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# **Deliverable 7.1**
# Governance and capacity development definition

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**Abstract:**
This is a consolidated report on the definitions of governance and capacity development as part of WP7 'Govern and Grow: Sustainable governance and capacity buildings models'

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**Contributors:** Ine Buntinx, Joep Crompvoets, Serene Ho, Christian Timm and Gordon Wayumba

The its4land consortium consists of the following partners:

University of Twente (UT)
KU Leuven (KUL)
Westfaelische Wilhelms-Universitaet Muenster (WWU)
Hansa Luftbild AG (HL)
Institut d'Enseignement Superieur de Ruhengeri (INES)
Bahir Dar University (BDU)
Technical University of Kenya (TUK)
ESRI Rwanda (ESRI).

# Executive Summary

This document is directly linked to 'Work Package 7 (WP7) – 'Govern and Grow: Sustainable governance and capacity building' of the its4land project. WP7 deals specifically with the development of a governance model to support the implementation and evaluation of innovative tools and their use in order to meet stakeholders' needs and the creation and partially implementation of a capacity development model in order to strengthen the necessary skills and competencies so that the innovation process can have sustainable effects.

This deliverable report presents the first deliverable entitled 'Define governance and capacity development in the context of its4land'. Although technical innovations are crucial to overcome current land tenure challenges, these alone are not able to cope with adapting, scaling and sustaining the geospatial its4land tools. To do so, enabling governance and capacity development becomes significant. Governance is a varied and broad topic of inquiry and can mainly be understood as a process that provides direction and coordination of stakeholders and their actions. Governance strategies cannot be implemented effectively without focusing on capacity development for sustainable improvements. Capacity development mainly focuses on improving and maintaining tangible hard capacity characteristics such as knowledge and skills, and soft capacity characteristics such as attitudes.

From available governance and capacity development concepts and theories, operational definitions for governance and capacity development were formulated from the context of usage of the its4land tools. This involved a literature review and feedback from valorisation panels, advisory board, exploitation managers (Hansa Luftbild and Esri Rwanda) and work package leaders through a survey.

From these activities, governance of the its4land tools is defined as "*The process of interactively steering the land tenure society to sustain the use of the its4land tools*".

Capacity development for the its4land tools is defined as "*The development of knowledge, skills and attitudes in individuals and networks of people that are relevant for the sustained use of the its4land tools*".

These (operational) definitions will form the basis for developing the relevant governance and capacity development models. This will be achieved by intensively reviewing literature on ICT and land governance models as well as those related to capacity development (D7.2). Subsequently, initial versions of its4land governance and capacity development models will be generated (D7.3). These initial models will be reviewed and applied in the East-African context (D7.4), which will lead to the models being further adapted and/or refined (D7.5).

**Keywords:** fit-for purpose, governance, capacity development

# Contents

# 1  Introduction

Its4land is a European Commission Horizon 2020 project funded under its Industrial Leadership program, specifically the 'Leadership in enabling and industrial technologies – Information and Communication Technologies ICT (H2020-EU.2.1.1.)', under the call H2020-ICT-2015 – and the specific topic – 'International partnership building in low and middle income countries' ICT-39-2015.

Its4land aims to deliver an innovative suite of land tenure recording tools that respond to sub Saharan Africa's immense challenge to rapidly and cheaply map millions of unrecognized land rights in the region. ICT innovation is intended to play a key role. Many existing ICT-based approaches to land tenure recording in the region have failed: disputes abound, investment is impeded, and the community's poorest lose out. its4land seeks to reinforce strategic collaboration between the EU and East Africa via a scalable and transferrable ICT solution. Established local, national, and international partnerships seek to drive the project results beyond R&D into the commercial realm. its4land combines an innovation process with emerging geospatial technologies, including smart sketchmaps, UAVs, automated feature extraction, and geocloud services, to deliver land recording services that are end-user responsive, market driven, and fit-for-purpose. The transdisciplinary work also develops supportive models for governance, capacity development, and business capitalization. Gender sensitive analysis and design is also incorporated. Set in the East African development hotbeds of Rwanda, Kenya, and Ethiopia, its4land falls within TRL 5-7: 3 major phases host 8 work packages that enable contextualization, design, and eventual land sector transformation. In line with Living Labs thinking, localized pilots and demonstrations are embedded in the design process. The experienced consortium is multi-sectorial, multi-national, and multidisciplinary. It includes SMEs and researchers from 3 EU countries and 3 East African countries: the necessary complementary skills and expertise is delivered. Responses to the range of barriers are prepared: strong networks across East Africa are key in mitigation. The tailored project management plan ensures clear milestones and deliverables, and supports result dissemination and exploitation: specific work packages and roles focus on the latter.

