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Deliverable 7.5

An operational model for a sustainable implementation of the Its4land toolbox

31st December 2019

Version 1.0

Abstract:

This is a consolidated report on the initial proposal to apply governance and capacity assessment models in the case countries as part of WP7 'Govern and Grow: Sustainable governance and capacity buildings models'

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Executive Summary

Its4land is a European Commission Horizon 2020 project funded under its Industrial Leadership program, under an ICT call (H2020-ICT-2015) with the topic of 'International partnership building in low and middle-income countries'. Its4land combines an innovation process with emerging geospatial technologies, including smart sketchmaps (SmartSkeMa), unmanned aerial vehicles (UAV), automated feature extraction (AFE), and geocloud services (GS), to deliver land recording services that are end-user responsive, market-driven, and fit-for-purpose. The transdisciplinary work develops supportive models for governance, capacity development, and business capitalization.

The Deliverable 7.5 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 and capacity development model to support the implementation and evaluation of innovative technologies in the land administration system and to meet stakeholders' needs so that the innovation process can have sustainable effects.

The aim of the Deliverable 7.5 is to set up a model for the case countries to implement the its4land toolbox at a national scale in a sustainable manner. The model and operational guidelines presented in this deliverable allow policy designers (1) to develop governance and capacity development strategies according to the framework conditions and (2) to assess the progress achieved according to the policy goals.

List of acronyms

AFE	Automated Feature Extraction
EU	European Union
FCAF	Fit-for-purpose Capacity Assessment Framework
FGAF	Fit-for-purpose Governance Assessment Framework
FFP	Fit-for-purpose
FFPLA	Fit-for-purpose for Land Administration
GS	Geocloud Services
H2020	Horizon 2020
SmartSkeMa	Smart sketchmaps
UAV	Unmanned Aerial Vehicles
UNDP	United Nations Development Programme
WP	Work Package

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1 Introduction

The aim of the final deliverable of the WP7 'Govern and Grow' is **to present a comprehensive and replicable model** to help policymakers and practitioners identifying the weaknesses in the land administration system and **to develop effective intervention strategies for a successful and sustainable implementation** of the its4land toolbox.

The Deliverable 7.5 is structured in three sections in addition to the introduction and conclusion. Section 2 presents **the revised and refined versions of the Fit-for-purpose Governance Assessment Framework** (FGAF) and **the Fit-for-purpose Capacity Assessment Framework** (FCAF). These assessment frameworks were already introduced in Deliverable D7.4. To improve the applicability and replicability of these analytical tools, we detailed how Fit-for-purpose principles are translated into concrete categories according to high, moderate and low compatibility criteria.

Section 3 presents the **its4land model for governance and capacity development,** a holistic model that ties together the FGAF and FCAF in an interoperable way under the normative framework of the Fit-for-purpose land administration. The practical implication of the model is first, to help policy makers **diagnose the strengths and weaknesses of their land administration system**. Second, **policy designers can use the model to develop policy intervention strategies** for a successful implementation of the its4land toolbox. Third, the model provides **a basis to monitor the performance of the land administration system** during the implementation of the its4land toolbox. Following the presentation and elaboration of the underlying assumptions of the model, we illustrate its usage in the case of the UAV technology in Rwanda and Kenya.

Section 4 **provides guidelines for policymakers and designers** for the sustainable adaptation of the its4land toolbox in the land administration system. We elaborate on the policy making steps and highlights key issues to consider when designing, implementing and monitoring the adoption of the its4land toolbox.

The Conclusion summarizes the main outputs of the deliverable and highlights the key considerations on using the its4land model in different country cases with changing contextual conditions.

2 FGAF and FCAF revisited

In Deliverable 7.4, we introduced the analytical tools (i.e. FGAF, FCAF, and Its4land evaluation scorecard) to assess the readiness of the land administration system to implement the its4land toolbox under the Fit-for-purpose land administration framework. In order to evaluate the readiness of the land administration systems, we developed a three-degree evaluation scale- a ranking of high, moderate and low compatibility. For each rank, we identified the measures that need to be taken into account to improve the readiness - low compatibility necessitates structural changes, moderate compatibility necessitates processual changes. To assess the level of compatibility, we used questions and subquestions. However, in the earlier version, we did not detail what these ranks (i.e. low-moderate-high compatibility) mean descriptively for each element of governance and capacity dimension.

We concluded that the descriptions (i.e. what low or high compatibility means in a specific cell) need to be specified at a more concrete level to ensure the external validity of the instruments. Therefore, in the revised version, we defined the meaning of low-moderate-high rank for each component of the assessment framework. Respectively, Table 1 and Table 2 present the further developed version of the FFP Governance Assessment Framework and FFP Capacity Assessment Framework. It is important to note that the new descriptions are compatible with the country analyses shared in Deliverable 7.4. With this revision, we brought more clarity to the evaluation process and the choices within the evaluation scorecard[1]

[1] The assessment matrices developed in D.7.4 and the final version of the its4land model are shared with the final beneficiaries, i.e. land administration officials, in December 2019. More information will be provided about the feedback of the beneficiaries in the exploitation report at the end of the its4land project.

Table 1: Revised FFP Governance Assessment Framework (FGAF)

Governance Dimensions	Flexible	Inclusive	Participatory	Affordable	Reliable	Attainable	Upgradable
Levels & Scales	High: It is possible to delegate responsibilities in land recording among levels of government in a pragmatic manner. Moderate: Some responsibilities in the land recording can be delegated among levels of government under specific conditions. Low: The delegation of responsibilities in the land recording is not possible among levels of government.	High: All levels of government have access to the state ledgers during land recording. Moderate: Some levels of government do not have access to the state ledgers during the land recording. Low: Only one level of government has access to the state ledgers.	High: All levels of government take part during the land recording. Moderate: Some levels of government are excluded during the land recording. Low: Only one level of government is involved during the land recording.	High: All levels of government can afford the implementation and maintenance costs that is their responsibility. Moderate: Some levels of government cannot afford the implementation and maintenance costs that are their responsibility Low: Only one level of government can afford the implementation and maintenance costs that is its responsibility.	High: All levels of government are trusted for the data generated using the tool. Moderate: Some levels of government or government agencies are trusted for the data generated using the tool. Low: The government levels are not trusted for the data generated using the tool.	High: All levels of government can adapt the tool in their land recording processes within a year Moderate: Some levels of government can adapt the tool in their land recording processes within a year Low: It is difficult for the government levels to adapt the tool in their land recording processes within a year	High: All levels of government have a specialized unit to support constant innovation when implementing the tool. Moderate: There is only one level with the specialized department or agency to support constant innovation when implementing the tool. Low: There is no specialized unit inside the government levels to innovate the implementation of the tool.
Actors & Networks	High: It is possible to include non-governmental actors in the land recording. Moderate: Non-governmental actors can be included in land recording to a limited extent. Low: Non-governmental actors cannot be included in the land recording	High: All customary and community rights are recorded. Moderate: Customary and community rights under certain tenure types are not recorded. Low: Customary and community rights are not recorded.	High: Relevant stakeholders are part of the land recording. Moderate: Some relevant stakeholders are involved in the land recording. Low: Relevant stakeholders do not take part in the land recording.	High: Each stakeholder can afford its share of the implementation and maintenance costs. Moderate: Some stakeholders cannot afford their share of implementation and maintenance costs. Low: The majority of the stakeholders cannot afford their share of implementation and maintenance costs.	High: Non-governmental service providers are trusted for the data generated using the tool. Moderate: Some non-governmental service providers are not trusted for the data generated using the tool. Low: Non-governmental service providers are overall not trusted for the data generated using the tool.	High: Relevant stakeholders can adapt the tool in the land recording processes within a year. Moderate: Some stakeholders can adapt the tool in the land recording processes within a year Low: It is difficult for stakeholders to adopt the tool in the land recording processes within a year	High: There are specialized local stakeholders inside the country to support innovation when implementing the tool. Moderate: There are specialized international stakeholders inside the country to support innovation when implementing the tool Low: There are no specialized stakeholders inside the country to innovate the implementation of the tool.
Problem perspective & Goal ambition	High: There is no significant external risk that can restrict the implementation process. Moderate: Some external risks can restrict the implementation process	High: Implementation risks do not affect the recording of acknowledged tenure types. Moderate: Some implementation risks can	High: There are participatory conflict resolution mechanisms open to all stakeholders. Moderate: There are participatory conflict resolution mechanisms	High: The cost for the replacement of the equipment and the system is affordable for local service providers. Moderate: The cost of the replacement of the	High: There are no implementation risks that can affect the authoritativeness of the data generated using the tool. Moderate: There are implementation risks	High: It is easy to retrieve a new tool if there is a problem with the equipment. Moderate: Only some stakeholders can retrieve a new tool if	High: The local context encourages innovation and it is possible to upgrade the system through the means of the country. Moderate: The local context encourages

