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The roles of the government, international organisations and civil society organisations in the implementation of smart city initiatives in rural areas – The multi-case study of Georgia

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Abbreviations

B2B	Business-to-Business
CENN	Caucasus Environmental NGO Network
EC	European Commission
ENPARD	European Neighbourhood Programme for Agriculture and Rural Development
ENRD	European Network for Rural Development
EU	European Union
GEL	Georgian Lari
GITA	Georgian Innovation and Technology Agency
ICT	Information Communication Technology
IRDG	Improving Rural Development in Georgia
LAG	Local Action Group
LDS	Local Development Strategy
MLG	Multi-Level Governance
NGO	Non-Governmental Organisation
RDA	Rural Development Agency
RDFG	Rural Development for Future Georgia
SMEs	Small and Midsize Enterprises
UN	United Nations
UNDP	United Nations Development Programme

1 Introduction

With digitalisation and technological development reshaping our world and everyday life, with Information and Communication Technologies (ICTs) opening up new ways of solving urbanisation problems, existing paradigms and structures have undergone significant changes (C. Yin et al., 2015). Many of the public services that are used by citizens every day are now increasingly delivered using digital technologies (UN Habitat, 2022). “Smart city initiatives” refer to the initiatives to develop urban areas through the implementation of digital and information and communication technologies (ICT). Conversely, “smart cities” are frequently used to describe cities that develop their infrastructure and services using ICTs and digital technologies while striving to attain “prosperity, effectiveness and competitiveness“ across various socio-economic dimensions (Angelidou, 2014).

Local governments often collaborate with external stakeholders when it comes to implementing smart city initiatives (UN Habitat, 2022). Central governments, local governments, international organisations and civil society organisations are some of the stakeholders involved in the planning and implementation of smart city initiatives, however, the degree of their involvement often varies. While big cities are facing challenges in implementing smart city initiatives due to the complexity of having policy and regulation changes as well as organisational and institutional changes that need to happen for the process to run smoothly (UN Habitat, 2022), smaller municipalities are left under-researched as the barriers they face may often differ from those faced by the large, densely populated cities (Agriesti et al., 2022; Fröhlich et al., 2023). The spotlight, so far, has been focused on big cities and the smaller cities and villages have been neglected in academic literature.

Expanding smart city concepts to rural areas is crucial, as it may prevent rural depopulation and reduce the excessive burden on urban centres. Traditionally, analyses of smart city stakeholders have employed the triple helix, quadruple helix, and even quintuple helix models, yet these frameworks do not adequately address the intricate relationships between international organisations, civil society, and the government. Though the roles of international organisations may seem evident, the collaborative efforts they partake in with civil society organisations have been underappreciated, revealing a gap in current research—a gap this thesis aims to bridge.

As interest in rural areas has begun to increase, smart village initiatives have gained popularity over the last few years and have been supported by the European Network for Rural Development (ENRD) and the European Commission (EC), which have announced various initiatives pertaining to diverse aspects of rural development (Paneva, 2017).

Moreover, the European Union (EU) provides support for rural development through the European Neighbourhood Programme for Agriculture and Rural Development (ENPARD). In collaboration with the United Nations Development Programme (UNDP), the EU, through ENPARD has launched the Smart Villages project in Georgian municipalities. This initiative envisions the collaboration of different stakeholders from various sectors to develop and introduce digital solutions to the target municipalities (UNDP Georgia, 2021).

A report by UN-Habitat (2022) underlines the importance of the local governments coordinating operations involving players such as different municipal departments and agencies, private sector suppliers, universities and other research institutes, civil society groups, and citizens in highly collaborative environments. Understanding how governments collaborate with external organisations and delineating their respective roles is essential for effective planning, fostering further collaborations, and devising robust strategies. Research in this domain is crucial to gaining insights that can inform collaborative approaches and strategic planning.

The significance of multi-level governance practices is emphasised in the UN-Habitat report (2022), which states that such practices guarantee "local autonomy, coordinated efforts and mutual benefits among different government tires". Nevertheless, academic literature addressing such practices in smaller municipalities is scarce. The objective of this thesis is thus to provide an answer to the subsequent research question:

What are the roles of the government, international organisations and civil society organisations in the implementation of smart city initiatives in rural areas and how do they cooperate with each other?

Studying the development of smart city processes is particularly pertinent in developing and post-Soviet countries. These regions experience significant external influences and their impacts on local populations need thorough examination. As Gil-Garcia et al. (2015) have noted, cities globally are encountering complex challenges due to rapid urban population growth, which strains infrastructure and exacerbates social issues. Resolving such multifaceted problems necessitates collaboration among various city agencies, nonprofits, businesses, and the wider community. Therefore, to answer the research question of this thesis, four Georgian municipalities were selected for a multiple-case study. The detailed reasoning behind this choice will be elaborated on in the methodology section.

The thesis is organised into seven sections, beginning with this introduction. The following section will review existing literature on smart cities, distinctions between

smart cities and smart villages, and the LEADER approach proposed by the EU. Subsequent sections will explain the theoretical framework—the multi-level governance framework—used in this study, along with justifications for its selection. The methodology section will outline the research methods and steps undertaken. Finally, the results will be presented and discussed, culminating in the conclusion.

2 Literature Review

This chapter explores the theoretical framework and the starting literature of this thesis. The literature used for this thesis will explain the concept of multi-level governance, the definition of smart city initiatives used within the scope of this thesis, smart city initiatives in smaller municipalities, the concept of smart villages and the roles of governments in smart city initiatives.

2.1 Smart Cities

Typically, the phrase “smart city” is applied to cities that implement digital technologies and ICTs to enhance the efficiency and services they deliver to the public. Nevertheless, the term remains ambiguous, with numerous operational definitions being employed both, within academic circles and in practical applications (Chourabi et al., 2012). Smart cities tend to manifest themselves in different forms based on their objectives, challenges, realistic situations, etc. (Nam & Pardo, 2011). Therefore, there is no single, universally agreed definition that could be used.

For example, according to the EC, a smart city is an area where digital solutions are implemented to enhance the efficiency of “traditional networks and services”, thereby benefiting both the residents and businesses within it (Hämäläinen, 2020; Shamsuzzoha et al., 2021). The definition presented by Caragliu et al. (2011) (see Table 1), together with Angelidou’s (2014) smart city definition, mentioned in the introduction section, present a few of the working definitions among many circulating within the academic literature. Table 1 presents definitions of smart cities found across academic literature.

According to Nam and Pardo (2011, p. 288) effectively spearheading a smart city initiative necessitates a thorough comprehension of the intricacies and interrelationships that exist between technical and societal aspects of a city’s physical and service environments. This understanding forms the foundation of the socio-technical systemic understanding of smart city development (Giffinger & Hui, 2015).

Authors	Smart City Definitions
Caragliu et al. (2011)	"A city to be smart when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance" (p.70)
Giffinger et al. (2007)	"A city well performing in a forward-looking way in economy, people, governance, mobility, environment, and living, built on the smart combination of endowments and activities of self-decisive, independent and aware citizens" (p. 11)
Hall (2000)	"A city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens" (p. 1)
Harrison et al. (2010)	"Urban areas that exploit operational data, such as that arising from traffic congestion, power consumption statistics, and public safety events, to optimize the operation of city services" (p. 1)
Komninos (2002)	"Territories with high capacity for learning and innovation, which is built-in the creativity of their population, their institutions of knowledge creation, and their digital infrastructure for communication and knowledge management" (p. 6)
Kourtit and Nijkamp (2012)	"A promising mix of human capital (e.g. skilled labor force), infrastructural capital (e.g. high-tech communication facilities), social capital (e.g. intense and open network linkages) and entrepreneurial capital (e.g. creative and risk-taking business activities)" (p. 93) "The result of knowledge-intensive and creative strategies aiming at enhancing the socio-economic, ecological, logistic and competitive performance of cities" (p. 93)
Kourtit et al. (2012)	"Advanced business and socio-cultural attractiveness, presence of a broad (public and private) labor force and public facilities, and presence and use of sophisticated e-services" (p. 234)
Lombardi et al. (2012)	"Smart governance (related to participation); smart human capital (related to people); smart environment (related to natural resources); smart living (related to the quality of life); and smart economy (related to competitiveness)" (p. 139)

Table 1 – Smart City Definitions found in Academic Literature

In general smart cities are designed with four pillars in mind: institutional infrastructure, physical infrastructure, social infrastructure, and economic infrastructure (Sharif & Pokharel, 2022; Silva et al., 2018) and six dimensions (Albino et al., 2015; Arroub et al., 2016; D'Amico et al., 2020; Giffinger et al., 2007; Zubizarreta et al., 2016). These dimensions and the related aspects of urban life are shown in Figure 1. These dimensions will be discussed in the following sections.

Components of a smart city	Related aspect of urban life
smart economy	Industry
smart people	education
smart governance	e-democracy
smart mobility	logistics & infrastructures
smart environment	efficiency & sustainability
smart living	security & quality

Figure 1 – Components of a smart city. Source: Albino et al. (2015). Adapted from Lombardi et al. (2012)

Smart cities have four pillars (Sharif & Pokharel, 2022; Silva et al., 2018) and six fundamental dimensions, as defined by Giffinger et al. (2007): smart cities are comprised of six key fields such as smart governance, smart economy, smart mobility, smart environment, smart people and smart living. These six dimensions aim to resolve the most pressing issues facing actual cities and strive to avert the emergence of new challenges (Zubizarreta et al., 2016). Arroub et al. (2016) and D'Amico et al. (2020) have both identified six dimensions of smart cities that correspond to the dimensions identified by Giffinger et al. (2007). The following sections discuss the characteristics of all six dimensions of smart cities including critical factors and examples.

2.1.1.1 Smart Economy (Competitiveness)

The classification of economies hinges on several critical factors: an innovative mindset, entrepreneurial activity, economic reputation and trademarks, productivity, labour market flexibility, and global integration (Zubizarreta et al., 2016). According to Gil-Garcia et al. (2015), the economic dimension of a smart city focuses on the promotion of a knowledge-based economy, high-tech and creative industries, and a business-friendly environment conducive to commercial activities.

Zubizarreta et al. (2016) argue that achieving a robust economy with sustainable social growth necessitates innovation through the creation of new business sectors and the integration of advanced technologies into manufacturing processes to enhance productivity while reducing costs and environmental impact. These initiatives often

require substantial investments, which only strong economies can support. Furthermore, all other characteristics of smart cities rely on a solid economic foundation. Without a stable economic situation, implementing most applications in the European standard classifications would be unfeasible (Zubizarreta et al., 2016). Therefore, applications should aim to positively impact the local economy, serving as tools for economic growth and gateways to new development opportunities rather than purely business-oriented endeavours (Zubizarreta et al., 2016).

2.1.1.2 Smart People (Social and Human Capital)

This aspect is frequently referred to as Smart Human Capital or Smart People (Lombardi et al., 2012). The primary factors in the people classification include the level of qualification, commitment to lifelong learning, social and ethnic diversity, flexibility, creativity, cosmopolitanism, open-mindedness, and active participation in public life. Zubizarreta et al. (2016) explain that citizen participation in the city's public life and smart behaviour are crucial elements in this classification. To foster smart behaviour and active participation, a creative and multicultural environment is essential for a comprehensive understanding of public life and for collaborating on everyday city issues with an open perspective. The insights from citizens about their city's vision provide valuable information to the government, revealing immediate concerns and neighbourhood issues in a personal and timely manner. Analysing this large volume of data carefully and identifying priorities ensures that the city's main problems are addressed more efficiently, focusing on key development areas.

