluation Final Report

4.6. IMPORTANT DEVELOPMENTS RELATED TO THE PROJECT

In 2015, the new constitution came into effect and is considered to be progressive, recognizing the rights of gender and minorities and containing provisions to protect and empower minority groups. It also

12 Central Bureau of Statistics, National Population and Housing Census 2011 (CBS, 2011).

restructures the country into a federal republic. In 2017, a new government was elected at the federal level in addition to representatives for the provincial and local governments. Further development in legislation is in progress to implement the provisions of the constitution. The new land policy was drafted with the support of UN-Habitat/GLTN in cooperation with the Community Self Reliance Centre (CSRC) which is dedicated to empowering land-poor women and men, enabling them to claim and exercise their basic rights, including the right to land and natural resources, and contributing to eradicating poverty and injustice. Stakeholders at national, provincial and local levels were consulted on the new policy and international experts provided recommendations.

The GLTN has enabled the participation of Nepal's Community Self-Reliance Centre (CRSC), a national NGO that leads the land rights platform, in the formulation of the new land policy in collaboration with the Ministry of Agriculture, Land Reform and Cooperatives (currently reorganized as the Ministry of Land Management, Cooperatives and Poverty Alleviation). The draft policy addresses the inequities of land access and distribution that triggered a national armed insurgency from 1996 to 2006. GLTN's relevance in Nepal is reinforced by the broad land governance and capacity development needs of 753 new municipal governments that were created and authorities elected.

The majority of the land professionals in the government embraced the Fit-For-Purpose Land Administration approach. Together with land experts from government, the academic sector and civil society, a strategy document on Fit-For-Purpose Land Administration was drafted and launched in June 2018.

4.7. OTHER RESULTS

Additionally, awareness on land tenure issues was raised at district, local and community levels. Various brochures and information boards with information on how to access the reconstruction grants were produced. This is relevant as many enumerated households now know that they are eligible to receive reconstruction grants and therefore also know how to access them. Those brochures and information boards were shared and installed in the communities.

The findings of the project were presented at different fora in Nepal, including national symposia attended by multi-stakeholders. At the international fora, various scientific articles and conference papers were produced. Important among them are:

- FIG Congress, May 2018, Istanbul, Turkey, "Embracing our smart world where the continents connect: enhancing the geospatial maturity of societies";
  - Implementation of FFP LA approaches in Nepal by project partners
  - FFP LA - Assessment of efficiency and effectiveness of paper-based and digital data collection by Kadaster
  - VCSP Experiences
  - Synopsis: FFP LA
  - Validation of a cadastral map created using satellite imagery and automated feature extraction techniques: A case of Nepal

- FFP LA - Assessment of efficiency and effectiveness of paper-based and digital data collection. Case of Colombia, Mozambique and Nepal by Kadaster

❑ 7th GLTN Partners Meeting, April 2018 Nairobi, Kenya, "Together, Moving Tenure Security for All to the Next Level"
- A presentation on Land Management and Land Tenure Security Initiative in a Post-Earthquake Disaster Context in Dolakha District

❑ Annual Meeting FIG Commission 7, December 2017, Cartagena, Colombia, "Cadastre for emergencies and disasters: Challenges and opportunities for islands and coastline";
- Implementation of Fit-For-Purpose Land Administration Approaches in Nepal, in a post disaster context

❑ WB 2019
- Creating Resilience to Natural Disasters Through FFP Land Administration - an Application in Nepal
- Fit-For-Purpose Land Administration Strategy: An innovative approach to implement Land Policies in Nepal

❑ FIG 2019
- Creating Resilience to Natural Disasters Through FFP Land Administration - An application in Nepal

Stakeholders meetings were a resourceful avenue in creating awareness of land tenure issues. Photo ©Kadaster International/ Paula Dijkstra

Participants gather around Dr. Suresh Dhakal from Community Self Reliance Center (CSRC) to learn on the Nepal project experiences during the 7th GLTN Partners meeting in April 2018. Photo ©UN-Habitat/Tam Hoang

- Statutory Versus Locally Existing Land Tenure Typology: A dilemma for good land governance in Nepal
- Development of Fit-For-Purpose Land Administration Country Strategy: Experience from Nepal

Additionally, various short articles and tweets were produced to share immediate outcomes of the project.

4.8. OVERVIEW OF DIFFERENT ROLES IN THE FIT-FOR-PURPOSE SPATIAL FRAMEWORK

Considering the huge number of surveyors required to undertake a FFP LA project, the need for grassroot surveyors was emphasized. The following table explains the different roles of grassroot and professional surveyors in the FFP spatial framework, which has evolved as a feedback from the project. The table presents the first outline based on a discussion between experts engaged in the project. A pre-condition to be a grassroot surveyor is literacy and strong community involvement. Grassroot surveyors should have completed a basic survey course/short training, can be engaged in assisting in FFP LA projects and should be in position to carry out basic surveying and measurement functions. Depending on the approach and tools used in the field, computer literacy could be required. The table represents initial thoughts by the team and will need further investigation and development.