	for a specific time or in a specific region. Low: There are significant external risks that can restrict the implementation process.	affect the recording of particular tenure types. Low: Implementation risks can affect the recording of acknowledged tenure types.	open to a particular group of stakeholders. Low: There are no participatory conflict resolution mechanisms	equipment and the system is affordable only for a few local service providers. Low: The cost for the replacement of the equipment and the system is not affordable for local service providers	associated with a specific region or time that can affect the authoritativeness of the data generated using the tool. Low: There are implementation risks that can affect the authoritativeness of the data generated using the tool	there is a problem with the equipment Low: It is difficult to retrieve a new tool if there is a problem with the equipment.	innovation but there are limitations to upgrade the system through the means of the country. Low: The local context does not encourage innovation and/or there are significant limitations to upgrade the system through the means of the country.
Strategies & Approaches	High: There are multiple ways for the generation and use of the data in the land recording. Moderate: There are multiple ways for the generation of data but one specific use of the data in the land recording. Low: There is one specific way for the generation and use of the data in the land recording.	High: All tenure information can be recorded with available strategies. Moderate: Some tenure information cannot be recorded with available strategies. Low: Most tenure types cannot be recorded with available strategies.	High: There are strategies to include all relevant stakeholders in the capture and use of the data. Moderate: There are strategies to include only particular stakeholders in the capture and use of the data. Low: There are no strategies to include relevant stakeholders in the capture and use of the data.	High: The available data capture, maintenance and use strategies are affordable to the stakeholders. Moderate: The available data capture, maintenance and use strategies are affordable only to a specific group of stakeholders Low: The data capture, maintenance and use strategies are not affordable for the majority of the stakeholders.	High: The strategies available and used by the tool generate authoritative and up-to-date data. Moderate: The strategies available and used by the tool generate authoritative but not up-to-date data. Low: The strategies available and used by the tool do not generate authoritative data.	High: There are no significant obstacles to adopt available strategies in land recording processes. Moderate: The adaption of certain strategies needs adjustments in land recording processes. Low: There are systematic obstacles to adapt the available strategies.	High: There is a state-level strategy to support innovation during the implementation. Moderate: There are local or regional strategies to support innovation during the implementation. Low: There are no strategies to support innovation during the implementation.
Financial resources	High: Government actors have discretion in using their financial resources. Moderate: Only some government actors have the discretion in using their financial resources. Low: The financial resources are earmarked for a specific use.	High: Available resources are sufficient to collect data at large scales of land. Moderate: Available resources are only sufficient to collect data at medium scales of land. Low: Available resources are only sufficient to collect data at small scales of land.	High: It is possible to pool different resources to cover implementation costs Moderate: Pooled resources can only support specific tasks or in specific areas Low: There are systematic limitations to pool resources to cover implementation costs.	High: Existing financial sources are sufficient to cover the implementation and maintenance costs Moderate: Existing financial sources are sufficient to cover the implementation and maintenance costs in specific regions or at a specific scale only. Low: Existing sources are not sufficient to cover the implementation and maintenance costs.	High: Available governmental and non-governmental sources are reliable to sustain the implementation cost. Moderate: Only some governmental and/or non-governmental sources are reliable to sustain the implementation cost. Low: Available governmental and non-governmental sources are not reliable to sustain the implementation cost.	High: Available financial sources are sufficient to adapt the tool in land recording within a year. Moderate: Available financial sources are sufficient to adapt the tool in land recording within 3 years. Low: Available financial sources are not sufficient to adapt the tool in land recording within 3 years.	High: There are available funding options to support innovation that are accessible to all stakeholders. Moderate: There are available funding options to support innovation that are accessible only to a specific group of actors. Low: There are no available funding options to support innovation.

Table 2 Revised FFP Capacity Assessment Framework (FCAF)