Arroub et al. (2016) highlight that a city truly becomes smart when it emphasises not just technology but also its people and communities. According to Campbell(2009), the learning process itself can yield emerging qualities in a city that might be as significant as the cumulative lessons learned. Kourtit and Nijkamp (2012) also stress the significance of human capital in smart cities. Additionally, Gil-Garcia et al. (2015) underline that people, education, learning, and knowledge are central to urban development.

2.1.1.3 Smart Living (Quality of Life of Citizens)

Key factors influencing the classification of living conditions in a city include access to cultural facilities, health standards, individual safety, housing quality, educational institutions, touristic appeal, and social cohesion (Zubizarreta et al., 2016). These aspects relate to the daily lives of citizens, encompassing the social benefits they can utilise, and the availability of public healthcare, security, and education systems. Moreover, it also implies the existence of advanced socio-cultural and business attractions (Kourtit et al., 2012). One of the primary goals of a smart city is to enhance the quality of life by

improving information systems for citizens and creating a more comfortable living environment. This is accomplished by integrating new and sophisticated technologies and management systems into existing services and introducing new services to promote more comfortable and sustainable living (Kourtit et al., 2012; Zubizarreta et al., 2016).

2.1.1.4 Smart Environment (Natural Resources, Sustainable Growing)

Key factors in environmental classification include the attractiveness of natural conditions, pollution reduction, environmental protection, and sustainable resource management(Zubizarreta et al., 2016). The global concern for the environment is growing, especially given that cities and industrial areas, often located in city suburbs, rank among the largest sources of pollution (Bikis, 2023). As the population increases, so does pollution. Addressing urban pollution and reducing energy consumption are crucial steps toward achieving more environmentally friendly living conditions. Proper management of natural resources, particularly through public utilities such as electricity, water, and gas, is paramount. Major efforts are geared towards reducing CO2 emissions and expanding green spaces (Zubizarreta et al., 2016). Sustainability stands as a core strategic element of a smart city, which can be broadly categorised into ecological sustainability and monitoring systems(Gil-Garcia et al., 2015).

2.1.1.5 Smart Governance (Participation of Citizens)

Smart governance often involves employing new communication channels for citizens, such as "e-governance" or "e-democracy" (Benner, 2003; Florida, 2004; Lombardi et al., 2009; Torres et al., 2005). Key elements in the governance classification include citizen participation in decision-making, provision of public and social services, transparent governance, and the implementation of political strategies and perspectives. According to Zubizarreta et al. (2016), this classification pertains to governmental actions and the level of transparency and efficiency in managing public resources. Online platforms are commonly used to engage citizens in public life, with one of the most prevalent being reporting sites where citizens can report issues. Additionally, opinion portals serve as a medium where the government can directly solicit public opinions on specific projects or ideas, functioning similarly to an online referendum (Zubizarreta et al., 2016).

2.1.1.6 Smart Mobility (Transport and ICT)

Several essential elements form the basis for mobility classification: local and international accessibility, the presence of ICT infrastructure, and transport systems that are sustainable, innovative, and safe (Zubizarreta et al., 2016). Albino et al. (2015) emphasise that smarter cities ought to invest in human capital from the outset rather than

assuming that information and communication technology (ICT) alone will suffice to create a smart city (Hollands, 2008; Shapiro, 2006). They also advocate for smart governance that eliminates barriers related to language, culture, education, and disabilities.

The rapid population growth in cities is making mobility a significant current and future challenge. Ceder (2004) highlights that urban mobility greatly contributes to pollution and that congestion issues result in significant economic costs and environmental degradation. Zubizarreta et al. (2016) discuss that the quality and frequency of public transportation and its usage rates are crucial for future mobility. They argue for reducing single-occupancy vehicle trips and promoting sustainable transportation options like E-bikes and E-cars (Midgley, 2009).

2.1.2 Possible roles in smart city implementation

When it comes to actually implementing these dimensions in practice, there are several stakeholders that participate in the implementation process. Government, industry, academia and civil society could be some of the examples of the stakeholders that participate in smart city initiatives (Carayannis & Campbell, 2012). However, within the scope of this thesis, in addition to the usual stakeholder, which is the government, international organisations and civil society organisations are also researched. Therefore, to find the answer to the research question of this thesis, I will be looking at the possible roles the government can play and try to apply them to the other two stakeholder groups.

According to Borras and Edler (2020), there are six possible roles across the mode of governance when it comes to smart cities. The six roles are as follows: the facilitator, the lead-user, the initiator, the promoter, the enabler of social engagement and the gatekeeper. Borras and Edler (2020) describe these roles as follows:

Facilitator – The government aids in simplifying processes by backing the dynamic initiatives of change from other entities.

Lead-user – The government pioneers market development by engaging as both a primary user and a collaborative designer, aiming to address specific public needs.

Enabler of societal engagement – The government actively promotes stakeholder participation in processes that shape the direction of development.

Gatekeeper – The government regulates the entry of change facilitators, determining when to allow or restrict access to opportunities for analysis, experimentation, and transformation.

Promoter – The government supports, advocates for, and represents transformation within the sociotechnical framework.

Initiator – The government, recognizing potential opportunities early, actively employs its knowledge and resources to effectively drive transformation in the sociotechnical landscape.

The state's role in technological advancement and innovation has been viewed through two perspectives: one perspective views the state as a corrective force for market and system inefficiencies that hinder the growth and application of knowledge, technology, and innovation (Martin & Scott, 2000). The other perspective sees the state as a market creator, actively participating in specific missions to address societal challenges (Edler & Fagerberg, 2017).

The meaning of smart cities could be different for cities with different levels of development. While capitals and big cities could afford to focus on using big data and sensors to improve the infrastructure of the city, cities and villages in smaller municipalities may not have the economic means to implement such measures. Some of the remote villages might still be having problems with equipment such as computers and monitors or using ICT technologies to create maps or websites for business-to-business (B2B) interactions. So, in the context of this thesis, smart cities are considered to be cities that use ICTs and digital technologies as well as social innovation in order to benefit residents and businesses through the use of the aforementioned tools at the appropriate times and in an appropriate manner.

2.2 Smart Villages

As seen from the previous section, smart cities have garnered significant attention and have been the subject of extensive research over the past decade. Yet, rural areas have been neglected in academic research. The desire to attain sustainability and increased efficiency through smartness is not only specific to the major cities (Wang et al., 2022).

Even though the research has been focused on cities, it is argued, that villages may have an even bigger incentive than large urban areas to digitise their services, integrate technology into local service delivery and production and invest in smart technology (Spicer et al., 2021). Local characteristics, priorities and the requirements of cities, along with global market forces and available technology, influence the smart city landscape (Angelidou, 2014). As a result, the absence of a universally accepted definition of smart villages is understandable. Similarly to smart cities, they exhibit diverse manifestations depending on their goals, obstacles, and pragmatic circumstances (Wang et al., 2022).

While smart villages have gained academic interest, they simultaneously constitute a sub-initiative of the ENRD's comprehensive initiative on "Smart and Competitive Rural Areas" (Paneva, 2017). This initiative defines smart villages, as those in which rural services are transformed through the application of social and digital innovation (Paneva, 2018). In this context, Paneva (2018) explains that the term "smart" denotes the following 3 things: 1) utilising digital technologies when appropriate and as a supplementary instrument; 2) executing initiatives that may extend beyond the limits of the village and encompass the adjacent peripheries or territories; 3) fostering novel models of collaboration among stakeholders. Such cooperation could take place between individual entrepreneurs, private enterprises, governmental bodies, international organisations, civil society organisations and others.

A key point differentiating smart cities from smart villages is their emphasis on big data and the integration of interconnected digital technologies to transform urban operational processes (Paneva, 2018). In contrast, a concept of a smart village goes beyond mere enhancements in digitization and connectivity as true "smartness" is achieved by leveraging digital technologies as tools to drive local development goals and elevate the quality of life for residents (Giorgi Tsimakuridze, 2021). As such, in accordance with the definition of smart cities , being cities that use ICTs and digital technologies as well as social innovation in order to benefit residents and businesses, within the scope of this thesis, smart villages are considered as part of the smart city concept.

2.3 EU-LEADER Approach

The LEADER initiative, launched in 1991, aimed to enhance the development of rural areas by involving local populations and organisations in non-agricultural activities (Papadopoulou et al., 2011). This was in response to the inefficacies observed in top-down policies across various rural regions in Europe. To embody the principle of subsidiarity in rural development programs, the LEADER strategy facilitated the creation of Local Action Groups (LAGs) (Cañete et al., 2018). Even in instances when innovation was not defined as the objective of LEADER LAGs, innovation has frequently appeared anyway, albeit more in the form of social or cultural innovation rather than technological innovation (Dargan & Shucksmith, 2008).

The LEADER approach is built on seven foundational characteristics: a bottoms-up approach, an area-based focus, local partnerships, an integrated and multi-sectoral strategy, networking, innovation, and cooperation (European Network for Rural Development and European Commission, n.d.). These elements collectively ensure a degree of decentralisation in the planning, design, and implementation of EU policies, thereby granting greater legitimacy to local governments in engaging citizens in decision-

making processes as compared to central governments (European Commission, 2018; Granberg et al., 2015).

Moreover, adopting the LEADER approach addresses critiques regarding the democratic legitimacy of governance in smart cities, where concerns have been raised about policy-makers potentially being influenced by corporate interests and the limited opportunities for citizens to express their needs (Hollands, 2008; Vanolo, 2016). By fostering local involvement and ensuring that the voices of residents are heard, the LEADER approach helps mitigate such risks, ensuring more democratic and participatory governance in rural development (Nesti & Graziano, 2020).

3 Theoretical Framework

Multi-level governance (MLG) is a theory, that seeks to understand and explain the complex interactions and decision-making processes among various levels of government, non-governmental actors, and institutions involved in the governance of a particular issue or policy domain (Enderlein et al., 2010). Multi-level governance refers to “the dispersion of authority away from central government – upwards to the supranational level, downwards to the subnational jurisdictions and sideways to public/private networks” (Hooghe & Marks, 2001, p. 3). This theoretical framework allows us to research how governance is currently arranged when multiple stakeholders from different “political levels” are involved (Stephenson, 2013). Usually, this framework is used to understand how the EU works. However, in the Handbook on MLG, authors such as Inge Kaul have employed MLG to explore the evolving role of the UN (Enderlein et al., 2010).

According to Piattoni (2009), the fundamental aspect of multi-level governance theorisation lies in the simultaneous activation of three interconnected dynamics: centre-periphery, domestic-foreign and state-society. Hooghe and Marks (2001) emphasise the need for governance at many levels in order to reflect differences in the “territorial reach of policy externalities”. Therefore, while an important part of MLG is that the governance entities are geographically separated, its most crucial element rests in the interconnectedness that exists across different levels of governance (Stephenson, 2013).

MLG underscores the significance of proficient policy implementation, placing particular emphasis on the importance of coordination efforts among various tires of government and a diverse range of stakeholders. As mentioned in the previous paragraph, according to Hooghe and Marks (2001), the MLG differs from traditional hierarchical governance models by highlighting the value of coordination and collaboration among actors at the administrative tier. The argument put forth by Rosenau and Czempiel (1992) regarding "governance without government" underscores the importance of interdependence and collective accountability when it comes to dealing with intricate worldwide issues. Kooiman (1993) posits that "governance as interactive policymaking" underscores the imperative for multiple actors to be engaged in decision-making processes, thereby emphasising their participatory nature. Collaborative methodologies are especially relevant when considering smart city initiatives, which place critical importance on networked governance structures and decentralised decision-making. Further investigation into the topic from Pierre and Peters (2005) regarding complex societies sheds light on how adaptive and resilient governance structures are the result of integrating efforts at multiple levels of governance. Essentially, the MLG framework

offers a conceptual basis for comprehending and promoting the integration of efforts among local government, central government, and additional stakeholders with the aim of achieving sustainable and efficient governance.