Table 2: Different roles of grassroot and professional surveyors in the FFP spatial framework.

	Grassroot Surveyor	Professional Surveyor
Training	• Receive training and build confidence and routine through exercises • Able to conduct training after successful completion of training from the professional surveyor	• Conduct training on methodology; identification; image preparation, interpretation and explanation; • Create spatial & cadastral intelligence within the grassroot surveyors
Planning and Preparation	• Organize when and where to conduct communication and data acquisition with the communities	• Organize local and/or national support from governmental agencies (decentralize and central approach)
Awareness	• Build trust relation with local community	• Show support in the field through governmental representative
Validation	• Conduct validation in the field with the communities	• Train grassroot surveyors on how to conduct an inclusive and gender responsive validation in the field
Data acquisition	• Conduct field work (data collection by drawing on image or using GPS or other data acquisition method), collecting evidence on existing rights through photos of documents, photo of ID and person, • Introduce (communicate purpose and procedure) to household • Check data in detail after acquisition	• Supervise data organization, data management, tool/hardware management, logistical arrangements • Check data on consistency • Keep the overview
Approach	• Review the approach in regard to local circumstances	• Define the approach
Tools Customization & Manuals	• Review manuals on usability • Use manuals for conducting sensitization and training	• Draft and create manuals • Use existing manual for training purposes for grassroot surveying • Conduct tools customization
A/D Conversion	• Perform A/D conversion after required training	• Check quality after A/D conversion
Data Analysis	• Analyse data by using predefined basic queries • Support the interpretation of analysis results (both basic and complex)	• Conduct advanced/complex data analysis
Presentation of Results	• Present and sharing results to local communities	• Support grassroot surveyors bringing institutional knowledge and guidance
Maintenance	• Purpose dependent	• Purpose dependent

4.9. CHALLENGES AND LESSONS LEARNT

Compared with other FFP LA implementations in Mozambique (Simão *et al*. 2018), Indonesia (Ulvund *et al*. 2019) and Colombia (Molendijk *et al*. 2018), the challenges and lessons learnt were similar.

4.9.1 Language

Different local dialects in the different pilot sites were a challenge. The enumerators who were trained had difficulties communicating with people, especially the elderly in the community. This challenge was addressed through local field officers who supported the enumerators and made sure that in all the households somebody was present who could participate in the enumeration. During conceptualization of the Project, the team was not aware of this issue but through testing the approach in the field this issue could be addressed in a timely manner. The language barrier was not an issue for the visible boundary approach, as all

the community members immediately understood the task and identified their farmland.

This language barrier is seen in, for example, Mozambique and Indonesia where many local dialects are used and therefore the involvement of community leaders is essential.

4.9.2 Visible boundary approach with printed satellite images

After various expert group discussions, the decision for a paper-based approach was based on several reasons including the regular power outages and the limited computer literacy of community members. This decision had several consequences, for example in regard to the printing of the satellite image. Size A0 was chosen for printing because the study area is huge and printing on a smaller page size would have necessitated too many printouts. All the printouts from one area (e.g. for Phulappa required 12 A0 printouts) had to be laid out at the same time because one household had ''*" number of farms located in different areas. Also, due to printing the satellite images, the drawn farm boundaries had to be digitized afterwards. This step could be avoided with a digital approach, but the local partners were trained well by the project team to ensure post georeferencing does not lead to a decrease in accuracy.

In Mozambique and Colombia, a digital approach to identify the visible boundaries was used. The digital approach implies no digitization afterwards but still snapping functionalities, to automatically connect/snap already measured points, of mobile apps are not sufficient yet – which also has implications after processing. In Indonesia, both digital and paper-based approaches were used.

4.9.3 Different expertise and backgrounds of experts

The development of the questionnaire took more time than anticipated because of the different expertise within the team. The context was also different from previous applications (urban context vs. rural and post disaster). Because of the different contexts and therefore also a different questionnaire, the STDM software had to be updated, which led to an improvement of the software. The updates and improvements to the data model are separately documented (Unger *et al*. 2018).

This lesson learnt was also experienced in other FFP LA applications. Since the FFP LA approach addresses land issues holistically, cooperation between disciplines is important and can lead to improvement of processes.

4.9.4 Capacity development

Capacity needs should be addressed according to the situation. As such, procedures and processes were tested many times before going to the field. This created confidence in the enumerators. It was also important to give feedback and create an opportunity for the enumerators to show they understood and were able to apply the knowledge gained in the field. The development of the handbooks and their translation into Nepali was crucial.

All FFP LA applications imply capacity development based on needs. In Nepal, community members did the FFP LA recordation whereas in other FFP LA applications the recordation may involve government employees. Team members from different background may have expertise in different areas. Orientation training on how to develop purpose-based questionnaires for surveys, to conduct participatory enumeration, and using GIS and mapping are necessary for all team members.