Capacity Dimensions	Flexible	Inclusive	Participatory	Affordable	Reliable	Attainable	Upgradable
Regulations	High: The regulations are descriptive of the type of capacities required by the operators. Moderate: The regulations are prescriptive on the type of capacities required by the operators. Low: The regulations are restrictive on the type of capacities required by the operators.	High: There are no regulative obstacles to record a particular tenure or land type. Moderate: There are bureaucratic obstacles to record a particular tenure or land type. Low: There are legal obstacles to record a particular tenure or land type.	High: The regulations promote participatory practices in land recording. Moderate: There are bureaucratic obstacles to include local stakeholders in the land recording. Low: The regulations do not describe participatory processes in the land recording.	High: The administrative costs and user fees are affordable to the stakeholders. Moderate: The administrative costs and user fees are affordable to certain stakeholders only. Low: The administrative costs and user fees are not affordable for the majority of the stakeholders.	High: The rules are prescriptive and enforceable. Moderate: The rules are prescriptive but not always enforceable. Low: The rules are not prescriptive and open for interpretations.	High: The regulative framework is complete to run the operations. Moderate: The regulative framework is not complete, but it is possible to run the operations. Low: The regulative framework is not complete, and it is not possible to run the operations.	High: The regulative framework is complete to upgrade and scale up the operations. Moderate: The regulative framework is not complete, but it is possible to upgrade the operations. Low: The regulative framework is not complete, and it is not possible to upgrade the operations.
Political system	High: There are no particular political risks that can affect the operations. Moderate: There is some political risk that can affect operations. Low: There are widespread political risks that can affect operations.	High: All types of tenures are recognized, and land rights are justly treated. Moderate: The informal and social tenures are recognized but they are either in secondary importance or disregarded. Low: Certain tenure types and the rights of groups are not recognized by the political system.	High: Participatory practices are widespread in the land recording processes. Moderate: In some political areas, participatory practices are not implemented in the land recording. Low: Particular political minorities are excluded systematically from land recording processes.	High: There is no political cost of the operations. Moderate: There is a political cost of the operations at the local/regional scale. Low: There is a political cost of operations for the national government.	High: The political actors are trusted by citizens and stakeholders Moderate: Some political actors are trusted by citizens and stakeholders Low: Political actors are largely not trusted by citizens and stakeholders.	High: The political system can endorse the operations at a national scale. Moderate: The political system can endorse the operations at a regional/local scale. Low: The political system lacks resources to endorse the operations.	High: The political actors are strong enough to implement changes if there is a need. Moderate: The political actors need the support of other actors to implement changes if there is a need. Low: The political actors have little legitimacy to implement changes if there is a need.
Operational Units (OU)	High: There are multiple OU and ways for land recording Moderate: There are multiple OU but a single way for land recording.	High: The majority of OU has the necessary skills to operate the land recording tool in different terrains. Moderate: The majority of OU lacks particular skills to operate the land	High: The majority of OU has the necessary skills and knowledge to collaborate with local stakeholders in the land recording. Moderate: Only some OU has the necessary skills and knowledge to	High: The majority of OU can afford the cost of operations at any scale. Moderate: Only some operators can afford the cost of operations at any scale.	High: The majority of OU has the operational capacity to provide authoritative and up-to-date data. Moderate: Only some operators have the operational capacity to	High: The majority of OU can run the operations without the need for additional training. Moderate: Only some operators can run the operations without	High: There are OU with specialized skills and knowledge to upgrade the operations. Moderate: There are OU with relevant skills and knowledge to upgrade the operations to a limited degree.

	Low: There is one type of OU and a single way for land recording.	recording tool in different terrains. Low: The majority of OU lacks the necessary skills to operate the land recording tool in different terrains.	collaborate with local stakeholders in the land recording. Low: The majority of OU lacks the necessary skills and knowledge to collaborate with local stakeholders in land recording	Low: The majority of OU cannot afford the cost of operations or only on a small scale.	provide authoritative and up-to-date data Low: The majority of OU does not have the operational capacity to provide authoritative and up-to-date data	the need for additional training. Low: The majority of OU needs the training to run the operations.	Low: The OU do not have the skills and knowledge to upgrade the operations.
Social norms	High: Social norms allow usage of alternative ways for land recording. Moderate: Social norms can allow the usage of alternative ways for land recording if there is a proactive policy. Low: Social norms prevent applying certain methods in land recording.	High: There is no compliance problem between social norms and legal land rights. Moderate: There are minor compliance problems between social norms and the legal land rights of minorities or communities. Low: There are widespread compliance problems between social norms and the legal land rights of minorities and communities.	High: Social norms encourage the participation of local stakeholders in the land recording. Moderate: Social norms can encourage the participation of local stakeholders if there is a proactive policy. Low: Social norms discourage the participation of local stakeholders (e.g. women, youth, ethnic minorities) in the land recording.	High: Social capital is useful to reduce the cost of operation. Moderate: Social capital can reduce the cost of operation if there is a proactive policy. Low: There is low social capital to reduce the cost of operation.	High: Social norms do not undermine the authoritativeness of land records. Moderate: Some social norms can undermine the authoritativeness of land records. Low: There are social norms that undermine the authoritativeness of land records.	High: Social norms do not impede the adaptability of the operations. Moderate: Some social norms can impede the adaptability of the operations. Low: There are social norms that impede the attainability of the operations.	High: Social norms support innovation. Moderate: Social norms suggest a specific type/way of innovation. Low: Social norms are impeding innovation.
Land recording techniques (LRT)	High: LRT capture different land information for multi-purpose use. Moderate: LRT capture different land information for single-purpose use. Low: LRT capture specific land information for single-purpose use.	High: LRT can capture land data in any scope. Moderate: LRT can capture land data in a specific scope. Low: LRT cannot capture a certain type of land data.	High: Local stakeholders are part of the land recording process. Moderate: Local stakeholders are informed about the land recording process. Low: Local stakeholders are not part of the land recording process.	High: LRT are affordable at any scale. Moderate: LRT are affordable only on a medium scale. Low: LRT are affordable only on a small scale.	High: LRT can provide up-to-date and authoritative data on any scale. Moderate: LRT can provide up-to-date and authoritative data on a medium scale. Low: LRT can provide up-to-date and authoritative data on a small scale.	High: LRT are attainable on a large scale. Moderate: LRT are attainable on a medium scale. Low: LRT are attainable on a small scale.	High: It is possible to modify the modular design of LRT in any scope. Moderate: It is possible to modify the modular design of LRT in a specific scope. Low: It is not possible to modify the modular design of LRT
Software	High: There are alternative software solutions that allow adjustments in the land recording. Moderate: There is alternative software but with limited	High: The software can process any type of land information. Moderate: The current version of the software cannot process some type of land information.	High: The software allows local stakeholders to input or edit land recording data. Moderate: The software only allows local stakeholders to access land recording data.	High: The software is affordable for the operators. Moderate: The software is affordable only for some operators.	High: The software is secure and reliable. Moderate: The software has some weaknesses with reliability. Low: The software risks data breach and has	High: The software is attainable for the operators. Moderate: The software is attainable only for some operators.	High: The software is open-source and allows changes in any scope. Moderate: The software is protected but allows

	modular functions in the land recording. Low: There is only proprietary software with limited modular functions in the land recording.	Low: The software cannot process the land information about a specific land or tenure type.	Low: The software does not allow local stakeholders to access land recording data.	Low: The software is not affordable for the majority of the operators.	weaknesses with reliability.	Low: The software is not attainable for the majority of the operators.	modifications in specific cases. Low: The software is protected and does not allow changes in coding.

3 Its4land Model for Governance and Capacity Development

In this section, we introduce our model for governance and capacity development to support the implementation of the its4land toolbox in the land administration system. The its4land model for governance and capacity development, henceforth its4land model, brings together the Fit-for-purpose capacity and governance assessment frameworks into one holistic assessment model for the land administration system. By implementing the its4land model, it is possible to develop policy intervention strategies to support the implementation of the its4land tools and to monitor the progress of the implementation process.

In the following subsections, we will first explain the theoretical assumptions of the its4land model, and later we will illustrate the usage of the model in two selected cases in Rwanda and Kenya.