However, beyond this understanding of MLG, there are two visions of how governance should be organised (Hooghe & Marks, 2001). On one hand, the first type of governance envisions the delegation of authority to non-overlapping jurisdictions, with authority often bundled in large packages (Hooghe & Marks, 2001). In simpler terms, the decision-making power is with the central government and there is a hierarchical (vertical) structure of power between the levels of governance. Therefore, the power structure is vertical. The second type of governance, on the other hand, envisions a complex and flexible mixture of several overlapping jurisdictions (Hooghe & Marks, 2001). So, the decision-making power is with all the stakeholders and there is room for negotiations and cooperation. Unlike the first type of governance, this power structure is horizontal.

Within the scope of this thesis, the second type of governance of the MLG framework is chosen as the main framework. The second type of governance of the MLG theoretical framework is about decentralised decision-making and involves the civil society (local level), the different levels of government (national level) and international organisations, e.g. EU or UN (supranational level). The selection of this framework was based on its optimal alignment with the requirements of stakeholder collaboration research, providing a clear and systematic structure for this thesis to adhere to.

An alternative framework for this thesis could have been the quadruple helix framework, which expands the triple helix model by adding a fourth helix – the civil society. Researchers often use the Triple-helix or Quadruple-helix approach when it comes to studying stakeholder collaboration in smart cities. This approach allows the investigation of the relationship between three sectors in the case of the triple-helix approach – the government, the academia, and the industry (Etzkowitz & Leydesdorff, 2000). The quadruple helix adds on another actor – the civil society (Carayannis & Campbell, 2012). While this framework may seem to be well suited to this thesis, it has a significant issue. It lacks the supranational level, aka the international sector. As one of the main stakeholder groups researched in this thesis is international organisations, using the triple or quadruple helix may not be suitable. However, this does not mean that the MLG framework is perfect. Academia has identified multiple criticisms of this approach. The explanatory power of MLG has faced ongoing scrutiny, with some scholars arguing that it is more descriptive rather than explanatory (Ongaro, 2015). Moreover, the framework is very general and some may even describe it as an umbrella notion (Ongaro, 2015).

In conclusion, MLG framework offers a broad perspective on the roles and interactions of various stakeholders, it possesses significant limitations. Despite the criticisms, MLG remains a valuable lens through which we can examine the interactions between supranational entities like the United Nations (UN) and the EU, which have been pivotal in shaping global governance structures. From the smart city perspective, the MLG framework acknowledges the need for a holistic approach that integrates the efforts of central and local governments, external organisations such as the EU and UNDP, and civil society organisations. This comprehensive integration is essential for addressing the multifaceted challenges smart cities face. Therefore, this framework is particularly relevant in the context of smart cities, where the role of multilevel governance is crucial in navigating complex data collection and analysis processes to enhance urban management and services. Furthermore, civil society organisations also play a significant role within MLG, contributing to a more inclusive and participatory governance model. By applying the MLG framework, this research aims to highlight and analyse the multilayered interactions and governance processes, justifying its application to the study of the UN’s' role in global governance and its intersection with smart city initiatives.

4 Methodology

The implementation of smart city initiatives in smaller municipalities is a relevant issue globally. However, this thesis specifically examines the roles of stakeholders within the multi-level governance ladder in Georgia and explores their collaborative efforts. This chapter outlines the research methods and approaches used to answer the research question of this thesis. First, it presents an overview of the research design followed by an explanation of the case selection process. The chapter includes the blueprints of data collection and interview processes as well as the data analysis methods and an acknowledgement of the limitations of this thesis.

4.1 Research Design

As this multiple-case study is inductive and has an exploratory nature, I aim to employ a multimethod research design (Hesse-Biber et al., 2015). This approach allows using more than one qualitative approach (Fetters & Molina-Azorin, 2017), featuring a multi-case study and semi-structured interviews as a method to gather empirical data. I chose to incorporate the interview results, both in the multiple-case study section and in the results section, to compensate for the lack of literature which is explained below. The use of multiple methods can help with enhancing the internal validity of the research and support the statements made (Meijer et al., 2002).

A significant portion of research in the fields of public administration and nonprofit management lacks an experimental component (Brown & Hale, 2014). Likewise, to numerous other articles in this field, this thesis employs a nonexperimental approach. Nonexperimental designs are characterised by reflexivity, which refers to the simultaneous occurrence and mutual effect of all stages of the research process on each other (Brown & Hale, 2014). In other words, reflexivity means that a researcher consciously recognises their own participation in the research process and how it is influenced by the subject of study, which allows the researcher to recognise their impact on the procedures and results of the research (Symon & Cassell, 2012). According to Brown and Hale (2014) The process is characterised by non-linearity and iteration, whereby the knowledge gained from each iteration influences the subsequent one.

Data collection is a very important step in research. When conducting non-experimental research, there are several approaches to data collection. Brown and Hale (2014, p. 109), define such approaches and explain their advantages and disadvantages (p.109):

- ***Direct observation*** may involve either passive or active monitoring of a phenomenon. While it provides detailed insights into the subject, it tends to be subjective and usually unstructured.

- ***Focus groups*** are discussions led by a moderator with a small group of participants. The method is interactive and provides detailed insights but is not consistently reliable.

- ***Elite/Key informant interviews*** can include discussions with experts or important figures, which may differ in their degree of structure. Though it offers detailed insights, it generally lacks both validity and reliability.

- ***Case studies*** involve a comprehensive study of a specific phenomenon or location, integrating various forms of data. It is a thorough method that helps establish causality, yet it struggles with reliability and generalisability.

- ***Content analysis*** involves a "systematic analysis of recorded materials" (p.109) to gather detailed insights but at the same time it has reliability issues.

- ***Surveys*** are an "oral or written collection of information about beliefs, behaviours and demographics" (p.109). It offers in-depth insights, yet it often falls short in terms of validity, reliability, and objectivity.

- ***Secondary data analysis*** involves analysing data previously gathered by others, requiring "minimal effort and cost" (p.109). However, it lacks control over how the data are defined and collected.

Therefore, within the scope of this paper, the selected data collection methods are interviews, case studies and secondary data analysis.

Elite or key informant interviews as they hold the most knowledge about the interactions between different levels of governance. This approach involves conversing with the people, who were the closest to the event. The interviews can be unstructured, semi-structured or structured. This aspect of the methodology will be further discussed in section 4.2.1. Case studies provide an in-depth insight into the circumstances and environment at the time of the phenomena and involve either one or multiple cases. Either way, information is gathered by using various data-collection techniques. Finally, secondary data analysis, which allows to cross-check the empirical findings of this research with previously collected insights.

This study integrates both theoretical and empirical components, with the latter being coded and structured based on the chosen theoretical framework. Interviews are analysed in alignment with this framework, ensuring a cohesive connection between theory and empirical findings.

To identify any ongoing "smart" projects, I initiated contact with government officials. Additionally, I conducted a comprehensive literature review to delineate the research gap, as emphasised by Mertens (2010). The selection of literature review articles was guided by key terms, citation frequency, relevance derived from abstracts, and the references within these articles, utilizing a snowballing method to find related works. Databases such as Google Scholar, Scopus, and Web of Science were used to gather pertinent literature, and Zotero was employed for managing references.

By utilizing the aforementioned methods, this research examines several projects across four municipalities in Georgia, assessing the roles and collaborative efforts of various stakeholders. This comprehensive approach provides a robust framework for understanding the dynamics of smart city initiatives in these regions..

4.2 Case Selection

This thesis employs a multi-case study methodology to investigate the roles of governments, international organisations, and civil society organisations in the implementation of smart city initiatives in rural areas of Georgia. According to Yin (2009), a case study involves an empirical inquiry that delves deeply into a contemporary phenomenon within its real-life context, particularly when the boundaries between the phenomenon and its context are not distinctly defined.

The process of selecting multiple cases can be likened to sampling procedures in research. As described by Van Thiel , researchers can opt for purposive sampling—where cases are intentionally chosen for their relevance—or random sampling to enhance the reliability and validity of the findings. When homogenous cases are studied, known as the most similar systems design (Blatter & Haverland, 2012), the researcher anticipates similar outcomes, a concept referred to as 'replication logic' (C. Yin et al., 2015). This replication strengthens the study's reliability and validity. Conversely, selecting a set of contrasting cases, recognised as the most dissimilar systems design (Blatter & Haverland, 2012), does not undermine the reliability and validity of the research. On the contrary, it can provide a richer and more nuanced understanding of the subject matter.

This chapter outlines the methodological considerations and rationales behind the case study selection, ensuring a thorough and systematic approach to exploring the implementation of smart initiatives in rural Georgian municipalities.

The selection of municipalities for this study was designed to showcase a variety of regions and levels of economic development, ensuring a comprehensive overview of different contexts. The municipalities chosen included Zugdidi, Akhalkalaki, Tetritskaro, and Kazbegi.

The identification of cases involved extensive online research and the websites of numerous organisations such as USAID, GIZ, UNDP, UN, EU4Georgia, World Bank, and various municipal and government agencies. Search terms included "smart," "sustainability," "smart city," and "smart village," in both English and Georgian. This rigorous approach ensured that the selected cases were relevant and exemplary of the types of smart initiatives under investigation.

In Georgia, one of the UNDP in Georgia projects “Improving Rural Development in Georgia” (IRDG) has implemented a project called “Smart Villages”. The objective of this project was to collaborate with the local governments, rural entrepreneurs, LAG and other relevant stakeholders in eight Georgian municipalities (Keda, Khulo, Borjomi, Akhalkalaki, Tetritskaro, Dedoplistskaro, Lagodekhi and Kazbegi) in order to benefit rural residents and businesses through the use of “traditional and new networks and services that are enhanced by various innovative means of digital, ICT, social innovations and others” (UNDP Georgia, 2021, p. 9). Additionally, with EU funding, the “Improving Rural Development in Georgia” project has implemented a renewable energy project, the aim of which was to install solar panels for the most vulnerable groups in the target municipalities (Dedoplistskaro LAG, 2023; Rural Communities Development Agency - RCDA, 2022; Shirinyan, 2022). Moreover, GITA operates Tech Parks in eight cities in Georgia including the city of Zugdidi, which is located in the municipality of Zugdidi and the capital Tbilisi (Georgia’s Innovation and Technology Agency, n.d.b). These Techno Parks provide access to innovative technologies such as 3D printers, laser cutters, 3D scanners, etc.

Therefore, these projects have great potential to shed light on how various levels of government and non-governmental organisations operate when implementing smart city initiatives in rural areas. To this extent, publicly available documents were obtained.

These cases were partly selected due to my personal access to individuals involved in the projects and internal documents that enriched the case study. I personally attended

monitoring field trips for two out of the four cases, allowing me to observe firsthand the operations, benefits, strengths, and weaknesses of the projects.

Additionally, I have chosen Georgia as it is my native country and the one, I am most familiar with. I believe that knowledge of the Georgian language, as well as my experience working on the "Smart Villages" project and my personal contacts in the relevant organisations gave me an advantage in acquiring material for the research as well as convincing experts to give an interview regarding the research subject.

In summary, the strategic selection of these municipalities, supported by personal field visits, access to key individuals, and extensive research, ensured that the case studies were both representative and insightful. This approach facilitated a detailed and contextualised understanding of the various dimensions and impacts of smart initiatives across different regions. Therefore, due to the reasons mentioned above, I will do a multiple-case study on Georgia within the scope of this research paper.