This document is directly linked to 'Work Package 7 (WP7) – 'Sustainable governance and capacity building' of the its4land project as part of the major phase 'Transform' – concentrating on implementing, scaling, disseminating, and commercializing the results from the previous phase, 'Design'. WP7 deals specifically with the development of a governance model to support the implementation and evaluation of innovative land tenure recording tools and their use in order to meet stakeholders' needs and the creation and partially implementation of a capacity development model in order to strengthen the necessary skills and competencies so that the innovation process can have sustainable effects.

This deliverable report, D7.1 Governance and capacity development definition, maintains a simple structure. Section 2 presents the adopted methodology. Section 3 explores the linkage between the fit-for-purpose approach in land administration and governance and capacity development as a way to understand the distinct importance of governance and capacity development in the its4land project. These are then followed by specific sections about

governance (Section 4) and capacity development (section 5). To conclude this deliverable ends with a final section describing the main conclusions (Section 6).

# **2**  Methodology

This section presents the different approaches and research strategies undertaken to come up with a working definition for governance and capacity development in the context of its4land.

The different its4land tools are built upon the promises of fit-for-purpose land administration as conventional land tenure recording tools have not been able to deliver on expected outcomes in Sub-Saharan Africa. Therefore, a literature study was conducted based on fit-for-purpose literature to provide an overview of the shift from conventional towards fit-for-purpose land administration. This is crucial for positioning the importance of governance and capacity development as an explicit component of the fit-for-purpose ideology.

Second, a literature study was conducted in order to provide a short yet concise overview on widespread governance and capacity development definitions. This overview put a light on a wide array of definitions, while specifically focussing on the theories and ideological stands useful for the its4land tools.

Third, in order to extend and validate the gathered literature information, a panel of experts in the field of land tenure and land administration provided their views on the first version of the working definitions through an online survey (see annex 1). The combination of the fundamental characteristics and ideological stands of fit-for-purpose literature on the one hand, and governance and capacity development literature on the other hand, were used to develop this online survey. The online survey was sent to 12 valorisation partners, 8 advisory board members, 2 exploitation managers (Hansa Luftbild and Esri Rwanda) and the work package leaders of WP 3, 4, 5 and 6.

The response rate of the valorisation partners and advisory members was low (6/20 completed the survey, 6/20 partially completed the survey). The valorisation partners and advisory board members submitted the survey anonymously. These respondents have a very diverse area of expertise in land administration; going from policy maker to training and research, cadastral systems, land administration system development, land surveying, GIS management and land information management. Moreover. the respondents were from the Netherlands, Australia, different developing countries in Latin America, Caribbean and Southern Africa, Ethiopia , Rwanda and Kenya.
This is in contrast with the response rate of the exploitation managers and work package leaders. The response rate for this group was high as all of them completed the survey (6/6). As these respondents are closely involved with the its4land project, their input is mainly used to get better insights in the issues related to governance and capacity development of the use of the its4land tools. Their answers are used in an indirect way to feed into the responses of the experts for the formulation of the governance and capacity development definition for the use of the its4land tools. .

Finally, the suggestions and recommendations are analysed to refine and finalize the working definitions of governance and capacity development.

# 3  Towards fit-for-purpose land administration

## 3.1  Conventional land administration

Land administration is defined by UNECE (1996: p.3) as: "the processes of recording and disseminating information about the ownership, value and use of land and its associated resources. Such processes include the determination (sometimes known as the "adjudication") of rights and other attributes of the land, the survey and description of these, their detailed documentation and the provision of relevant information in support of land markets". Ownership of land refers to security of the land that the land tenant owns and which comes after the transfer of land through sale or lease. The value of land is used in different ways, but it mainly deals with the assessment of the value of land and properties, the gathering of revenues through taxation and the management and adjudication of land valuation and taxation disputes. The use of land is dependent upon the national, regional/federal and local land use and management policies (UNECE, 1996; Enemark, 2004).

Conventional land administration depends upon conventional systematic survey and mapping approaches like theodolites, total stations, GPS for position measurements and mapping purposes. These conventional systematic survey and mapping approaches have proven to be very useful in developed countries as they can deliver high precision and high quality data. For developing countries, however, they have been found to be of limited value as coverage is more urgently important than accuracy: evidence from the ground shows that almost two-thirds of the global population do not have access to land tenure security, which implies that approximately four billion of the world's six billion land interests are not recorded nor known by governments (Bennett et al., 2008; Williamson et al., 2010; Zevenbergen et al., 2013). Additionally, conventional approaches are not always appropriate to fully accommodate existing contextual conditions due to the diversity of informal, social or customary land tenure types (Enemark et al., 2015).