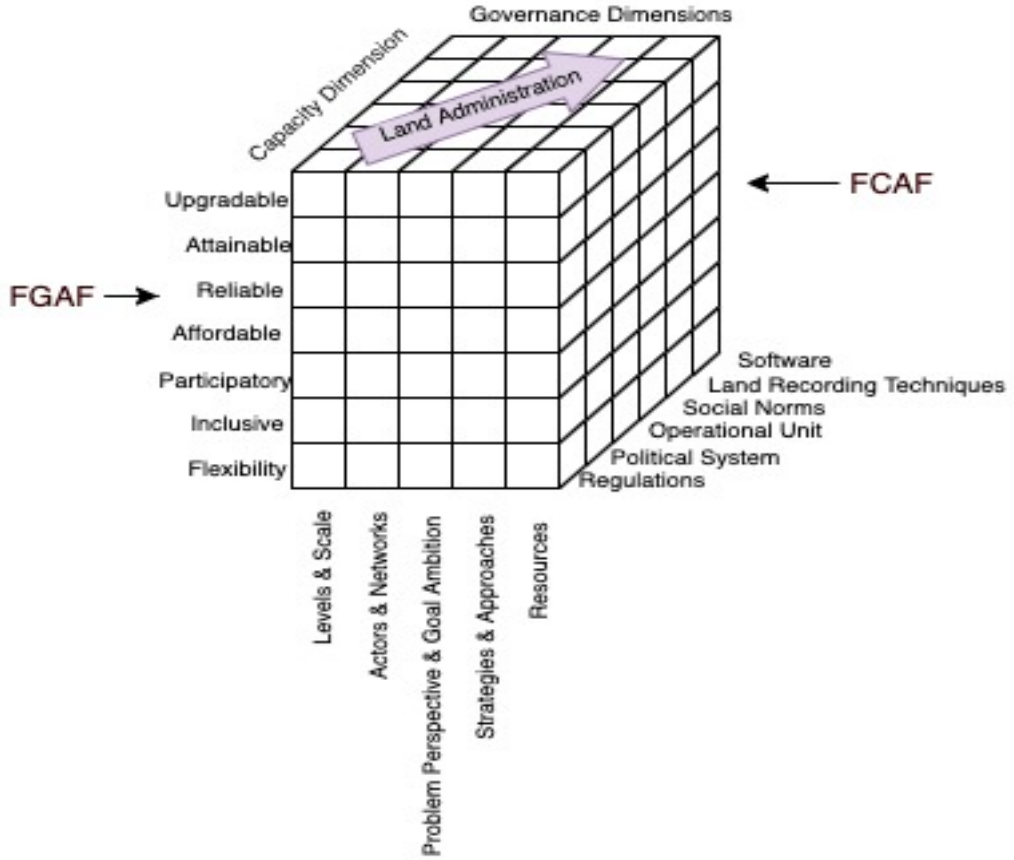
3.1 Theoretical assumptions

The its4land model is based on the assumption that the higher the land administration system complies with the Fit-for-purpose principles, the better the land administration system adapts with the geospatial technologies. Under this normative framework, Fit-for-purpose Capacity Assessment Framework (FCAF) and Fit-for-purpose Governance Assessment Framework (FGAF) show to what extent capacity development and governance dimensions in the land administration system comply with the Fit-for-purpose principles. The holistic evaluation of both assessment frameworks is important to analyze the interrelationships between the governance and capacity dimensions and to assess the performance of the land administration system in the implementation of geospatial technologies.

Ontologically, the its4land model derives from the sociological systems theory (Parsons, 1951). The social system theory holds that each system should be viewed as consisting of several elements that make the system a functional whole, and each system should be viewed in relation to the other systems that can cause a change or reaction within the main system (Teater, 2015). Furthermore, social systems differ in the way they refer to time: they are either oriented toward realizations in the future or to need satisfactions in the present (Stichweh, 2011). In the its4land model, the land administration system is viewed as consisting of governance and capacity elements that make the system a functional whole. Governance and capacity dimensions are themselves separate systems but changes in them cause a change or reaction within the main land administration system. The its4land model is designed to satisfy the needs for the implementation of the geospatial tools in the land administration, and it shows the present needs in the capacity and governance conditions (e.g. FGAF and FCAF). However, the its4land model is also oriented toward realizations in the future, i.e. improving the performance of the land

administration system to implement the its4land tools. Figure 1 illustrates the visual representation of this systemic view. The sides of the cube reflect the governance and capacity assessment frameworks. The upper side of the cube represents the systemic dimension of the land administration system dependent on the changes in the capacity and governance dimensions. The performance of the land administration system is dependent on its ability on utilizing the capacity and governance elements to lead into the desired results (e.g. sustainable adaptation of the its4land tools) in land administration.

Figure 1. Its4land model for governance and capacity development



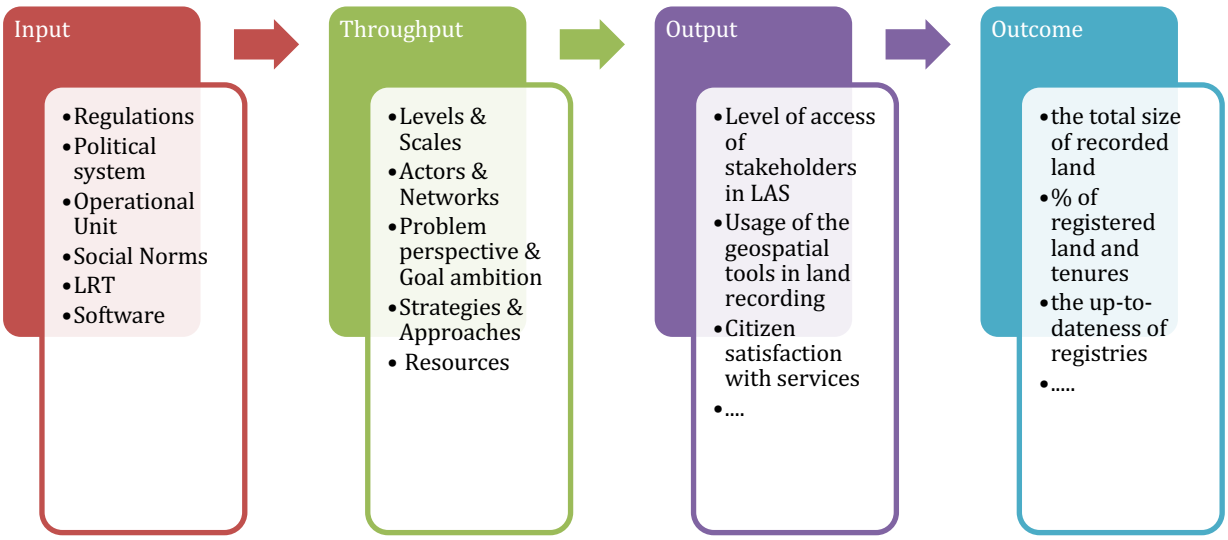
A common practice to assess the performance of a system is to focus on the changes in the input-throughput-output-outcome stages (Janssen et al, 2011). The input stage shows the assets and latent properties of the system. Throughput stage shows the processes and activities in the system. Output stage shows the products of the system. Outcome stage shows the impact of the system according to the goal-direction.

Through this systemic and ontological approach, we can build the following assumptions on the governance and capacity development in the FFP land administration system.