4.2.1 Interviews

According to Zittoun (2021), the qualitative interview is a technique employed to gather empirical data and evidence throughout a study in order to address a particular research problem. The qualitative interview can be structured, semi-structured or unstructured. Zittoun (2021), states that there are four types of empirical data that could be obtained from interviews: data about the respondent, opinion, description of an event and chronological account of an event.

Semi-structured interviews are an integral part of this inductive research approach (Bryman, 2012). They are well suited for open-ended questions, allowing for further inquiries about the information at hand (Adams, 2015). Furthermore, as stated by Johnson (2002), Semi-structured or unstructured interviews are well-suited for understanding a wide range of experiences and for conducting interviews regarding the specific steps of a process or the roles and duties of community or organisational members. These aspects would be difficult to capture through a written survey.

The empirical basis consists of interviews with individuals involved in the "Smart Villages" and the Solar Panels projects, which consist of people working in the UNDP and the LAGs of different municipalities as well as people working in the GITA. I reached out to the LAG representatives who were the persons responsible for these projects with an interview request. Additionally, I utilised the snowball sampling method to seek additional contact information from these representatives regarding government agencies and local government officials involved in the smart city/smart village initiatives within

their respective municipalities (T. P. Johnson, 2014). Therefore, increasing the interviewee pool and obtaining information from more diverse sources.

In the end, I contacted organisations such as the Georgian Farmers' Association, Local LAGs of Dedoplistskaro, Tetritskaro, Kazbegi, Akhalkalaki and Zugdidi municipalities, Youth Innovation Centre of Zugdidi municipality, GIZ, UNDP, USAID, World Bank, the Georgian Ministry of Environmental Protection and Agriculture, Rural Development Agency (RDA) and Georgian Innovation and Technology Agency (GITA). At first, contact was initiated with Respondent 1 and then snowballed to other respondents as Respondent 1 provided contact information for 6 out of 8 interviews that took place afterwards. Moreover, in the two remaining cases, the contact information for Zugdidi LAG, Youth Innovation Centre and GITA representatives was obtained during a face-to-face meeting with persons affiliated with USAID. The aim of the meeting was to see if the USAID program had any projects which would fall within the scope of this thesis in the selected municipalities. Unfortunately, there was no response from the Georgian Farmers' Association, Dedoplistskaro LAG, GIZ and RDA. Moreover, the goal initial was to snowball from the interview respondents to the local government representatives, however, based on the responses in the interviews, it became clear that the local governments did not actively cooperate with the stakeholders examined in this thesis, therefore, they would have little to no knowledge of the selected cases. As a result, the local governments were not contacted for an interview. The USAID, World Bank and Zugdidi LAG did respond, however, they did not have any projects in the municipality that would fit the scope of this thesis. Therefore, respondents representing Tetritskaro LAG, Kazbegi LAG, Akhalkalaki LAG, UNDP and GITA were chosen for interviews.

The interview questions are prepared in both English and Georgian. The interviews are conducted one-on-one via ZOOM and Microsoft Teams and considering the limited knowledge of English in rural regions in Georgia, interviews are conducted in Georgian as all of the respondents are Georgian. First, interviews are recorded and transcribed in Georgian by hand, as there is no software capable of transcribing Georgian audio files. Then, these transcripts are translated into English and then coded. Even though some AI software claims to have the ability to transcribe Georgian audio, after trying out multiple software, none were able to accurately transcribe the audio files. Therefore, there was a need to transcribe audio files by hand. According to Sutton and Austin (2015), an experienced transcriber takes 8 hours on average to transcribe a 45-minute interview. Considering, that the nine interviews were 368 minutes in total and had to be transcribed and translated, this took far more time. This was especially the case because some respondents did not speak English and Georgian was their second language, therefore the recording was even harder to transcribe.

At first, Georgian transcriptions were translated by Google Translate to Russian and then from Russian to English for more efficiency. Such a roundabout way was needed as the translation from Georgian to English by Google Translate is not reliable. However, even in this case, the English transcripts had too many errors. Therefore, in the end, the transcripts were corrected manually. Table 2 shows the list of the respondents who participated in the interviews and the reasons they were selected for the interviews:

Respondent	Affiliation	Competency
Respondent 1	UNDP - IRDG	Monitoring and evaluation – knows how the projects were implemented and followed up with the project on a quarterly basis. Had communication with all stakeholders for monitoring and evaluation purposes. Also knows well the impact the projects brought.
Respondent 2	UNDP - IRDG	Was the coordinator for smart villages projects. Has insight on how the projects were chosen and has insights on who were the contributors in the projects.
Respondent 3	Tetritskaro LAG	Was one of the responsible people involved with implementing both of the chosen projects in Tetritskaro Municipality. Also has good knowledge on how LAGs work in general. Therefore, has deep knowledge on the process, roles and challenges faced while implementing the projects in Tetritskaro.
Respondent 4	Akhalkalaki LAG	Was one of the responsible people involved with implementing both of the chosen projects in Akhalkalaki Municipality. Therefore, has deep knowledge on the process, roles and challenges faced while implementing the projects in Akhalkalaki.

Respondent 5	Kazbegi LAG	Was one of the responsible people involved with implementing both of the chosen projects in Kazbegi Municipality. Therefore, has deep knowledge on the process, roles and challenges faced while implementing the projects in Kazbegi.
Respondent 6	UNDP - IRDG	Is involved with the policy and different partners like the government and civil society organisations. Has a good understanding of the roles each player plays.
Respondent 7	UNDP - IRDG	Was one of the responsible people in the Solar Panels project from UNDP side. Has deep knowledge on the process, roles and challenges form the UNDP perspective in all chosen municipalities.
Respondent 8	GITA - Zugdidi	Is affiliated with the GITA Tech Parks in the Zugdidi Municipality. Has deep knowledge of the process, roles, challenges and projects implemented by the government in the Zugdidi Municipality.
Respondent 9	GITA – Headquarters	Is affiliated with the GITA Tech Park department. Has good knowledge of the work the Tech Parks do in municipalities.

Table 2 - List of Respondents, Affiliation and Competency

Overall, nine interviews took place. The respondents are numbered based on the sequence of interviews. Four of the respondents represent the UNDP, three people represent the LAGs and two people represent GITA. The interview questions were revised on a case-by-case basis and were tailored to the respondent's experience and expertise. The interview questions were shared with the respondents in advance. Therefore, they had the possibility to prepare for the interview.

The interview questions are divided into three categories: questions for governments, international organisations and civil society organisations – see in annexes A,B and C. The interview questions are drafted with the research question in mind. They include

knowledge questions regarding smart cities, which are employed to ensure mutual understanding of the idea being discussed during the interview. Moreover, some of the questions are formed in order to find out more about the selected cases, as well as the activities carried out by the organisations. The information derived from such questions may be the success stories, other similar projects, obligations and delegated duties of the organisations, collaboration types, strategies and approaches used, etc. This line of questioning is used to discover current practices, existing challenges, lessons learned and possible improvement directions.

4.3 Coding of Interviews/Data Analysis

In qualitative research, systematic analysis of data is crucial to ensure validity and reliability. One effective method for achieving this is through the coding of interviews. This chapter details the coding approach used in this study to analyse qualitative interview data, with a specific focus on the use of MAXQDA software and the theoretical framework guiding the coding process.

To analyse the data from the qualitative interviews, the software MAXQDA was utilised, provided through the University of Münster. The use of MAXQDA facilitated an organised and systematic approach to coding, ensuring that data was meticulously analysed and interpreted.

The coding process began inductively, meaning that codes emerged organically from the data based on recurring themes. This approach was augmented by the theoretical framework, which provided a structured lens through which to identify and categorise patterns within the data. As Stenner (2014, p. 136) states, "A pattern suggests a multiplicity of elements gathered into the unity of a particular arrangement." Recognizing these patterns was essential for transforming observed phenomena into significant and tangible insights (Saldaña, 2016). The initial coding involved identifying roles and recurring themes from the interviews. The following codes were derived from the data:

- Concept Perceptions
- Policy Making
- Funding
- Capacity Building
- Knowledge Transfer
- Information Dissemination

- Research
- Project Drafting
- Project Implementation
- Challenges
- Barriers
- Opportunities
- Cooperation

These codes represented various aspects of the roles and activities associated with the subjects of the study. Throughout the coding process, the theoretical framework was carefully considered. This ensured that the coding not only captured the recurring themes and patterns but also aligned with the broader conceptual context of the study. The integration of the theoretical framework helped in structuring the codes and in providing deeper insights into the observed data. After the initial coding, the identified codes were classified into broader categories based on the level of governance they pertained to: Supranational, National, and Subnational levels. This classification enabled a comprehensive understanding of how different roles and activities were distributed across various governance levels. Finally, the results of the coding process were presented based on the classified codes. This organisation helped in clearly illustrating the roles and activities of different stakeholders at various levels of governance, providing a structured and insightful interpretation of the qualitative data.

5 Case Studies

Case studies offer a comprehensive approach to research by amassing a substantial amount of primarily qualitative data related to the given case. This method often employs a combination of different techniques (triangulation) to ensure a robust analysis (Van Thiel, 2021). Interviews are frequently used within case studies and are discussed in detail in this chapter. Case studies are applicable to both inductive and deductive research frameworks but typically provide limited opportunities for statistical hypothesis testing. Therefore, ensuring the reliability and validity of case study research is crucial (Van Thiel, 2021).

This chapter will explore the selected municipalities and the projects they have implemented, offering detailed insights into each. By examining similar cases through the method of literal replication, I aim to verify whether the theoretical predictions hold across these cases. Employing a most similar systems design enables us to select cases with similar variables but different outcomes, providing a nuanced understanding of the factors at play (Yin, 2018).

The selection of these municipalities is based on the state of their economic development and access to interview partners and project documents, such as those provided by Respondent 1 concerning the UNDP IRDG projects implemented in Georgia. Among these projects are specific initiatives like Smart Villages and Renewable Energy initiatives, which will be discussed in depth.

Given the growing global population and the surge in economic activities, there is a corresponding increase in energy consumption, leading to environmental issues and threats to the quality of life in numerous regions . This situation prompts extensive discussions on addressing these challenges and promoting sustainability at global, national, and local levels (Giffinger, 2015). This chapter intends to contextualise these discussions within the framework of the case studies examined.

Municipality	Region	State of economic development	Smart City Dimension
Zugdidi	Samegrelo-Zemo Svaneti	Higher	Smart Economy & Smart People
Akhalkalaki	Samtskhe-Javakheti	Lower	Smart People & Smart Environment

Tetritskaro	Kvemo Kartli	Lower	Smart Economy & Smart Environment
Kazbegi	Mtskheta-Mtianeti	higher	Smart People, Smart Economy & Smart Environment

Table 3 - Overview of Selected Cases

The economic development rate was derived by looking at turnover, product value, investments and employment rate of municipalities over a span of three years. A table of all selected parameters by municipality can be seen in Annex V.I calculated the Georgian Lari (GEL) per resident and the population percentage based on the Population by Regions and Self-governing Units (National Statistics Office of Georgia, 2024) and the Regional Statistics on Business Sector (National Statistics Office of Georgia, 2022).