Conventional tools represent complex, time-consuming and expensive processes, which are mostly government driven, aligned with a top-down approach. In addition, there are often insufficient professionals in developing countries to conduct such methods of cadastral data capture. At this contemporary land tenure recording rate, it would take centuries to deliver adequate coverage (Zevenbergen et al., 2013).

## 3.2  Towards fit-for-purpose land administration

Around the 2000s, as a response to the failures of several projects in delivering appropriate and adequate land recording data in developing countries, a new 'fit-for-purpose' approach was needed (Enemark et al., 2015). This approach seeks to provide an answer to the inability of conventional methods to *fully accommodate existing conditions* (e.g. the diversity of informal, social or customary land tenure types). Fit-for-purpose tools are therefore designed to fulfill country specific land issues, needs and capacities (Enemark et al., 2015). These tools needs to be *flexible* in use and *affordable* in price This moves away from the conventional top-down approach and is more focused on a *participatory* manner aiming to better meet the needs of the people and achieving the right outcomes. However, these new generation tools

can afterwards be *upgraded* by conventional tools as soon as high precision data is a priority and affordable (UNCTAD, 2012).

Fit-for-purpose is a process that is very participatory driven and strives towards including several non-governmental stakeholders in the process of decision making and delivering services (Enemark et al., 2015). Despite the importance of non-state actors like NGO's, private companies and communities, the role of the government remains crucial for accomplishing real change. For example when gathered data (through participatory methods) is not acknowledged by the government, the data set will contradict the state-run system and will in this way not be very effective. Sometimes, however, fit-for-purpose gathered data can also be used to enforce rights in a longer battle against the government (Laarakker et al., 2016). There is currently a growing interest for innovative geospatial tools aligning this new approach, including examples like crowdsourcing (Goodchild and Glennon, 2010; Laarakker et al., 2016), mobile mapping (Enemark et al., 2016; Hay, 2016) or digital pen (Rugema et al., 2016) and more.

The its4land technologies are developed to align with the fit-for-purpose approach and includes smart sketchmaps, unmanned aerial vehicles (UAVs), automated feature extraction and geocloud services.

- *Smart sketchmaps* enable hand drawn non-metric spatial representations collected on a participatory manner to be converted into topologically and spatially corrected maps (Bennett et al., 2017). While conventional sketchmaps purely focus on spatial information, this innovative technology also aims to capture semantic information like labels and annotations.
- *UAVs* are fixed-wing or rotary technologies, remotely piloted, and capable of carrying positioning and imagery sensors for data collection of smaller areas (up to a few hundred hectares) (Stöcker et al., 2017). The main advantages over conventional (manned) airborne-based mapping are threefold: i) UAVs are easily deployable; ii) UAVs are easily able to achieve a ground pixel size of 5 cm, which can be captured for a relatively large area in a relatively short time; iii) UAVs are easy in use - with a small training effort, state-of-the-art devices can be operated, even by laymen.
- *An automated feature extraction* algorithm supports imagery-based identification and vectorization of real-world phenomena of interest for visible cadastral boundary detection (Crommelinck et al., 2016). While this technology cannot deliver complete matching, mostly matched output can contribute to lower tenure mapping workflow costs and more efficient time-use. It can also be used to support general boundary identification in volatile areas without necessarily going to the ground. In the developing countries, it is becoming exceedingly difficult to map property boundaries in the pastoral areas or areas of peri-urban sprawl. Sometimes, access to such areas by conventional boundary-mapping methods can be security challenged, hence the automatic boundary identification and extraction can save money and time.
- *Geocloud services* are information infrastructures that enable remote storage, analysis, and presentation of geo-information (Zhang et al., 2017). This technology differs from conventional storage in the fact that the acquired data can easily be accessed and adapted through one overarching storage. Geocloud services are designed to improve the flexibility, cost-efficiency and speed of data exchange and use between different sectors and for different contexts. In this project, the geocloud platform is intended to host the

technical results of the UAV imagery, sketchmaps and the automated feature extraction algorithm. Given the actual contextual situation of the East-African countries, where the internet access rate and related infrastructural developments are lacking behind compared to the rest of the world, the Geocloud services of its4land will use cloud techniques in combination with other contextual feasible approaches to make the implementation successful.

## 3.3  Sustaining fit-for-purpose land administration: the challenge of scaling and sustainability

To deliver on their promise, fit-for-purpose technologies need to be scalable and sustainable. Currently however, the main focus of the fit-for purpose approach is on technologies, but not yet that far on the aspects of scalability and sustainability.