(1) The input elements are the assets and latent conditions in the FFP land administration system. In the its4land model, these conditions are captured by the capacity dimensions (i.e. regulations, political system, operational unit, social norms, land recording techniques, and software).
(2) Capacity development can take place in time due to endogenous (e.g. knowledge accumulation) and exogenous changes (e.g. policy reforms) in the FFP land administration system.
(3) Capacity development is dependent on the internal (e.g. self-defined objectives) and external expectations (e.g. policy objectives at the national scale and/or international expectations and funding conditions) from the FFP land administration system.
(4) Throughput elements are the processes and activities in the FFP land administration system. In the its4land model, the processes and activities are captured by the governance dimensions (i.e. levels & scales, actors & networks, problem perspective & goal ambition, strategies & approaches, and resources)
(5) In this systematic view, FFP land administration refers to the set of activities that convert the capacity conditions through governance conditions into the outputs of the FFP land administration system.
(6) The impact of the FFP land administration system is assessed via the changes in the output and outcome stages, which are determined by the policy goals.

Correspondingly, Figure 2 illustrates the stages to assess the performance of the land administration system according to the its4land model. Input stage corresponds to the capacity dimensions. Throughput stage corresponds to the governance dimensions. Output stage shows results in terms of access, usage and stakeholder satisfaction from products and services generated by the land administration system. Outcome stage shows the efforts, products and services generated by land administration activities.

Figure 2. Performance of the land administration system according to its4land model



3.2 Operationalization

The its4land model is designed as an analytical tool to develop successful policy interventions for governance and capacity development in order to modernize the land administration system by introducing innovative geospatial technologies. Building on the aforementioned assumptions, we develop the following operational steps to form policy interventions for capacity development.

(1) The purpose of policy interventions is to increase the compatibility of the land administration system with Fit-for-purpose principles and thereby to support the successful adoption of the its4land toolbox in the land administration system. Therefore, the impact of the policy interventions is assessed horizontally across the governance and capacity dimensions.
(2) The policy intervention starts with assessing the compatibility of the governance conditions. The governance dimension with the lowest level of compatibility has a priority in policy interventions.
(3) The policy intervention improves the compatibility of the governance conditions by changing the capacity conditions.
(4) The policy intervention changes low capacities (i.e. red) into higher capacities. If there are no low capacities, the intervention focuses on moderate capacities (i.e. yellow).
(5) Improving low capacities means that the structural changes need to take place in the land administration system. While implementing structural changes the scope of the policy intervention can be decided by the vertical assessment of the capacity dimension.
(6) The purpose of the policy intervention is to achieve the most improvement in the governance dimensions (i.e. turning reds into yellow or green) with the least interventions in capacity dimensions.

To illustrate the operationalization of these steps, we present below two cases in Rwanda and Kenya about the implementation of UAV technology in the land administration system.

3.2.1 Case example: Implementation of UAV in Rwanda

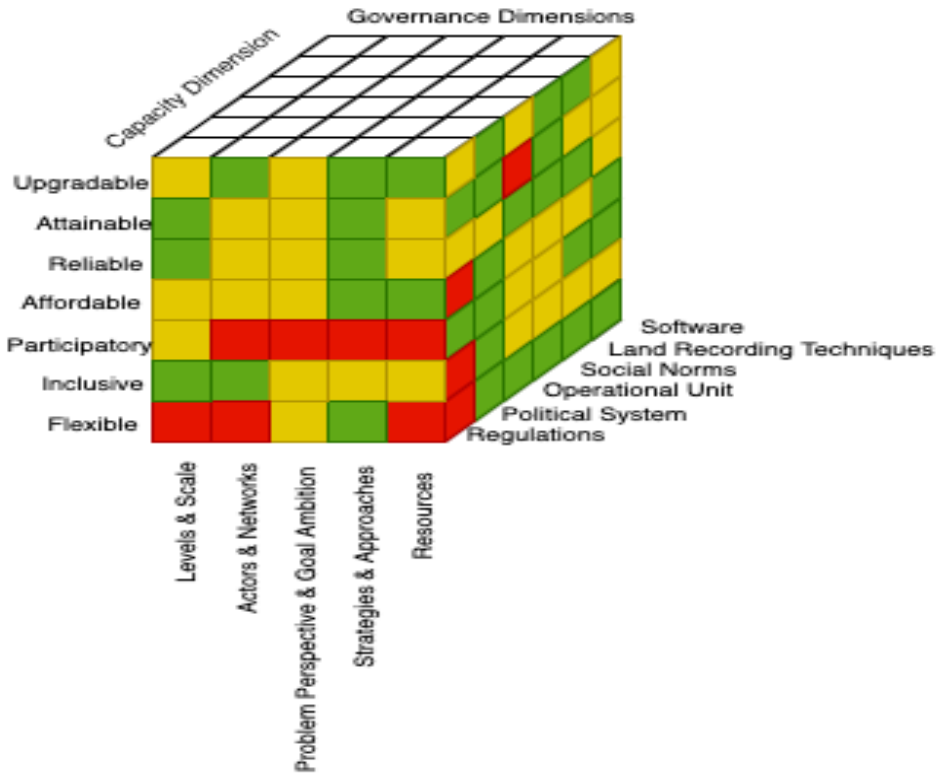
Figure 3 shows the its4land model for the implementation of the UAV technology in Rwanda. The capacity and governance conditions in the model are from the evaluation matrices developed in Deliverable 7.4. The evaluation matrices show the compatibility of the land administration system to implement a specific its4land tool. Green shows high compatibility, yellow shows moderate compatibility, and red shows low compatibility for the implementation. Moderate compatibility refers to processual changes that are required to improve the compatibility of the land administration system for the implementation of the its4land tools. Low compatibility refers to structural changes that are required to improve the

compatibility of the land administration system for the implementation of the its4land tools.

By following the operational steps introduced before, we start working on a policy intervention strategy by assessing the governance conditions (Step1). Figure 3 shows that the *flexibility* and *participatory* dimensions are the most problematic areas in Rwanda if one wants to fully implement the UAV technology in the land administration system because they are the only principles with red-colored cells at the governance dimension (Step2). Therefore, policy intervention strategies ideally focus on developing the capacities concerning *flexibility* and *participatory* dimensions (Step3).

We will start with the *flexibility* dimension. In the governance dimension, the Rwandese land administration has a lack of flexibility concerning the delegation of responsibilities within state actors *(levels & scale)* and between state and non-state actors (*actors & networks*) and concerning the usage of available resources (*resources*). The capacity development dimension of *flexibility* suggests that except for the *regulations*, the rest of the capacity conditions are compatible with the FFP land administration system, i.e. they have green cells. Therefore, we conclude that to improve the flexibility of the system, we need to develop the capacity conditions concerning *regulations* (Step4). For that, we can change the regulations that affect the usage of the UAV in land administration.

Figure 3 Its4land model of UAV technology in Rwanda



The next operational step suggests the scope of the policy intervention can be evaluated by vertical assessment of the capacity dimension columns (Step 5). The vertical assessment of the *regulations* shows that *inclusiveness* and *affordability* are the other problematic areas in capacity dimensions in addition to *flexibility*. Therefore, the UAV regulations can be reformed by focusing on the flexibility, inclusiveness, and affordability of the land administration system. As the last operational step suggests, this policy intervention would be an effective capacity development strategy because it can improve the land administration system along several axes (Step 6).