5.1 Georgia

The Republic of Georgia is situated in the South Caucasus region. Nestled between the Black Sea and the Caucasus Mountains (Melua, 2021). Russia borders it from the north and north-east, while Turkey and Armenia border it from the South {Citation}. The Western Georgia has a coastline on the Black Sea while the East of Georgia has Russia/Azerbaijan?? There are 3.7 million people living in Georgia (National Statistics Office of Georgia, 2024)

Since obtaining its independence in 1991, Georgia has been through two wars with Russia in 1992 and 2008, which both ended in the occupation of Georgian territories (Cheterian, 2009), a civil war in the 90ies and a revolution (Jones, 2006). All of these processes have had a significant impact on the development of the country and much is yet to be done in this regard. Starting from 1993, many international organisations have shown support for Georgia and have aided the development of the country.

Georgian people have always considered themselves as part of the European family and as polls show, 85% of Georgia is pro-European and wishes to join the EU. The long-held dream of this country has finally had some progress as Georgia obtained the EU candidacy status in 2023. However, the influence of Russia is still strong in the country.

Today, Georgia is grappling with the Law on Transparency of Foreign Influence" also known as the "transparency law" or the "Russian Law", which aims to declare any non-governmental organisation which gets 20% of its funding from abroad as agents of foreign interests (Parliament of Georgia, 2024).

5.2 Stakeholders

This section introduces the actors who are involved with the smart city initiatives and the representatives of which were interviewed within the scope of this thesis.

5.2.1 UNDP

Since 1993, the UNDP has played a crucial role in Georgia's progress, striving to foster a peaceful, inclusive, equitable, and climate-resilient society. The primary objective of UNDP in Georgia is to speed up the country's transition towards sustainable development, with a strong emphasis on ensuring that the most vulnerable and marginalised populations are included and safeguarded against crises and shocks (UNDP Georgia, n.d.-a).

The UNDP provides substantial support to Georgia in achieving its national Sustainable Development Goals (SDGs). This assistance includes the development of robust policies, enhancing skills, fostering partnerships, and strengthening institutions to facilitate continued progress toward a prosperous, equitable, inclusive, and fair society (UNDP Georgia, n.d.-a).

Key areas of focus for the UNDP in Georgia encompass democratic governance and institutional development, resilience to climate disasters, gender equality, economic development, as well as conflict prevention and recovery (UNDP Georgia, n.d.-b). To carry out these initiatives effectively, UNDP Georgia collaborates with various governmental bodies, NGOs, and educational institutions.

The UNDP IRDG project commenced in January 2018 with a total budget of EUR 10,083,200, the majority of which—EUR 10,000,000—was provided by the (Bugnion de Moreta & Shakhnazarovi, 2022). This project formed part of the third phase of the EU-funded ENPARD programme, which aims to support rural development and agriculture in Georgia. The primary objective of the project was to contribute to the overarching goals of ENPARD III: eradicating poverty, promoting sustainable and inclusive growth, and enhancing democratic and economic governance within the country and therefore, as part of these efforts, notable initiatives such as the Smart Villages and Solar Panels projects were implemented (Bugnion de Moreta & Shakhnazarovi, 2022).

5.2.2 Local Action Groups (LAG)

LAGs were established to implement the principle of subsidiarity in rural development efforts. This principle is put into action via the LEADER strategy, which supports the creation of LAGs. These groups, made up of both public and private stakeholders from the local community, are empowered to allocate European funds.(Cañete et al., 2018). In

Georgia, LAGs were created during ENPARD 2, within the scope of the LEADER approach to aid rural development and involve local people and organisations in the development of their areas (Respondent 4). These are organisations which are made up of motivated and enthusiastic local people. LAG unites residents from different backgrounds. While some members may be businessmen, others might be public servants and low-level bureaucrats (Respondent 3).

5.2.3 Georgia's Innovation and Technology Agency

Georgia's Innovation and Technology Agency (GITA) is a government entity, under the Georgian Ministry of Economy and Sustainable Development. The main goal of this agency is to create an effective system and platform for the development of innovation and technology. Moreover, GITA aims to encourage the commercialisation of the obtained innovative knowledge and emerging technologies into (ideally) all economic sectors (Georgia's Innovation and Technology Agency, n.d.a).

GITA, as an organisation, encompasses various directions. The primary focus oft he agency is to foster the development of the country's innovative and technological ecosystem, starting with the growth of startups (Georgia's Innovation and Technology Agency, n.d.a). They offer programs for startups at every stage, beginning with education for young children from the age of 8, promoting STEM and ICT education through workshops, lectures, competitions, and projects. Tech Parks also play a crucial role, offering facilities in robotics, electronics, design, graphics, industrial design, hardware creation, digital skills development, and e-commerce.

GITA undertakes a wide array of initiatives aimed at fostering an innovative and technological ecosystem within the country. Its efforts commence with startup development, catering to all stages of the entrepreneurial journey. The organisation engages young individuals, starting as early as eight years old, by promoting STEM and ICT education through workshops, lectures, educational events, and competitions. Tech Parks play a crucial role, offering facilities for activities in robotics, electronics, design, graphics, industrial design, hardware creation, digital skills development, and e-commerce (Respondent 9).

Following these educational initiatives, GITA emphasises innovative entrepreneurship, teaching individuals how to create business models. Although GITA does not operate as a conventional educational institution, it runs projects aimed at commercialisation rather than traditional education, effectively bridging the gap between education and practical, market-driven innovation (Respondents 8 and 9).

GITA organises a variety of events, including technological weeks, intensive boot camps, summer and winter camps, and hackathons. These events challenge participants to develop innovative solutions to regional issues. As startups progress and require funding, GITA provides financial support, guiding them through stages including pre-accelerator programs and grant applications (Respondent 9).

For nascent startups in various regions, GITA offers regional grants and incubator programs. Higher-level startups receive coaching and are introduced to international accelerators, completing a comprehensive cycle designed to support and advance beneficiaries through every phase of their entrepreneurial journey (Respondent 9).

5.3 Kazbegi Municipality

Kazbegi municipality is situated in the East-North of Georgia, in the mountainous region of the Mtskheta-Mtianeti. There are 47 settlements in the municipality, however, according to Kazbegi LAG (2016), "only 25 of the villages have permanent residents" (p.13). Overall, 3800 people reside in Kazbegi municipality (National Statistics Office of Georgia, 2024). This statistic has been almost unchanged over the last 10 years.

The municipality of Kazbegi is a highly touristic region in Georgia (Kazbegi Local Action Group, 2016). Therefore, it is no surprise that the economy is relatively stronger in this municipality if we take into account the number of residents who live there. Prior to the COVID-19 pandemic, tourism was the main income source for 45% of residents of Kazbegi Municipality (Kazbegi Local Action Group, 2020). Moreover, even when taking into account the pandemic, the turnover of the municipality per resident over the last three years has been significantly higher in comparison to others.

Table 4 shows some of the variables for economic success in Kazbegi municipality such as turnover, products produced, investments and employment rates over the last three years. I made the calculations of Gel per resident and the percentage of the population based on the Population by Regions and Self-governing Units (National Statistics Office of Georgia, 2024) and the Regional Statistics on Business Sector (National Statistics Office of Georgia, 2022). According to these numbers, Kazbegi municipality is doing remarkably better for its size than the other municipalities.

Socio-economic Statistics of Kazbegi Municipality						
	2020		2021		2022	
	Mil. GEL	GEL per resident	Mil. GEL	Gel per resident	Mil. GEL	GEL per resident

Turnover	179,8	47.316	203,1	53.447	243,1	63.974
Production Value	212,5	55.921	188,7	49.658	209,8	55.211
Investments	1,1	289	4,7	1.226	66,1	17.395
	Unit	Percentage of population	Unit	Percentage of population	Unit	Percentage of population
Self-employed	1.360	35,79%	1.635	43,03%	1.614	42,47%
Employed	1.286	33,84%	1.367	35,97%	1.510	39,74%

Table 4 – Socio-economic Statistics of Kazbegi Municipality

As seen in the table above, the turnover in Kazbegi municipality is 47,316 per municipality resident, while the total employment rate suggests that on average (based on the three years shown in Table 4) 63% of the municipality residents were employed. This is a rate that is exceptional compared to the results of the other municipalities. Therefore, it is interesting to study what types of projects were implemented in this municipality, if they proved to be successful and what the contributing factors to the result.

5.3.1 Supporting Women Entrepreneurs to Adopt Innovative Business Approaches in Response to Covid-19 Crisis

Funded by the UNDP IRDG project and the EU, "Supporting Women Entrepreneurs to Adopt Innovative Business Approaches in Response to the COVID-19 Crisis" project was carried out by the Kazbegi LAG in 2020. The Kazbegi municipality Mayor's Office was cited as a partner organisation on the Grant Application Form. The target location of the grant was Kazbegi municipality, more specifically the villages Stephantsminda, Gergeti, Arsha, Achkhoti, Tkarsheti, Pkhelshe, Sioni, Sno, Pansheti. Before developing the proposal, Kazbegi LAG carried out a needs assessment within the community (Kazbegi Local Action Group, 2020). As a result, women individual entrepreneurs were found to be the most vulnerable service providers in the municipality.

Therefore, the aim of the project was to enhance the proficiency of female entrepreneurs to adjust to the COVID-19 pandemic by utilising online platforms to sustain the provision of tourism services remotely. The proposed project aligned with the objectives of the Local Development Strategy 2020 - 2024 (LDS) of Kazbegi LAG and specifically supported LDS Priority Objective 2.1, which focused on promoting formal and informal education through various training programmes and seminars (Kazbegi Local Action

Group, 2020). The project aimed to disseminate information about entrepreneurship and employment, while also providing support for innovative and sustainable approaches, with a particular emphasis on empowering women and youth.

Therefore, to accomplish the stated objective, Kazbegi LAG intended to assist the recipients of the project by providing them with remote access to internet-based platforms and methods of service delivery. The selected target group of beneficiaries were trained on how to use modern technologies to adapt their services to the reality presented by the COVID-19 pandemic (Respondent 5). The UNPD and the EU awarded a low value grant of 13080.8 USD for this endeavour (Kazbegi Local Action Group, 2020). The beneficiaries were mainly trained on how to use the equipment to film masterclasses and how to make revenue from posting them online (Respondent 5). According to Respondent 5, there is no longer a need for the beneficiaries to use online platforms as visitors have returned to Kazbegi municipality post-COVID, however, the beneficiaries still use the acquired knowledge to attract visitors to their masterclasses.

5.3.2 Promoting the use of renewable energy solutions in Kazbegi Municipality

The project “Promoting the use of renewable energy solutions in Kazbegi Municipality” was implemented by the Kazbegi LAG in collaboration with the Caucasus Environmental NGO Network (CENN). The UNDP project "Improving Rural Development in Georgia" and the EU jointly provided funding of 99,807.32 USD for the initiative (Kazbegi Local Action Group, 2022b). The objective of this initiative was to promote the adoption of innovative and environmentally sustainable practices within the municipality (Kazbegi Local Action Group, 2022b). This goal is supported by the Kazbegi Local Development Strategy (LDS). Therefore, the LAG promoted environmentally friendly approaches and provided technical assistance to ensure the proper use of solar PV panels. To this extent, within the scope of this project, the first Kazbegi Renewable Energy Forum was organised(Kazbegi Local Action Group, 2022a, 2022c).

The project focused on vulnerable families in remote parts of the municipality which often experience power outages from the severe weather conditions in the municipality (Kazbegi Local Action Group, 2022b). Kazbegi LAG chose 20 vulnerable households through an open grant competition. The chosen families received renewable energy systems, namely solar panels. 10 families installed solar panels on their properties, but due to various challenges, 10 other families were unable to install the panels on their properties (Respondent 5). According to Respondent 5, as a solution, a mini solar panel plant was created and the remaining 10 families get the electricity from that plant. In the interview, it was mentioned that a resident of the municipality gave up part of their land and took on the responsibility of care and maintenance of the mini plant. In exchange,

they were included in the project and also receive power from the mini plant (Respondent 5).