The link between scalability and sustainability, and governance and capacity development, is an area that has not been examined in detail by either academics or practitioners in the field of land administration. From past studies on innovation and innovation systems, we know that transitioning social and socio-technical systems to a future state where such innovations become embedded requires governance. Such transitions are uncertain and complex as many actors are involved, the direction of change is often uncertain (e.g. top-down vs. bottom-up), and power to enforce or incentivise change may also come from different sources.

Governance, by its definition, provides direction and coordination of stakeholders and their actions (Bevir and Rhodes, 2001; Elzen et al., 2004; Kooiman, 1999), and this in a way that and it recognises the multi-level nature of the land tenure information production system, and can eventually strengthen the understanding of how the its4land tools can provide scalable solutions. Although, the fit-for-purpose approach seeks to improve local participation, good cooperation between the state and citizens is still crucial as the information needs to first be acknowledged by the government before it can deliver the expected outcomes (De Vries et al., 2015). In this way, governance will augment the potential of the its4land tools, and perhaps of other fit-for-purpose tools, to deliver wider societal impact by supporting the transfer of technology to other contexts in Sub-Saharan Africa (and perhaps beyond). Moreover, as noted in D2.5, a lack of governance can have a major (negative) impact on land information production, use and management. This suggests that in addition to technological innovation, there is also a need to understand who should 'own' and direct the use of these new technologies, and how its use might be coordinated given the array of stakeholders involved in land administration in Ethiopia, Kenya and Rwanda.

Land recording programs in developing countries are usually government-driven donor-backed projects. The impact of these investments is often restricted to project-driven contributions and gives too little consideration to the sustainability of the project and post-project maintenance contributions (Magis and Zevenbergen, 2014). Therefore, required governance strategies cannot be implemented effectively without focusing on capacity development for sustainable improvements (Bolger, 2000).

The importance of recording and mapping the parcels that are currently missing in developing countries is non-negotiable. It is, however, even more crucial to focus on the

governance and capacity development aspect of the tools in order to potentially upscale, maintain and sustain this process. How these technologies may be sustainably adopted and potentially transferred requires an understanding of how these new technologies potentially align with current systems of practices and processes. It requires an understanding as to how these technologies might present new challenges for existing institutional frameworks at the country level, and how it might confront prevailing social structures at the individual and organizational levels.

# 4  Governance

## 4.1  Conceptual overview on Governance definitions

During the past decades, governance gained interest as a relevant topic of inquiry in a variety of study areas e.g., ranging from (social) sciences to IT. The shift from government to governance was initially initiated around 1980 through public administration and public policy debates in the context of New Public Management (NPM) reforms. This shift was mainly characterised by a restructuring of state-society relations, regarding the competence of public managing and decision-making (Hughes et al., 2005; Hyden et al., 2003). Where nation state authorities were previously the ruling coordinating and decision-making bodies, a dynamic shift towards a mainly trilateral collaboration between nation state governors, the community and civil society took place (Corijn, 2009). In this way, governance can be distinguished from government as not only state but also non-state actors are assigned role in the governing process (Bevir, 2003; Goodwin and Painter, 1996; Jessop, 1997; Rhodes, 1997; Saito, 2008).

Consequently, governance is increasingly becoming a broad concept that is used in different ways and has a variety of meanings. The concept of governance was originally derived from the Latin word 'gubernare' which can be translated as 'to direct, guide, steer' (Levi-Faur, 2012). This meaning has been maintained till now as one of the main characteristics in contemporary governance definitions employed in public administration to IT research. In the following paragraphs different governance perspectives from public governance, good governance, land governance and corporate governance will be discussed. Public governance mainly refers to the way the government is organised and public services are delivered. According to Rhodes' (1996: p.658) public administration perspective, public governance refers to *"self-organizing, inter-organizational networks, in which these networks complement markets and hierarchies as governing structures for authoritatively allocating resources and exercising control and co-ordination."* In line with many contemporary public governance definitions, these definitions emphasize the shifting relationships between the private and public sector. Public services used to be mainly delivered by the government in a strong hierarchical approach; nowadays, there is a growing tendency towards governing on the 'border'. Different public tasks and responsibilities that were previously solely executed by state-actors are now divided and shared by different state and non-state actors (Osborne, 2010; Kooiman, 1993). This shift is built upon the idea that the interaction creates opportunities in terms of knowledge, resource and capacity sharing, which cannot be delivered by one single actor (Ansell and Torfing, 2016). In this way, public governance evolves from hierarchical, to more market and networked approaches. This tripartite subdivision is, however, an abstract representation of the reality, where the different forms coexist or overlap with each other (Pollitt and Bouckaert, 2011; Meuleman and Niestroy, 2015; Osborne, 2010).