For the *participatory* dimension, *actors & networks, problem perspective & goal ambition*, *strategies & approaches,* and *resources* are the problematic areas in the governance dimensions (Step 2). In the corresponding capacity dimensions, we do not have any red-colored cells (Step 3). Therefore, the policy intervention needs to focus on improving yellow cells, i.e. *operational unit* and *social norms*, in the capacity dimensions (Step 4). Yellow cells mean that to improve the system, capacity development strategy does not need to change the structures (Step 5) but can focus on the promotion of the participatory practices in land administration. Therefore, public awareness campaigns, training, and promotion of participatory practices at the operational and societal levels are suggested as the most effective policy intervention strategies (Step 6).

In summary, our analysis suggests the following policy interventions in Rwanda;

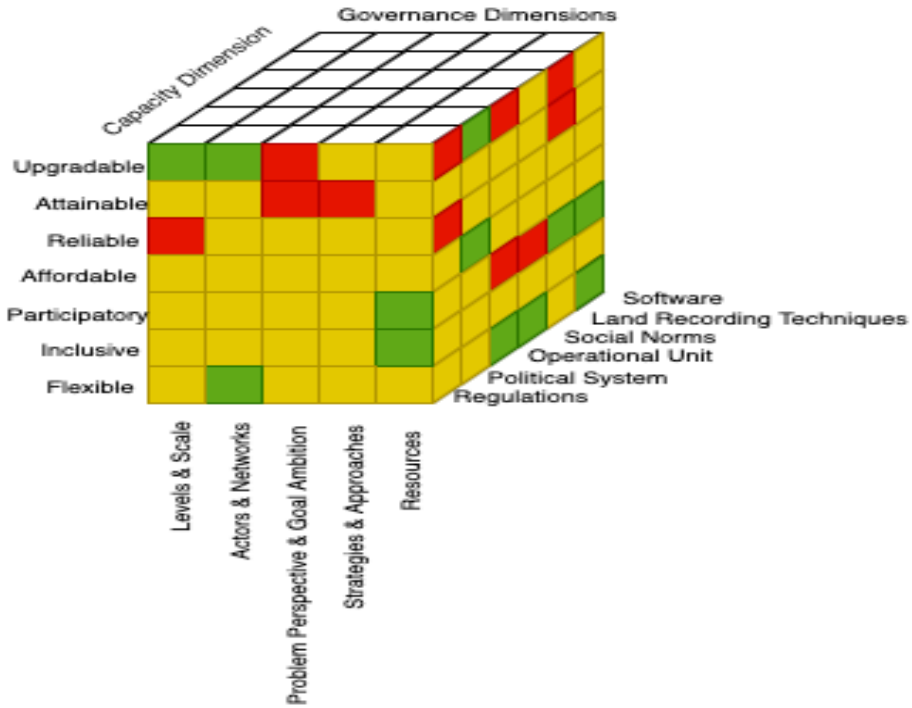
1. Revising the UAV regulations by focusing on the flexibility, inclusiveness, and affordability of the land administration system.
2. Organization of public awareness campaigns, training, and promotion of participatory practices at the operational and societal levels.

3.2.2 Case example: Implementation of UAV in Kenya

Figure 4 shows the its4land model for the implementation of UAV technology in Kenya. The capacity and governance conditions in the model are taken by the evaluation matrices developed in Deliverable 7.4.

The first assessment suggests that most governance dimensions have moderate compatibility with Fit-for-purpose principles, but *reliability*, *attainability*, and *upgradability* have areas with low compatibility (Step 1).

Figure 4. Its4land model of UAV technology in Kenya



Starting with reliability, the only red-colored cell in the governance dimension is *levels& scale* (Step 2) and the only corresponding red-colored capacity dimension is *regulations* (Step 3). According to the operational steps, the policy intervention to improve reliability conditions needs to focus on changing regulations concerning the implementation of UAV technology in the land administration system (Step 4). The vertical assessment of the *regulations* column suggests that the revision of regulations can be enhanced to include the *upgradability* dimension as well (Step 5). Hence, the first policy intervention can be revising the regulations to specify the roles and responsibilities concerning the implementation of UAV technology in the land administration system and applying the regulations toward digital transformation in land recording processes (Step 6).

The second weakness in the governance dimension is about *attainability*. The low compatibility areas in governance dimensions are *problem perspectives & goal ambition* and *strategies & approaches* (Step 2). As specified in Table 1, the low compatibility on these governance dimensions suggests that there are systematic obstacles in the land administration system to adapt available strategies for the usage of UAV in the land administration and if there is a problem with the UAV equipment it is difficult to replace the material. In the corresponding capacity dimension, the only red-colored capacity condition is the *land recording techniques* (Step 3). Low compatibility in land recording techniques means that UAV can only be implemented at a limited scale by certain land administrations that have the right capacities. The operational steps suggest improving the capacity of the land recording techniques, which means according to the classification in Table 1, scaling up the use of the UAV in land recording processes. One way of scaling up the use of

UAV in land recording processes is creating the right market conditions for commercial UAV operators to provide land-recording services for land administration. The findings in Kenya showed that there are multiple capable commercial UAV operators in Kenya. As a possible policy intervention, the government can incentivize commercial operators to foster market competition and to scale up the use of UAV in land recording processes. A competitive market can support the spread of maintenance services for UAV equipment that is both cost-effective and locally provided. Furthermore, the vertical assessment of the *land recording techniques* column shows that there is low capacity concerning the *upgradability* of the system (Step 5). The low capacity of *upgradability* in Kenya is due to limitations with digitalization and lack of technological capacities at most of the local offices. Collaboration with commercial UAV operators and other stakeholders can be also useful to overcome the limitations concerning upgradability of the land recording techniques (Step 6).

The third weakness in the governance dimension is about *upgradability.* The low compatibility at *problem perspective and goal ambition* suggests that the land administration system does not encourage innovation in land recording processes because of the bureaucratic resistance and the administrative burden for commercial UAV operators (Step 2). The capacity dimension of *upgradability* shows that there are low capacities concerning *regulations*, *operational units* and land recording techniques (Step 3). Possible policy interventions concerning *regulations* and *land recording techniques* have already been mentioned previously. In addition to these policy interventions, the government can focus on providing specialized training and capacity building programs to build up the necessary skills in operational units with low technical expertise on UAV (Step 4). As a final step, the vertical assessment of *the operational unit* shows *the participatory* dimension is another weakness. the most effective policy interventions in improving the overall system (Step 5). For example, specialized training for operational units can both focus on building the technical expertise for UAV missions and also build the necessary skills in engaging with local stakeholders during UAV operations (Step 6).

In sum, our analysis suggests the following policy interventions in Kenya;

1. Revising the regulations to specify the roles and responsibilities concerning the implementation of UAV technology in the land administration system and applying the regulations toward digital transformation in land recording processes.
2. Incentivizing commercial operators and to foster market competition to scale up the use of UAV in land recording processes.
3. Collaborating with commercial UAV operators and other stakeholders to overcome the limitations concerning upgradability of the land recording techniques.
4. Providing specialized training for operational units (both public and commercial) to build up the technical expertise for UAV missions and the necessary skills in engaging with local stakeholders during UAV operations.