Moreover, according to Respondent 5, the project schedule at Kazbegi had multiple delays due to its remote location and difficult environment. Usually, the problem appears when a specific project is implemented in several villages, leading to substantial expenses for Kazbegi. This is because projects that are closer geographically and have more suitable climatic circumstances are naturally preferred, as they make the work easier. Therefore, a decision must be made between incurring greater costs or experiencing a longer delay.

5.4 Zugdidi Municipality

Zugdidi municipality is located in Western Georgia, the Samegrelo region. There are 49 territorial units in the municipality, including the self-governing city of Zugdidi (Zugdidi LAG, 2022). In total, 92 900 people reside in Zugdidi municipality as of January 1st 2024 (National Statistics Office of Georgia, 2024).

The variables that contribute to the economic prosperity of Zugdidi municipality, such as turnover, production outputs, investments, and employment rates over the past three years are illustrated in Table 5. Additionally, the table shows calculations of GEL per person and the percentage of the population of the illustrated parameters.

Socio-economic Statistics of Zugdidi Municipality						
	2020		2021		2022	
	Mil. GEL	GEL per resident	Mil. GEL	Gel per resident	Mil. GEL	GEL per resident
Turnover	786,8	8.103	820,6	8.451	808,0	8.321
Production Value	675,4	6.956	571,4	5.885	592,5	6.102
Investments	19,9	205	31,0	319	10,0	103
	Unit	Percentage of population	Unit	Percentage of population	Unit	Percentage of population
Self-employed	8.169	8,41%	9.329	9,61%	9.286	9,56%
Employed	6.970	7,18%	7.436	7,66%	6.833	7,04%

Table 5 – Socio-economic Statistics of Zugdidi Municipality

Zugdidi comes in second in terms of turnover, production value, investments and employment rates. Although the numbers seem bigger in Zugdidi municipality, when calculated per person, it became clear that though there is a large difference between Kazbegi and Zugdidi municipalities, Zugdidi came in as second-best in all categories between the four selected municipalities.

5.4.1 GITA Tech Park

The Technology Park in Zugdidi was opened in 2016 by the Georgian Innovation and Technology Agency of the Ministry of Economy and Sustainable Development.

The Technology Park in Zugdidi was opened in 2016 by the Georgian Innovation and Technology Agency of the Ministry of Economy and Sustainable Development. The Tech Park means that young people across the region are able to transform state-funded innovative ideas into a reality by turning them into businesses and developing their startup ideas. Zugdidi Tech Park provides an opportunity for local people, private companies or businesses to use hard-to-reach technologies to develop their business and gain knowledge in the field of innovation and technology, which will in-turn help build a knowledge-based economy.

Zugdidi Tech Park features a conference hall, computer lab, small training spaces and an industrial innovation laboratory. It is equipped with advanced technology including a Laser engraving machine, Programmable machine tool, Programmable sewing machine, Vacuum forming machine, Vinyl cutter plotter, 3D printer, Wide format inkjet printer and UV printer. In addition, Zugdidi Tech Park regularly conducts training sessions in 3D modelling, programming, design, entrepreneurship, and other business-related topics. During these sessions, participants develop business concepts and create startup business plans. Activities in Zugdidi's Tech Park include active training sessions for skills development (Georgia’s Innovation and Technology Agency, n.d.c).

According to Respondent 8, such FabLabs were a novelty 5 years ago. After familiarising themselves with the new technology, residents of Zugdidi municipality often went to the FabLab to utilise the innovative technologies there (Respondent 8). Many started successful businesses using these technologies, e.g., a woman manufactures wooden bags with paintings of Frida Kahlo. This woman used the laser cutter to cut the wooden bag and then the UV printer to “paint” it. Businesses such as these gained a lot of profit. Therefore, Tech Park also adapted and now provides a paid service for businesses, while the usage of the technology is totally free for those creating innovative prototypes

(Respondent 8). The Tech Park even helps in the process of creating the prototype. However, the capabilities of the Tech Park does not end there. They even help residents develop software prototypes as well as they have local human resource with such expertise (Respondent 8). According to Respondent 8, last year 35 prototypes were created in the Zugdidi Tech Park.

Moreover, According to Respondents 8 and 9, GITA's Zugdidi Tech Park hosted the "Smart City Zugdidi" Hackathon two years ago, where "urbanists, programmers, and people interested in the concept of Smart City" gathered from all over Georgia (Respondent 9). The hackathon focused on concepts such as technology-based infrastructure, environmental initiatives, high-functioning public transport, smart parking systems, waste management, optimisation of Emergency services, energy efficiency, progressive urban planning, and reduction of natural and economic costs. The participants of the hackathon were chosen by sending information to 16 partner universities and by disseminating information using social media (Georgia's Technology and Innovation Agency, 2023).

During the event, many projects focused on mobility, waste management and environmental protection (Respondent 9). The hackathon winners received a 5000 GEL reward and were to develop the startup (Respondent 8, Georgia's Technology and Innovation Agency, 2023). Furthermore, the city hall provided a separate reward for its favourite team and funded the development of the chosen idea (Respondent 9). During the hackathon, the main segment of participants were students and young adults (Respondent 8).

5.5 Akhalkalaki Municipality

Akhalkalaki municipality is located in South Georgia, in the Samtskhe-Javakheti region. The municipality has the status of a high mountainous region (The Government of Georgia, 2015) and it consists of 22 administrative-territorial units. Moreover, as of January 1st 2024, 37,400 residents live in Akhalkalaki municipality (National Statistics Office of Georgia, 2024). According to the Akhalkalaki Local Development Strategy (Akhalkalaki Local Action Group, 2018), over 90% of the population in the municipality is ethnically Armenian.

Table 6 presents various indicators of economic success in Zugdidi municipality, including turnover, products produced, investments, and employment rates over the past three years. The calculations for Gel per resident and the percentage of the population were derived using data from the National Statistics Office of Georgia (2022, 2024).

Socio-economic Statistics of Akhalkalaki Municipality						
	2020		2021		2022	
	Mil. GEL	GEL per resident	Mil. GEL	Gel per resident	Mil. GEL	GEL per resident
Turnover	4.739	239,1	6.069	4.739	239,1	6.069
Production Value	96,2	2.442	97,5	2.475	91,4	2.320
Investments	8,5	216	1,5	37	6,8	173
	Unit	Percentage of population	Unit	Percentage of population	Unit	Percentage of population
Self-employed	1.300	3,30%	1.589	4,03%	1.707	4,33%
Employed	972	2,47%	1.192	3,03%	1.196	3,04%

Table 6 – Socio-economic Statistics of Akhalkalaki Municipality

The municipality shares its low ranking of economic development with Tetritskaro municipality. When it comes to the economic development of the municipality, the average turnover is 5329 million GEL, which is fairly close to Tetritskaro's average turnover rate and the total employment rate is 6,73% on average. Therefore, Akhalkalaki municipality seems to be less economically developed than the Kazbegi and Zugdidi municipalities. This is an exceptionally low statistic, however, this could be explained by the fact that not everyone reports their employment status and revenue. Therefore, these results may not fully depict the picture in the Akhalkalaki municipality.

5.5.1 The Youth Hub for Education and Development

The Youth Hub for Education and Development was a project which was implemented by the Akhalkalaki LAG, with funding from UNDP Georgia and the EU for Georgia. The contract was made for a low-value grant for a total of USD 15,000.00. The aim of the project was to establish educational digital youth hubs in the most remote villages of the municipality – Gogasheni and Khaveti villages. According to Respondent 4, there is a mobility problem within the municipality due to the lack of public transportation. Therefore, digital youth hubs were planned to be established at one school in each village. The strategy involved utilising several online platforms to establish the hub as a centralised location for local outreach, interaction, communication, and information dissemination. The hubs would be linked to the already existing training centre in

Akhalkalaki with the aim of attracting more people from the villages (Akhalkalaki Local Action Group, 2020).

Before the development of the project proposal, Akhalkalaki LAG did a comprehensive Baseline Study to assess the prevailing community problems and identify the specific needs. The survey identified a lack in proficiency in the Georgian and English languages, as well as a lack of digital literacy (Akhalkalaki Local Action Group, 2018). The school infrastructure lacked essential amenities, such as IT facilities and equipment. The need for such infrastructure became even more apparent due to the COVID-19 crisis when lessons were being conducted online. In Akhalkalaki, in the target villages, there were not enough teachers for all the subjects. Therefore, even after restrictions were lifted, there was still a need for some classes to still be conducted online.

Within the scope project, IT equipment was purchased for the two schools and online educational classes took place (Respondent 4). Moreover, on one hand, for the village, Khaveti, which had mostly ethnically Armenian residents, online lessons in Georgian were organised as most of the residents there do not speak Georgian. On the other hand, for the Gogasheni village, which is one of the few villages in the municipality with mostly ethnically Georgian population, online English lessons were arranged (Respondent 4). Moreover, as the villages are so remote, some schools did not have teachers in some subjects and dispatching teachers from Tbilisi would be a huge cost. Therefore, the hubs are used for teachers to conduct lessons online (Respondent 4). Moreover, apart from the online lessons for the students, the space is also being used by teachers and administrative staff to attend various trainings to further develop their skills.

According to Respondent 4, this project was very successful and was the foundation upon which they later built on with an additional EU grant and another US Embassy grant. One of the reasons for such success was that the sustainability of the project was well thought-out from the beginning. At the proposal drafting stage, the LAG came to an agreement with the two schools, which were willing to take it upon themselves to operate and maintain the digital youth hubs after the project came to an end (Respondent 4). Consequently, teachers and administrative staff were trained on how to operate the hubs (Akhalkalaki Local Action Group, 2021).

5.5.2 Solar Panels

In a significant effort to promote sustainable development, the EU-funded UNDP project IRDG in collaboration with the Akhalkalaki LAG, implemented a solar panel initiative aimed at supporting socially vulnerable families. This project provided solar panels to 16 families, allowing them to reduce energy costs significantly. The selection criteria for

beneficiaries included "socially vulnerable households" and "women-headed households" (Akhalkalaki Local Action Group, 2022b, p. 12). One notable beneficiary was a family where every member was disabled, highlighting the project's focus on aiding those most in need (Respondent 4).

According to LAG monitoring results, the families benefiting from this project have not had to pay electricity bills for at least a year, illustrating the project's substantial impact on reducing household expenses (Respondent 4). The success of this initiative has generated widespread interest among residents, who are inquiring about future opportunities for similar support (Respondent 4).

The project included a second phase focused on promoting renewable energy technology and demonstrating its practical applications (Respondent 4). This phase aimed to familiarise residents with the new technology through comprehensive training. Experts from the Georgian Institute of Public Affairs (GIPA) developed a training module that covered essential topics such as environmental protection, waste management, energy efficiency, and renewable energy (Respondent 4).

The training sessions were conducted in 64 villages and the administrative centre of Akhalkalaki, reaching a broad audience (Akhalkalaki Local Action Group, 2022a). According to the LAG final report (2022a), to enhance the effectiveness of this education outreach, nine youth members of the Akhalkalaki LAG received Training of Trainers (ToTs). These youth trainers subsequently delivered workshops on two key areas: Environment Protection and Waste Management, and the Application of Renewable Energy Alternatives in Rural Areas. This comprehensive training effort covered 66 local communities and engaged more than 1,000 local citizens (Akhalkalaki Local Action Group, 2022a).