Good governance is mainly built upon the pillars of democracy and human and economic development. This is crucial for positioning the importance of governance and capacity development as an explicit component of the fit-for-purpose ideology (Weiss, 2000). As a response, supranational bodies like the World Bank and International Monetary Fund (IMF)

came up with the building blocks of 'good governance' based on a neo-liberal ideology. So, according to the World Bank (1992), good governance involves *"an efficient public service, an independent judicial system and legal framework to enforce contracts; the accountable administration of public funds; an independent public auditor, responsible to a representative legislature; respect for the law and human rights at all levels of government; a pluralistic institutional structure and a free press*" (Leftwich, 1993: p.610). Later, Hirst (2000) built on this definition. The author defines good governance as *"the creation of an effective political framework conducive to private economic action – stable regimes, the rule of law, efficient state administration adapted to the roles that governments can actually perform, and a strong civil society independent on the state"* (Hirst, 2000: p.14). This insists on a strategy of supporting development and democracy goals by limited interference of the nation state and relying on a (largely) self-regulating civil-society (Hirst, 2000).

More recent concepts like land governance possess good governance characteristics. During the last decade, land governance has also gained prominence in equality and development research. Currently, land governance in developing countries has to deal with multiple land related challenges like unequal access to land, land tenure insecurity, unsustainable land use and competing land interests which results in increasing land disputes and conflicts (Deininger, 2014; Palmer et al., 2009). Land governance is defined by Palmer et al. (2009: p.1) as "*the rules, processes and structures through which decisions are made about access to land and its use, the manner in which the decisions are made, implemented and enforced, and the way the competing interests are managed.*"

The field of business management provided corporate governance with governance aspects derived from private sector perspectives. Within this context, the European Central Bank (2009: p. 219) refers to corporate governance as *"procedures and processes according to which an organisation is directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among the different participants in the organisation – such as the board, managers, shareholders and other stakeholders – and lays down the rules and procedures for decision-making."*

Reviewing governance from different perspectives shows that the application of governance is very context specific, which makes it very complex to create a one-size fit all definition (Loorbach, 2010). There are, however, many principles that reappear in the variety of definitions from different fields of inquiry. Indeed, from the previous definitions we can learn that governance is mainly about '*structures and processes*', '*decision-making, organising, managing and controlling*' and '*actors*'. Based on these definitions, governance can be broadly defined as steering a specific society through the interaction of different actors taking into account the economic and political context and a common goal of that time. These definitions and especially these terms will be used as a guidance for the governance definition of the its4land tools.

It can be criticised, however, that the used definitions and approaches are from a western perspective and therefore not applicable to the African context. To avoid that inappropriate approaches and terms will be imposed to the African context, African partners will be closely involved to develop a definition for the context of the its4land tools.

## 4.2 Governance for innovative geospatial tools: definition

In this section, the input from valorisation partners, advisory board, exploitation managers (Esri Rwanda and Hansa Luftbild) and work package leaders derived from the online survey is used to formulate a governance definition for the innovative geospatial tools of its4land. The questions of the survey were based on a combination of the fundamental characteristics and ideological stands of fit-for-purpose literature on the one hand, and governance literature on the other hand in order to gather information about specific governance topics (Annex 1); (i) *the enablers* are the people that are responsible for the governance of the its4land tools, these actors are the key players to make the process happen, (ii) *actors* are the people that are involved in the actual governance of the its4land tools, (iii) *governance definition* describes how governance of the its4land tools needs to be organised. This section is solely based on the analysis of the output of the different respondents. In this way, the outcomes will give a good overview on governance for the use of the its4land tools but will be iteratively adapted in time based on fieldwork and in depth-interviews.

### 4.2.1 Enablers

As is stated before, the government is an important player in order to formally use the tools in an official manner. The government can support the use of the tools by providing the necessary political policy, structures, recourses and infrastructure. However, according to the experts, this needs to be organised in a bottom-up manner, as the deployment of the different tools will be distributed. This can be illustrated with a few examples, which illustrates how the work can be distributed between the government and other actors:

- The actual service of UAV data collection could be done by government surveyors or provided by a company in collaboration with the government that obtained the legal requirements to conduct UAV flights including the operational certificate and a licensed pilot.
- To implement smart sketchmaps systems, communities must be involved and this is an on-going activity. This could be done in close collaboration with NGO's. There also needs to be affordable technical support for running these systems which means continued involvement of project implementers for a period beyond the first deployment of the systems.