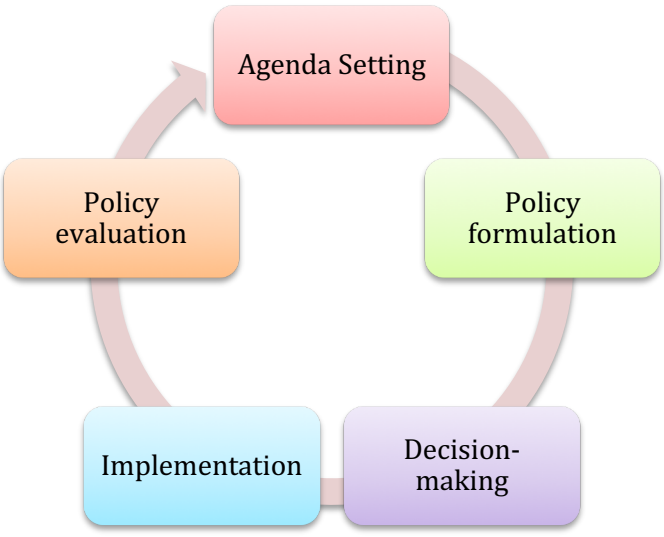
4 Guidelines for a sustainable implementation of the its4land model

In the previous section, we explained how to use the its4land model to design effective policy interventions for capacity development in the land administration system. However, capacity development and improvements in governance conditions also necessitate monitoring the change in the system to assess the goal achievement of policy interventions.

Goal achievement in system design is measured by monitoring the changes in outcomes and outputs (see Figure 2) before and after the policy intervention. The effectiveness of policy interventions is also dependent on policy goals. Policy goals reflect the expectations of the system and thus determine the outcomes. If policy interventions improve the performance of the system in reaching policy goals, we conclude the interventions have been successful. However, to achieve sustainability in the implementation process, it is necessary to run periodic assessments with the its4land model and re-evaluate policy goals.

In this section, we will provide operational guidelines on how to integrate the its4land model in policy-making processes to monitor and measure progress achieved with policy interventions. On the design of the operational guidelines, we followed the **policy cycle model** (Lasswell, 1956). A policy cycle shows how a policy should be drafted, implemented and assessed. Policy cycles are adapted to the area of application, but at least five operational steps are present in a policy cycle design. These are **agenda setting, policy formulation, decision-making, implementation,** and **policy evaluation.** Figure 5 shows the stages of the policy cycle.

Figure 5. Policy cycle stages



In the following subsections, we elaborate on the recommendations for each phase. The recommendations shared below are compatible with the *UNDG Capacity Assessment Methodology User Guide* (UNDG, 2008) which is designed by the UNDP to develop effective capacity assessment and capacity development strategies for national governments.

By using the guidelines provided in this section, policy designers can design implementation strategies for the its4land tools at a national scale and assess which strategy is most effective, least costly, and brings short-term and/or long-term benefits.

4.1 Agenda Setting

The policy cycle begins with agenda-setting. The agenda-setting phase is about deciding on the scope of the policy goals and selecting the right outcome indicators to measure the progress. For example, a policy goal could be the implementation of the its4land toolbox in a specific geographical region in a specific time period. In order to successfully complete the agenda-setting phase, it is important **to establish deliberative mechanisms with key stakeholders** to decide on the scope of the policy goal and **then select the outcome indicators that are compatible with SMART criteria**.

4.1.1 Establishment of deliberative mechanisms

The relevant stakeholders at the national and local levels should be identified and brought together. Deliberative mechanisms are established to create national dialogue and feedback processes that focus on the emerging or agreed upon priority areas in the land administration system. A diverse and inclusive network of stakeholders is important to create legitimacy in policy goals and to ensure the engagement of stakeholders in the implementation of policy intervention strategies.

4.1.2 Selection of SMART indicators

After the selection of policy goals, the outcome indicators should be selected to assess the results achieved. A commonly agreed framework in selecting successful indicators is **SMART** criteria (Doran, 1981). SMART is a mnemonic for **s**pecific, **m**easurable, **a**ttainable, **r**elevant and **t**ime-bound indicators. For each indicator, the baseline and target metrics should be defined, which are measurable through available indicator data, accessible to the public and verifiable by objective sources. It is important to acknowledge the distinction between output and outcome indicators. Outcome indicators capture the value created by the land administration system. Output indicators show the results of the land administration activities.

4.2 Policy Formulation

The second phase in the policy cycle is policy formulation. Policy formulation is the stage where the policy designers assess the capacity and governance conditions by applying the its4land model. In Deliverable 7.4 and Section 2 of this deliverable, we explained how to assess the capacity and governance conditions in the land administration system. However, the success of the its4land model and other analytical tools provided in this work package is dependent on the quality and analysis of the field data. For that, it is important **to constitute a capable assessment team**, **to consider specific operational issues that can affect the governance and capacity assessment process** and **selection of the right methodology for data collection**.

4.2.1 Constitution of an assessment team

An assessment team should be composed of individuals with relevant capabilities, technical and managerial expertise, familiarity with the social and local context, content knowledge and assessment methodological skills. The UNDG capacity assessment user guide (2008) suggests the inclusion of the following experts in an assessment team;

- Context experts bring to bear an understanding of the landscape – political, socio-economic, cultural, etc.
- Substantive content experts bring detailed and technical knowledge of a thematic area, sector, issue and/or tool under assessment, including good practices and relevant examples to be used as the basis for dialogue concerning the design and implementation of the assessment.
- Experts with methodological skills facilitate and manage discussions regarding assessment scope and scale; adaptation of the framework; execution of the assessment, including quantitative and qualitative data collection; and interpretation of assessment results as they lead into the formulation of policy intervention strategies. An overall process manager is assigned who serves as a liaison between the assessment team and primary stakeholders and thus manages the overall process.
- The team is also complemented with experts in crosscutting issues, i.e., a human rights-based approach and gender equality, as necessary.

4.2.2 Consideration of specific operational issues

Before starting the process of assessment with FGAF and FCAF, several operational considerations should be taken into account.

- Understand the assessment activity as a means and not an end in itself. The purpose of the assessment activity is to have a structured overview of the needs and assets in the land administration system.
- Recognize the flexibility of the FGAF and FCAF and adapt it to suit its specific needs and context.
- The assessment is not a one-time event but as a dynamic ongoing process. It is important to use indicators (e.g. number of respondents, type of

respondents) to monitor progress during the assessment and to adjust areas of focus as progress is made.
- Identify the objectives and expectations for the deployment and the cost of the assessment exercise based on team composition, duration, depth, and location.
- Engage key national/local stakeholders throughout the process. The identification and inclusion of additional core issues depend upon the needs expressed by key stakeholders.
- Leave the prioritization of policy interventions until after the completion of the assessment.