In addition to direct training, the project included extensive promotional and awareness-raising activities to broaden its impact (Akhalkalaki Local Action Group, 2022b). These actions aimed to educate the wider community about the benefits of renewable energy and sustainable practices. The project's multifaceted approach ensured that information about renewable energy reached a wide audience, fostering a community culture supportive of sustainable development and innovation.

5.6 Tetritskaro Municipality

Tetritskaro municipality is located in the Kvemo Kartli region in South-East Georgia. The municipality consists of 90 villages, one small town (urban settlement), and one town (RDFG & Tetritskaro LAG, 2018). Out of these settlements, 51 were given the high

mountainous status (Municipality of Tetritskaro, 2014). According to the data of the National Statistics Office of Georgia (2024), as of 1st of January 2024, there are 23,500 residents in Tetritskaro municipality. Among these residents, 82% are ethnically Georgians, while 18% are either ethnically Azerbaijani, Armenian or other (RDFG & Tetritskaro LAG, 2018).

Table 7 The data highlights various economic success indicators for Tetritskaro municipality, including turnover, products produced, investments, and employment rates over the past three years. The calculations for GEL per resident and the population percentages were derived using data of the National Statistics Office of Georgia (2022, 2024)

Socio-economic Statistics of Tetritskaro Municipality						
	2020		2021		2022	
	Mil. GEL	GEL per resident	Mil. GEL	Gel per resident	Mil. GEL	GEL per resident
Turnover	85,3	3.709	162,6	7.070	150,9	6.561
Production Value	52,5	2.283	69,9	3.039	73,8	3.209
Investments	1,7	74	6,4	279	1,2	52
	Unit	Percentage of population	Unit	Percentage of population	Unit	Percentage of population
Self-employed	935	4,07%	1.150	5,00%	1.142	4,97%
Employed	827	3,60%	831	3,61%	744	3,24%

Table 7 – Socio-economic Statistics of Tetritskaro Municipality

According to the statistics, Tetritskaro municipality is considered to be less developed economically than the other municipalities. The average employment rate is actually above Akhalkalaki municipality at 8.16%, while the average turnover rate is relatively equal – 5780 million GEL.

5.6.1 The SmartVille Project

The SmartVille project was carried out by the Tetritskaro LAG in cooperation with Rural Development for Future Georgia (RDFG) in 2020. The project was funded by the UNDP

and the EU. Before developing the project proposal, Tetritskaro LAG conducted a population survey to pinpoint the main problems impeding the development of the municipality (Tetritskaro Local Action Group, 2020). The survey was taken by 378 residents of Tetritskaro municipality (RDFG & Tetritskaro LAG, 2018). The results of the survey showed what the residents believed the biggest impediment to the development of the municipality to be. Among, those, the challenges this project aimed to solve were: market access, access to modern communication technologies, no access to financing (Tetritskaro Local Action Group, 2020).

Moreover, according to the justification for intervention and needs assessment of the Tetritskaro LAG Low-Value Grant Proposal (2020), the SMEs in Georgia were unprepared for the switch to the digital marketplace caused by the COVID-19 pandemic. The SMEs were forced to suspend or stop their activities due to the lack of access to digital communication channels, input suppliers, and markets (Tetritskaro Local Action Group, 2020). Therefore, according to the project proposal (Tetritskaro Local Action Group, 2020), to aid the SMEs in the municipality, Tetritskaro LAG decided to launch the SmartVille project. The LAG aimed to utilise ICT technology to diminish expenses and technical barriers in reaching regional markets and lowering trade costs. Additionally, the project envisioned improving access to B2B events and establishing regional networks between local producers and business sector entities.

As part of a collaborative initiative, Tetritskaro LAG, the Tetritskaro Youth Centre, and the University of Georgia conducted a series of workshops aimed at fostering local young entrepreneurs (Giorgi Tsimakuridze, 2021). Among these efforts was a comprehensive four-day training on Digital Skills Development, attended by 11 young entrepreneurs. Additionally, 29 business-to-business (B2B) events were organised under this project.

To support these activities, the creation of an online portal designed to connect businesses was also agreed upon, for which the project received a $15,000 grant from the UNDP, funded by the EU (Tetritskaro Local Action Group, 2020). The resulting SmartVille portal was developed with the objective of enhancing the local business environment. This portal includes resources for financial literacy, information on funding sources, and integration of tourism-related value chains into regional information management systems (Tsimakuridze, 2021).

5.6.2 Solar Panels

In a concerted effort to advance renewable energy and environmental education, the Tetritskaro LAG, in collaboration with the non-governmental organisation Eco-Life, implemented the project titled “Solar Panels in Tetritskaro municipality –

Renewable/Alternative Energy for Better Education and Environmental Protection." This initiative was part of the broader UNDP IRDG project and funded by the EU through a grant of USD 92,860.00. The project targeted nine municipalities: Matseni, Golteti, Khaishi, Tsintskro, Kosalari, Marabda, Kotishi, Didi (Big) Durnuki, and Patara (Small) Durnuki (Tetritskaro Local Action Group, 2022).

The project selected 17 beneficiaries to receive solar panels, ensuring they could benefit directly from renewable energy sources (Respondent 3). In addition, the project also included an intensive theoretical training course for 30 technicians from Tetritskaro Municipality, focusing on renewable energy. This theoretical training was complemented by on-site practical training, ensuring that participants gained comprehensive knowledge and hands-on experience in solar technology. This dual approach was designed to build local capacity and expertise in renewable energy, fostering a sustainable and self-reliant community. However, according to Repsondent 3, approximately 10 individuals are currently trained to provide technical assistance and maintenance for the installed equipment. This training component was crucial for ensuring the sustainability and long-term functionality of the solar panels . This training component was crucial for ensuring the sustainability and long-term functionality of the solar panels. Furthermore, to further acquaint residents with the technology, an explanatory video was produced to illustrate solar energy production and its benefits for households (Tetritskaro Local Action Group, 2022). This educational effort served to demystify solar technology and promote its advantages within the community.

Moreover, information campaigns were a key part of the project's implementation. These campaigns were organised in each of the selected villages and included engagement with local government representatives. A total of 76 individuals participated in these campaigns, which aimed to inform and educate the community about the project's objectives and benefits (Tetritskaro Local Action Group, 2022). Furthermore,Eco-Life organised a study visit to KTW Wine Enterprise, an enterprise utilizing solar panels (Tetritskaro Local Action Group, 2022). According to the final report of the Tetritskaro LAG (2022), this visit provided 19 participants—comprised of project beneficiaries, local organisations, and local authority representatives—with firsthand experience of the technology's practical application and benefits.

6 Results

The results of this research are presented in this section. This section contains information gathered from the interviews. It is structured based on the MLG framework, coding results and the research question. Therefore, the section explains the smart city perceptions of respondents and the following subsections were based on the roles of each level of governance, illustrating the corresponding roles that were identified and the final subsection will be about the cooperation between the different levels.

6.1 Smart City and Smart Village Perceptions

As mentioned in the Literature Review section, Smart Cities do not have a single correct definition. Over the years, authors such as Lombardi et al. (2012), Caragliu et al. (2011) and Gil-Garcia et al. (2015) have summed up the most common definitions of smart cities. However, it is also interesting to see how the people working on these initiatives in Georgia understand this concept. The perceptions of those working on smart city initiatives in rural areas are especially interesting.

For the most part, the respondents' perceptions of smart cities were in alignment with the definition used in this thesis. Most respondents admitted to not knowing of smart cities prior to the interview. While some avoided giving a specific definition, others derived their definition of a smart city from the smart village concept due to their familiarity with the UNDP IRDG's Smart Villages project. On the other hand, others had a more mobility-oriented perception of the concept.

Respondent 1 viewed smart cities and smart villages as part of the same concept. According to them, the overall goal of a smart city is to minimise the gap in development between urban and rural areas so that the residents in both areas are able to take advantage of the same benefits. An example of this was the efficiency of work commutes or access to services. Moreover, just like Respondent 1, Respondent 2 also had not heard about smart cities before but confirmed that they were familiar with the smart village concept. They described smart cities as *"innovative tools used for Urban Development."*

On the other hand, Respondent 9 had a comprehensive understanding of the concept, focusing mostly on the mobility and infrastructure aspects of smart cities. Furthermore, according to Respondent 6, the smart city concept involves a vision of a digitally equipped and interconnected rural future where technology, infrastructure, and skills effectively address local and global challenges. However, Respondent 6 stressed that this definition extends beyond just digital or technological advancements. It encompasses the use of innovative solutions to bolster resilience against various negative impacts and crises,

aiming to create new advantages and opportunities while fully leveraging existing ones. This holistic approach forms the foundation of the smart village concept, which utilises diverse tools and indicators to actualise its principles in practice.

6.2 The Roles of International Organisations (Supranational Level)

The representative organisation for international stakeholders, as highlighted in the interviews, is the IRDG project led by the UNDP Georgia. This project, part of the broader budget aid program funded by the EU, serves as a focal point for collaboration between international organisations, government entities, and civil society organisations. One of the primary aims of the UNDP project IRDG was rooted in inclusiveness, especially emphasizing the involvement of youth and rural women in their calls for proposals (Respondent 1).

This chapter will delve into the specific roles and contributions of international organisations, particularly focusing on their interactions with government bodies and civil society organisations. It will explore how these relationships foster development and the integral part played by inclusiveness in driving these initiatives forward.

- ***Funding:***

International organisations such as the EU, UNDP, USAID, and other international development programs play a crucial role in funding, monitoring, and evaluating smart city initiatives in rural areas. Their financial support and oversight are integral to the successful implementation of these projects.

First of all, international organisations publish a call for proposals. After receiving the proposals, an evaluation committee is formed, which assesses the incoming proposals. When in cooperation with other organisations, the committees are set with representatives from different sides. E.g. in the case of cooperation with RDA over the green grants programme, the evaluation committee was filled with members from UNDP, RDA and even LAGs (Respondent 1). However, when it comes to Smart Villages, the UNDP, as the sole actor involved, only had an internal committee (Respondent 1). Within this cycle, the UNDP decides on the eligibility and the criteria for funding (Respondent 2).

For Kazbegi LAG, a significant portion of project financing comes from the EU or EU-affiliated entities such as the Austrian Development Agency and the Czech Development Agency (Respondent 5). Among the notable projects financed by the UNDP's IRDG was the Smart Villages project. These projects were categorised as Low Value Grant projects, with each winning project receiving an average of 15,000 USD (Respondent 1). However, Respondent 2 expressed concerns that this amount was insufficient for achieving

substantial impact, highlighting the need for innovative and new approaches to overcome funding challenges.

The overall project was financed by the European Commission (Respondent 2). Notably, the EU and UNDP implemented two 80-20 co-funding grant schemes in cooperation with the RDA and another two fully funded grant schemes with LAG. Additionally, the UNDP provided grants to the RDA and announced calls for proposals for the Smart Villages project and a solar panels project. The UNDP's green grants program and improving rural development grants program were also carried out in collaboration with the RDA, while the solar panels project was fully funded by the UNDP and the EU and was carried out in cooperation with LAGs, emphasising co-funding for renewable energy and energy efficiency projects (Respondent 7).

The UNDP's initiatives not only finance smart city projects, such as the Smart Villages and renewable energy schemes, but also support government entities across a wide range of activities (Respondent 1). These comprehensive funding strategies underscore the pivotal role that international organisations play in advancing rural development and ensuring the sustainable implementation of smart city initiatives.

- ***Policy Making:***

The evolution of rural development policies in the region has been significantly influenced by initiatives such as the ENPARD. ENPARD has been a strong advocate for the LEADER/CLLD approach, which emphasises community-led local development (CLLD) tailored to both rural and urban settings.