### 4.2.2 Actors

For the sustainable use of the tools four main actor groups can be distinguished from the online survey: government, communities, private companies, and NGOs:

1. The government: this group of actors includes all government related officials in the central, regional and local government. This group represents the authority on land tenure and are mostly involved in decision-making and policy making.
2. Communities (land holders/inhabitants): this group of actors needs to be involved in order to learn about their informal land practices and their land needs. Without their involvement informal activities can continue happening outside of the structured information space.
3. Private companies: this group of actors can help to implement crucial parts of the land recording processes through professionals (e.g. surveyors, IT staff, lawyers) or expert knowledge. This group of actors can assist the government in service delivering and technical support (e.g. by providing satellite imagery or performing data).

4. NGOs: This group of actors can also help to implement crucial parts of the land recordation processes. This group of actors can assist communities (e.g. by helping the communities in the data collection process).

These different groups of actors can be seen as the land tenure society as they are all actors involved in land adjudication, demarcation, recording/surveying and dissemination and geospatial information management. In order to ensure a proper coordination, a clear organisational structure is needed, including clear delineation of the responsibilities. The different actors involved and their responsibilities can, however, differ from country to country.

### 4.2.3 Governance definition

For the purpose of its4land, governance is seen as an iterative process of steering, which constantly needs to deal with the social innovation challenges aligning the use of the geospatial tools. The importance of the involved actors of the land tenure society, which is the government, the people, the private companies and the civil society, and their interactions cannot be neglected in order to ensure sustainability of the governance process. The diversity of actors and interests in land tenure information, however, introduces a level of complexity in understanding how best to coordinate and manage the use of the proposed technologies to deliver maximum benefits.

The problem with available existing governance definitions is the fact that they are often too broad, which leaves space for endless interpretations. Therefore it is important that the definition clearly states WHAT is governed and HOW it is governed (Meuleman, 2008). Therefore, the working definition for governance of the its4land tools can be defined as follows: *"The process of interactively steering the land tenure society to sustain the use of the its4land tools"*.

# 5 Capacity development

## 5.1 Conceptual overview on capacity development definitions

As a response to project failures, capacity development is increasingly seen as an essential factor of sustainable improvements (Bolger, 2000). This term is used in a variety of meanings targeting a very broad to a very specific scope. The broad approach is more commonly used and focuses on a holistic context, whereas the specific approach focuses on more unambiguous targets like human resource development or policy related reinforcements (Enemark et al., 2003). Capacity development can consist of two types describing hard and soft characteristics. Hard characteristics mainly concern16 the development of knowledge and skills, whereas soft characteristics of capacity development consist of values, vision, leadership, management style, and organizational culture... (Brinkerhoff and Morgan, 2010). In this deliverable, all these soft characteristics are summarised by using the concept 'attitudes'.

The broader definitions are commonly adopted by NGOs to build an understanding of capacity development. Morgan (CIDA) (1998: p.2) defines capacity development as *"the abilities, skills, understandings, attitudes, values, relationships, behaviours, motivations, resources and conditions that enable individuals, organizations, networks/sectors and broader social systems to carry out functions and achieve their development objectives over time"*. UNDP (2009: p.5) defines capacity development as *"the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time"*. OECD (2006: p.12) defines capacity development accordingly as *"the process whereby people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time"*. While focusing on developing countries, this definition was expanded by Bolger (CIDA) (2000: p.2), who addressed capacity development as *"the approaches, strategies and methodologies used by developing countries, and/or external stake-holders, to improve performance at the individual, organizational, network/sector or broader system level"*. However, these broad definitions have been criticised as being too general, which makes it difficult to evaluate outcomes and draw overall conclusions (World Bank, 2009).

In response, the World Bank (2009: p.3) tried to define a more specific and testable definition, stating that capacity development is "*a locally driven process of learning by leaders, coalitions and other agents of change that brings about changes in socio-political, policy-related, and organizational factors to enhance local ownership for and the effectiveness and efficiency of efforts to achieve a development goal"*.

Although the World Bank's definition is more explicit, more specific definitions have been developed in the context of land administration aligning the objectives (like skills, resources, relationships and sustainability, etc.) of the broader, more commonly used definitions.
From the land administration perspective, capacity development is more defined from a human capacity approach: *"the development of knowledge, skills and attitudes in individuals and groups of people relevant in design, development, management and maintenance of institutional and operational infrastructures and processes that are locally meaningful"*

(Groot and van der Model, 2000: p.3). Transversally, attention to human capacity (knowledge, skills and attitudes) development is crucial for overall success.