4.2.3 Selection of the methodology

Several approaches could be used to gather information during fieldwork: self-assessment, one-on-one interviews, focus groups, surveys, etc. Each methodology has its advantages and disadvantages that will have to be weighed in a given context. Regardless of the approach taken, a variety of perspectives should be gathered, which may suggest collecting input from people at various levels of an organization (e.g. director-level and staff; central and field; line and staff professionals), as well as from other partners (e.g., government partners, beneficiaries, CSOs, private sector organizations). Triangulation of the data with various sources, using both quantitative and qualitative data, and validation of the assessment with a variety of the members of the assessment team is important for the reliability of assessment.

4.3 Decision-making

The third stage in the policy cycle is decision-making. Decision-making is about selecting policy intervention strategies for capacity development and governance. Section 3 of this deliverable already provided the operational steps on how to use the its4land model to decide on the policy intervention strategies. However, policy intervention strategies are also dependent on the political preferences of the decision-makers at the national scale. Therefore, the sustainable implementation of the policy intervention strategies requires assessing **to what extent the policy intervention strategy complies with the policy priorities** in the land administration system and **what is the available budget to finance the cost of the intervention**.

4.3.1 Prioritization of policy interventions

When possible policy intervention pathways are identified by using the its4land model, the policymakers with the engagement of multiple stakeholders should set on selecting policy priorities for integrated development in the land administration system. The selection of the policy priorities takes into account the following considerations;

- Political importance: Is there any political urgency or politically sensitive issue regarding the area of intervention? Is the political importance a time-

and space-bounded issue or is it pervasive for the country case? Is political resistance a likely outcome if policy intervention takes place?

- Long term vs. immediate impact: A political intervention strategy can be part of medium- to long-term strategic initiatives (one year or longer) or can have immediate quick impact activities (less than one year). The ease of implementation and the need for short-term wins to sustain long-term changes are strategically important considerations during the prioritization of policy interventions.
- Scope of intervention: A policy intervention strategy can target improving several weaknesses of the system at the same time. However, complicated intervention strategies and no specific intervention goals can risk the success of interventions. The scope of intervention also reflects on the desired changes in the system and the defined timeframe within which the changes in the system to be achieved.

4.3.2 Cost of policy intervention

During the decision-making process, it is critical that costing exercises are undertaken for a range of strategy options and action plans so that there is a clear idea regarding the extent of funding required to implement the policy intervention strategies and initiatives. For processual changes in the land administration system such as training, the costing exercise is likely to be a straightforward exercise of budgeting the necessary inputs, such as the cost of personnel, equipment, etc. However, for structural changes, such as attitudinal change or complicated institutional reforms, the costing exercise may not be easy and straightforward. In such situations where costs cannot be accurately projected or measured, UNDG guidelines (2008) suggest that the costing exercise be limited to actual costing of inputs to avoid issues of legitimacy. The cost of interventions and the cost for sustaining them should be considered before the final selection of policy intervention strategies.

4.4 Implementation

The following phase in the policy cycle is implementation**.** The implementation phase is about implementing the selected policy intervention strategies for capacity development.

Policy interventions should include indicators so that progress can be measured. Such indicators must be related to progress in terms of outcomes and not merely immediate outputs. The effectiveness of policy intervention strategies is measured by assessing the change in output and outcome indicators based on the time and money invested in policy interventions.

At this phase of the policy cycle, a reassessment of capacity and governance conditions might be necessary by using FGAF and FCAF. Change in the system does not always occur by policy interventions alone as endogenous development in the capacity conditions can improve the outcome of the land administration system too. Furthermore, policy interventions might have a ripple effect on other governance and capacity dimensions. It is then to be determined whether the change in output and outcome indicators is sufficient or needs improvement. A limited improvement or no improvement does not always indicate a policy intervention has been unsuccessful; a relatively low rating may be adequate in the context of given disabling environment or deterioration in contextual factors.

Findings may be discussed with various stakeholders at several points during the overall process. Findings must be presented in a way that allows for the consideration of comments, validations and other forms of feedback. The discussion and interpretation regarding the results provide the necessary guidance towards better policy intervention strategies – in terms of focus, priorities, and instruments.

4.5 Policy evaluation

The last phase in the policy cycle is policy evaluation. The policy evaluation phase is about re-evaluating the relevance of antecedent policy goals within the changing context of the land administration system.

A periodic re-evaluation of policy goals by strategic planning or management team ensures the sustainable implementation of the its4land toolbox. The effectiveness of the policy goals and their enduring effect on sustainable implementation can be interrogated by two sets of questions.

The first set of questions address the environment for the implementation:

- Does the policy support the sustainable implementation of the tools in the land administration system? Does it support the improvement in the land administration system comprehensively and holistically?
- Is there political support for the policy goal?

- Is there a long-term budget to support the policy goal?

The second set of questions addresses the design of the policy goals.

- Do the new policy goals focus on those strategies that have been shown to have an impact on the development and retention of endogenous capacity at the national and local levels?
- Do the new policy goals ensure the application of key principles of national ownership and leadership, accountability, transparency, participation, inclusiveness, non-discrimination, equality, and empowerment?
- Do the new policy goals include a monitoring and evaluation system, including the determination of indicators and the collection of baseline data?
- Do the new policy goals include a plan to manage risks and obstacles?

Through these sets of questions, the strategic planning or management team can assess whether there is a need for the change of the policy goals in the land administration system.

5 Conclusion

The final deliverable of WP7 presents the **its4land model for governance and capacity development**. The model brings together FGAF and FCAF in a holistic assessment framework to produce successful policy interventions and capacity development strategies for the implementation of the tools from the its4land toolbox, and ultimately for the modernization of the land administration system.

The policy designers and stakeholders in the country cases can use the model to guide and position the policymakers on implementing, monitoring and evaluating the sustainable implementation of the its4land tools. By using the operational steps and guidelines shared in this deliverable, policy designers and implementers in land administration can analyze the weaknesses in the land administration system in terms of governance and capacity conditions, develop capacity development strategies and assess the effectiveness of strategies by monitoring the improvements in the system.

We illustrated the practical use of the its4land model for the implementation of UAV technology in the land administration systems of Rwanda and Kenya. By using the model, we drew several policy recommendations to support the implementation of UAV technology on a national scale. However, the policy recommendations shared in this deliverable should not be taken at face-value because according to the political priorities and policy goals alternative strategies could be more viable in the country cases. The model can pinpoint the areas in need of intervention and show the pathways for capacity development, but the success of policy intervention depends on the contextual factors. Therefore, in developing and selecting the capacity development strategies, it is important to collaborate with actual policy implementers and stakeholders. The final part of the deliverable is illustrative for the policy practitioners on developing successful strategies in implementation and scaling up successful policies in the country cases.

The model and the guidelines shared in this deliverable are applicable to other its4land tools and other country cases. Policy designers can assess the capacity and governance needs and develop strategies by using the its4land model. One ontological limitation of the model is that it presumes that Fit-for-purpose land administration is the desired state for a well-functioning land administration system and the model treats all Fit-for-purpose principles with an equal weight of importance for the successful implementation of the its4land tools. Depending on the political priorities and policy goals, some principles of the model can be taken as secondary in importance in policy intervention. We recommend policy designers who are willing to use this model to be reflexive about the principles of the Fit-for-purpose land administration and adjust their policy strategies according to their policy priorities.

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