4.9.5 Strong local partner

Having a strong local partner is crucial. The local partner for this project, HURADEC, showed that they are capable of executing FFP LA and that the approach can be applied in other fields. For example STDM can be used in different contexts such as public administration, health, schooling, etc. Also, the involvement and participation of the community rested on the engagement and dedication of the local partner.

Working with a strong local partner, governmental officials and also young people and women is key to the success of any FFP LA application. This was witnessed in all FFP applications by Kadaster and GLTN.

Photo ©Kadaster International/Paula Dijkstra

CHAPTER 5

RECOMMENDATIONS & CONCLUSION

Land administration plays a leading role in disaster risk management. Addressing tenure security in disaster-prone areas is essential to prevent, mitigate, prepare and respond to natural disasters. This Project shows that vulnerable or at-risk groups are children, the elderly, people with disabilities, women, the poor and marginalized groups, and especially people affected by tenure security. Mapping these vulnerable groups based on their needs, priorities and marginalization vs. integration to implement interventions can be done during preparedness, planning, response and relief processes. The analysis shows that disaster management policies have to be redirected towards tenure security, poverty and vulnerability reduction instead of compensation, resettlement and relief responses. Disaster management should integrate structural with non-structural measures such as increasing tenure security as a first step towards resilient communities. Disaster-prone communities in particular should be engaged in the process of land administration and disaster-related decision making in order to increase the resilience of these communities. This Project proved the importance of documenting all people-to-land relationships in order to prepare for, mitigate and respond to natural disasters. Through the documentation of all people-to-land relationships efficient and effective land-use planning can further mitigate disaster risks. A backup of all documents related to tenure needs to be stored safely so that the return to land, when safe, is ensured and those documents can be used for an inclusive, participatory and transparent resettlement process.

Official launch of the land information management system project in Ratnanagar municipality as part of upscaling the Fit-For-Purpose Land Administration approach for tenure security. Photo ©UN-Habitat/Shristee Singh Shrestha

Trainees interact during the Fit-For-Purpose Land Administration training in June 2018. Photo ©UN-Habitat/Raja Ram Chhatkuli.

Grassroot surveyors can potentially be used by governments to achieve complete coverage in their land administration systems to be better prepared for natural disasters. In the aftermath of a natural disaster, housing is a priority as is the need for building permits, the need for land documents, and the need for grants for all. Having complete coverage in the land administration system creates opportunities to mitigate and prepare for disasters. Information is power and is the base for creating better services for all people pre, during and post disaster. This Project showed that the approach works and that the link between land administration and disaster risk management is there – and addressing both benefits all people. Further, the Project showed that working together brings results; the cooperation between Kadaster, UN-Habitat GLTN, UN-Habitat Nepal and HURADEC brought results and benefited four communities in Dolakha District but also had an impact at national and global level.

Finally, the application of a FFP approach for tenure security is well recognized in Nepal and is reflected by the initiation of STDM projects in Ratnanagar and Belaka Municipalities in 2019. The Ministry of Land Management, Cooperatives and Poverty Alleviation has expressed an interest in expanding this approach to other municipalities.

Community discussions in Bulungkhani. Photo ©UN-Habitat

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ABOUT THIS PUBLICATION

Information on people-to-land relationships that is documented in a land administration system is crucial to any recovery from a natural disaster. A Fit-For-Purpose land administration, with special attention given to the poor and vulnerable in disaster risk management, plays an important role in the recognition of human rights by the governments and by the local community before, during and post disaster. This publication is a summarized documentation of the application of Fit-For-Purpose land administration tools and approaches in Dolakha District of Nepal undertaken by the Global Land Tool Network (GLTN), Kadaster International and UN-Habitat in partnership with the Human Rights Awareness and Development Centre (HURADEC) and the UN-Habitat, Nepal Country Office. It presents key findings on the implementation of a Fit-For-Purpose Land Administration approach aimed at improved earthquake recovery and resilience, specifically for affected communities in four villages in the Dolakha District in Nepal following the 2015 massive earthquake of April 2015

The project implemented land tools developed by the Global Land Tool Network (GLTN) partners within the framework of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT), the Sustainable Development Goals (SDGs), the New Urban Agenda (NUA) and the Sendai Framework for Disaster Risk Reduction in a post-disaster environment. This publication outlines the application of land tools and the development of land administration strategies for disaster risk management in a post-earthquake context which aim to i) support the implementation of GLTN's Fit-For-Purpose Land Administration tools and approaches in Nepal; ii) enable the management and recordation of customary and informal land rights for communities; iii) pilot the use and application of the GLTN tools and other related tools in the context of disaster risk management in a post-earthquake, peri-urban and rural setting; and iv) document the processes, lessons learnt and build capacity on its use and capabilities.

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