In addition to human capacity, there should also be a focus on policy capacity for the sustainable use of the tools. Policy capacity addresses capacity building beyond the training of skills and competencies and is closely aligned with the governance of the innovations. Policy capacity is defined by Painter and Pierre (2006: p.2) as *"the ability to marshal the necessary resources to make intelligent collective choices about and set strategic directions for the allocation of scarce resources to public ends"*. In other words policy capacity can be seen as the capacity to govern. In this way, policy capacity aims to enhance the capacity of governments, business and non-governmental sectors. Policy capacity is in essence a function of three competencies or skills (Wu et al., 2014): analytical skills, managerial skills and political skills that enable policy makers and managers to mobilise the resources and the support required for developing policies and implementing them.

## 5.2 Capacity development for innovative geospatial tools: definition

In this section, the input the from valorisation partners, advisory board and exploitation managers (Hansa Luftbild and Esri Rwanda) and work package leaders derived from the online survey is used to formulate a capacity development definition for the innovative geospatial tools of its4land. The questions of the survey were based on a combination of the fundamental characteristics and ideological stands of fit-for-purpose literature on the one hand and capacity development literature on the other hand in order to gather information about specific capacity development topics (Annex 1); (i) *the enablers* are the people that are responsible for the capacity development for the its4land tools, these actors are the key players to make the process happen, (ii) *actors* are the people that are involved in capacity of the its4land tools, (iii) *hard type capacity development* describes tangible characteristics of capacity development like knowledge and skills, (iv) *soft type of capacity development* describes the intangible characteristics of capacity development like attitudes and (v) *capacity development definition* describes how capacity development for the its4land tools needs to be formulated. This section is solely based on the analysis of the output of the different respondents. In this way, the outcomes will give a good overview on capacity development for the use of the its4land tools but will be iteratively adapted in time based on fieldwork and in depth-interviews.

### 5.2.1 Enablers

According to the experts, the government will be mainly responsible for softer capacity development for the use of the its4land tools. The government needs to sensitize about the importance and principles of land administration, which also needs to be reflected in policies. In this way, the government will be directly responsible for the soft characteristics of capacity development (attitudes). Furthermore, the government will also be responsible to provide enough resources, up to date technology and infrastructure to use and maintain the tools. For the hard characteristics of capacity development (knowledge and skills), they can work together in close collaboration with local institutions like universities, private companies or NGO's. These institutions can assist in large scale training, education and workshops.

### 5.2.2   Actors

The actors involved in capacity development to support the use of the its4land tools are the same actors that are involved in governance of the its4land tools

### 5.2.3   Hard capacity development

Apart from a decent knowledge of communication skills, time management, IT and land administration, there is a minimum set of requirements of knowledge and skills for the sustainable use of the its4land tools which were derived from the output of the survey:
- Knowledge of land laws in the area of land
- Knowledge of political systems on the ground where the mapping is supposed to take place
- Knowledge of management and organisation of an organisational unit
- Knowledge of social norms/values/(actual)practices regarding the management of land
- Knowledge about surveying techniques and coordinating systems
- Software knowledge and skills such as GIS, Matlab, QGIS, Pythonas well as database knowledge such as SQL
- Basic knowledge and skills in photogrammetry, UAV technology, meteorology, air and flying law
- Application knowledge and skills for the use of the its4land tools in order to learn to understand what they do, how they needs to be applied, maintained…
- Ability to understand and interpret geospatial information

### 5.2.4   Soft capacity development

Based on the outcomes of the survey, the following attitudes are a minimum set of requirements for a sustainable use of the its4land tools:
- Political willingness
- A certain level of trust in technology
- openness and acceptance to explore innovative ways for land tenure mapping

### 5.2.5   Capacity development definition

Within its4land, the capacity development definition of the technologies closely follows ideas of the specific definitions, taking into account the perspectives of the broader definitions while focusing on specific human and policy capacity development approaches. Indeed, a structural implementation of different geospatial tools in developing countries requires a broader holistic capacity approach. For this purpose, it is necessary to identify the available capacity by considering different types of capacity (e.g. hard and soft) and perspectives of actors (e.g. individual, organizational and systematic) in order to develop capacity for a sustainable use of the its4land tools.

Therefore, the working definition of capacity development for the its4land tools can be defined as follows: "*The development of knowledge, skills and attitudes in individuals and networks of people that are relevant for the sustained use of the its4land tools*".

In this context the hard characteristics are captured in the knowledge and the skills, the soft characteristics are captured in the attitudes.

# **6** Conclusion

There are now diverse instances of fit-for-purpose tools in land administration. Although technological innovation is a key strategy for closing the well-known land tenure information gap, dissemination, scaling and sustainable use of these tools presents social challenges. For that part, governance and related capacity development can play an important role.

Governance, by its definition, provides direction and coordination of stakeholders and their actions, and in a way that recognises the multi-level nature of the land tenure information production systems and can eventually help to understand how the its4land tools can provide scalable solutions (Bevir and Rhodes, 2001; Elzen et al., 2004; Kooiman, 1999). In this way, governance will augment the potential of the its4land tools, and perhaps other fit-for-purpose tools, to deliver wider societal impact by supporting the transfer of technology to other contexts in Sub-Saharan Africa and perhaps beyond. Therefore, the definition of governance for its4land is the following: "The process of interactively steering the land tenure society to sustain the use of the its4land tools".

Governance strategies cannot be implemented effectively without focusing on capacity development for sustainable improvement. Indeed, capacity development is increasingly seen as an essential factor of sustainable improvements (Bolger, 2000). Both hard and soft capacity development types are important to sustainably use the its4land tools. Therefore, the working definition of capacity development for the its4land tools can be defined as follows: "The development of knowledge, skills and attitudes in individuals and networks of people that are relevant for the sustained use of the its4land tools".

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# Appendix 1: Governance and capacity development: a working definition for the purpose of the its4land tools: survey

## 1    Informed consent

* You understand that the participation in this study is voluntary and that you have the right to discontinue your participation without prejudice at any time and to withdraw any information previously supported.

* You understand that the result of this study can be used for scientific purposes and may be published. The anonymity and confidentiality of the data will be assured at each stage of the investigation.

* For any complaints or concerns about the ethical aspects of this study, you understand that you can contact the Social and Public Ethics Committee of KU Leuven at: smec@kuleuven.be, citing no. G-2016 08 600.

* If you have any questions after your participation, you understand that you can contact the responsible researcher Ine Buntinx (ine.buntinx@kuleuven.be) or one of her colleagues Joep Crompvoets (joep.crompvoets@kuleuven.be) or Serene Ho (serene.ho@kuleuven.be).

I have read and understood the above information, I agree to participate.

## 2    Brief introduction

| Question | Information needed |
|---|---|
| **What is your area of expertise in land administration?** | area of expertise |
| **What is your main country of operation** | Country of expertise |

## 3    Governance:

| Question | Information needed |
|---|---|
| **Who is usually responsible for implementing and/or using new land administration technology in your country? Please provide the reason(s) for this answer.** | Enablers/responsible |

| | |
|---|---|
| **Are there situations where this might not be the case? Please clarify.** | Enablers/responsible |
| **How is the implementation and/or use of new land administration technology usually organised? Who is involved in this process?**<br><br>**(for example: the government is responsible for the overall organisation and resource management, but works closely with private partners for a specific task)** | Organisation 'structure'/stakeholders involved |
| **Based on your experience, who should be responsible for the implementation and/or use of the its4land tools?** | Governance definition enabler/responsible |
| **Based on your experience, how would this implementation and/or use of the its4land tools ideally be organised? Who needs to be involved?** | governance definition organisation 'structure'/<br><br>Governance definition stakeholders involved |
| **What potential challenges should be taken into account for the implementation and/or use of the its4land tools?** | Possible challenges |
| **The working definition for governance of the its4land tools is as follows:** *"the process of interactively steering the land tenure society\* to sustain the use of the its4land tools".*<br><br>**Based on your experience, do you have any changes you could suggest to improve this definition?** | Recommendations on provided definition |

| | 26 |
|---|---|
| **\* In this context, land tenure society means all actors involved in land adjudication, demarcation, recording/surveying and dissemination and geospatial management.** | |

## 4    Capacity development

| Question | Information needed |
|---|---|
| **What is your assessment of your country's capacity for using new technologies in land administration? Why?** | Enabling environment |
| **Who needs to be engaged in capacity development for the <u>sustained</u> use of land administration technology? Please provide the reason(s) for this answer.** | responsible |
| **What knowledge and skills are needed in the land tenure sector?** | Capacity development factors hard: skills and knowledge and soft: |
| **What attitudes are needed in the land tenure sector?** | attitudes |
| **Based on your experience, what are the potential challenges associated with capacity development for land administration?** | Overall challenges |
| **What are the potential challenges for developing capacity in the context of the its4land tools?** | Specific challenges |
| **The working definition for capacity development of the its4land tools is as follows: *"The development of knowledge, skills and attitudes in individuals and networks of people that are relevant for the*** | Recommendations on provided definition |

| *sustained use of the its4land tools".*<br><br>**Based on your experience, do you have any changes you could suggest to improve this definition?** | 27 |
|---|---|