As Respondent 6 explained, within the EU, investment structural funds finance the LEADER approach specifically for rural areas. In contrast, the CLLD approach is utilised for urban settlements (Respondent 6). This distinction underscores the flexibility and targeted application of these development approaches across various community settings.

The EU finances the LEADER approach through various state programs, which are implemented by national governments but funded through EU structural investment funds (Respondent 6).

ENPARD has been particularly instrumental in advancing the authorisation process for LAGs. According to Respondent 1, the developments within ENPARD 3 and ENPARD 4 were pivotal in kickstarting this process, providing the necessary framework and support for establishing LAGs.

Additionally, the UNDP has played a crucial role in aligning local policies with EU rural development standards. UNDP has been actively assisting the RDA to adapt to these policies, specifically in areas such as monitoring and evaluation. This support has been crucial for ensuring that local initiatives are effectively aligned with EU practices and standards, thereby enhancing their impact and sustainability.

- ***Capacity Building and Knowledge Transfer***

Capacity building and knowledge transfer are critical components for the success and sustainability of rural development initiatives. Respondent 6 emphasised that "capacity building and development are vitally important" for achieving lasting impacts in these communities. To address this need, various efforts have been undertaken to enhance the capabilities of LAGs and other stakeholders involved in rural development.

UNDP has played a central role in facilitating capacity building and knowledge transfer. One of their key strategies involved distributing guidelines and case study collections that highlighted successful projects in Europe (Respondent 2). By sharing these resources, the UNDP aimed to provide valuable insights and practical examples that local organisations could emulate.

In addition to disseminating information, the UNDP actively facilitated the introduction of organisations to one another during the implementation process. The goal of these introductions was to connect entities working on similar projects but with slightly different approaches, fostering a collaborative environment where they could learn from each other's experiences (Respondent 2).

A notable initiative was the establishment of a coordination mechanism where non-governmental organisations involved in village development policies could actively participate as stakeholders (Respondent 1). This inclusive approach ensured that diverse perspectives were considered and leveraged for the community's benefit.

While the UNDP had limited direct cooperation with the private sector, the indirect benefits to businesses through RDA grants were significant. The involvement of academic institutions, such as universities in the green matching grants project, was also crucial. These institutions helped identify the appropriate technologies to be included in the grants, thereby enhancing the technical expertise available to the projects.

Respondent 7 highlighted the strategic importance of linking LAGs with specialist organisations, presenting a valuable opportunity to enhance their capabilities and share knowledge. This linkage would enable LAGs to more effectively assist future projects, whether initiated by the government or the non-governmental sector

The UNDP also played a pivotal role in selecting competent partners and companies for specific projects, such as the solar panels project. This careful selection guaranteed excellent service and effective knowledge transfer. Furthermore, the UNDP set up demonstration locations in four municipalities to familiarise residents with the new technologies, ensuring practical exposure and hands-on learning (Respondent 7).

Despite these efforts, challenges remain in strengthening the capabilities of LAGs, particularly concerning the authorisation process. Respondent 6 pointed out that involvement from multiple donors often leads to temporary solutions that do not adequately address long-term institutional sustainability. Instead of developing LAGs and transferring essential skills and capabilities, some donors tend to substitute them temporarily. This approach leaves regions without the necessary skills and knowledge once the donors depart, creating dependency and triggering various challenges (Respondent 6).

To address these gaps, Respondent 6 emphasised the importance of helping organisations streamline their processes. By improving the organisational environment, even the best professionals can work more efficiently, ultimately benefiting the community. Eliminating gaps in capacity and enhancing institutional sustainability are crucial steps toward ensuring the long-term success of rural development initiatives.

In conclusion, capacity building and knowledge transfer are foundational to empowering LAGs and other local stakeholders. The collaborative efforts led by the UNDP, combined with strategic partnerships and practical demonstrations, have made significant strides in this area. However, continued focus on sustainable development and process optimisation is necessary to ensure these initiatives achieve their full potential and deliver lasting benefits to rural communities.

6.3 The Roles of Government (National & Subnational Level)

Usually, governments play various roles when it comes to smart city initiatives. There is a lot of research on the top-down approaches and government is considered to be one of the main contributors of the smart city initiatives. Borrás and Edler (2020) have identified various roles that governments play in such changes, however, they imply that the government plays an active role in these initiatives. However, that is not always so. In the case of Georgia, the role of government and the extent of its collaboration was studied.

Overall, during the interviews, it became clear that the government mostly cooperated with local governments and international organisations. However, interactions between

government institutions and LAG were minimal. This section will outline the roles of government identified through interviews.

- ***Policy Making***

According to Respondent 1, UNDP cooperates with the government in policy matters. Even more than that, "the Ministry of Environmental Protection and Agriculture is our beneficiary ministry" (Respondent 1). The Government and the Ministry of Environmental Protection and Agriculture especially cooperate on policies concerning rural development, which also includes smart cities (Respondent 1).

Moreover, the Government is actively involved in the authorisation process of LAG (Respondent 6 and 1). The Authorisation of LAGs are issued by the Ministry (Respondent 6). Around one million has been allocated for this initiative (Respondent 1). If LAG receives the authorisation, it would turn into a public-private entity which receives fixed funding from the local budget (Respondent 6).

- ***Information Dissemination***

Information dissemination was a role that was reiterated quite frequently in the interviews. For one, RDA executed a green grant programme in collaboration with UNDP. RDA actively contributed to spreading awareness in this programme (Respondent 7). Nevertheless, ministries demonstrated less engagement in this matter, as they did not strive to make any changes to policies (Respondent 7).

According to Respondent 4, the local government was involved in spreading the information about the solar panels project and provided the LAG with necessary information and statistics of their target group. Respondent 8 further drives this point across and points out that local governments can just aid in information dissemination as they could have points of contact in target groups, including vulnerable groups.

Moreover, the local government was also active in information dissemination in Zugdidi municipality. Given the fact, that local governments may have contacts within a specific target group, GITA cooperates with the local government to reach such e.g. vulnerable groups. Moreover, According to Respondent 9, managers of GITA Tech Parks put in a lot of effort to raise awareness as much as possible. The managers personally visit schools and universities to raise awareness and spread information about the projects and available opportunities (Respondent 9).

- ***Startup Support and Project Implementation***

GITA carries out various programs, trainings, meetings and hackathons. According to Respondent 8, the primary responsibility for financial support and implementation falls on them. According to Respondent 8, the main contribution of the local government to the Zugdidi Smart City Hackathon was a monetary reward for the team of their choosing. The local government fully funded the implementation of their chosen idea in the Zugdidi municipality (Respondent 8).

GITA Tech Parks organise hackathons in which they promote the creation of innovative solutions for various challenges based on the region. According to Respondent 9, GITA financially supports startups when it is needed. Moreover, with the support from international organisations such as USAID, they carry out a pre-accelerator program to help startups obtain grants (Respondent 9).

In the interview with Respondent 8, it has also become clear that local governments are more active in helping fund the activities of GITA, however, they are not actively involved in the implementation process. During the interview, it became clear that for example, local governments may have separate financial rewards for the winners or favourite teams of certain events (Respondent 8).

6.4 The Roles of Civil Society Organisations (Civil Level)

Out of the nine respondents, 7 had good knowledge of the roles civil society organisations played in the projects. The degree of knowledge varied since some were representatives of LAG while the rest were the people LAG representatives cooperated with during the projects. Therefore, during the interviews, several roles of LAG became clear.

- ***Information dissemination***

As LAG members are deeply integrated into the rural community, they are also one of the main sources of information dissemination. Organisations such as LAGs are very close to the population, therefore, when spreading the information about a project, they also spread it by word-of-mouth or by directly contacting people who may be interested in such projects (Respondent 4). Respondent 5 stated that they conduct information campaigns with the aim of reaching the entire municipality. Nevertheless, it appears that the openness of the residents to new information also significantly influences this aspect (Respondent 5).

- ***Research***

All LAG representatives highlighted the research their organisations carried out in their respective municipalities. The aim of this research was to identify the pain points in the municipality and consolidate a list of biggest needs locally.

A study was conducted in the communities of Tetritskaro municipality to explore the available opportunities. This study involved examining accessible resources, and the resulting report was made available to the public (Respondent 3). Hence, the study serves the dual purpose of motivating the implementation of the solar panels project in the Tetritskaro municipality and providing a valuable resource for future individuals interested in installing solar panels. As stated by Respondent 3, the LAG initiates the needs research process, evaluates the findings, receives expert opinions, and ultimately modifies the document to suit various sectors such as tourism, infrastructure, and so on.

The same process was reported by Respondent 4. In addition, Respondent 4 stated that Akhalkalaki LAG and Tetritskaro LAG were among the first to carry out a mobility-related study. However, the study was not taken into account by the local government of Akhalkalaki until a year later, after other municipalities started working in this direction (Respondent 4).

- ***Project drafting***

The role of LAGs in drafting project proposals for smart city initiatives is very important and involves a collaborative approach with active participation from both the community and experts. As Respondent 3 indicated, LAGs often undertake the proposal development process independently. This autonomy allows them to align their proposals closely with their strategic goals. According to Respondent 5, all proposals are meticulously drafted in accordance with the overarching LAG strategy, ensuring coherence and strategic alignment.

The drafting process is inclusive, involving not just the population but also specialised sectors with expertise in key fields (Respondent 5). This inclusivity is needed, as it brings diverse perspectives and knowledge into the proposal development process. LAG members themselves are deeply involved in drafting project proposals and their expertise is particularly valuable, as they provide essential recommendations and insights (Respondent 3).

Respondent 6 highlighted an innovative aspect of the LAGs' role in project implementation. LAGs have the authority to enter the implementation scheme and independently decide which projects should be financed within their local area. This local

decision-making power empowers them to prioritise projects that best meet the needs of their communities. Furthermore, LAGs have the flexibility to take the initiative in promoting the smart village concept, dedicating substantial parts of their strategy to these innovative projects (Respondent 6).

In Akhalkalaki, for instance, LAG members have envisioned several smart city projects. Respondent 4 shared some of the ideas the Akhalkalaki LAG aims to implement, such as installing autonomous lights powered by solar panels and equipping schools with solar panels to enable autonomous operation. Another potential project includes mobility-related initiatives, which aim to enhance local transportation infrastructure. However, a significant challenge remains: securing the necessary funding to realise these projects. Despite the innovative ideas and detailed planning, the lack of adequate funding is a substantial barrier to the execution of these proposals.

In conclusion, the project drafting process within LAGs is a collaborative, community-oriented endeavour that leverages local expertise and strategic planning. The flexibility and autonomy of LAGs allow them to tailor projects to the specific needs and aspirations of their communities. However, securing sufficient funding remains a critical hurdle that must be overcome to bring these innovative projects to fruition.

- ***Capacity Building & Project Implementation***

The role of LAGs in capacity building and project implementation has been instrumental in driving sustainable development in rural areas. LAGs often take the lead in training local residents, tailoring their efforts to meet the specific technical needs of various projects. For instance, in Tetritskaro municipality, capable individuals were trained in the installation, care, and repair of solar panels (Respondent 3). This hands-on training ensured that locals had the necessary skills to maintain and sustain the technology.

In Kazbegi, LAGs played a vital role in enhancing the skills of local businesses. Respondent 5 highlighted that Kazbegi LAG spearheaded a project aimed at retraining and equipping some residents, which included initiatives that now help women entrepreneurs attract visitors—a direct outcome of the knowledge gained during the Kazbegi LAG Smart Villages project.

The training initiatives extended to Akhalkalaki LAG as well, where a comprehensive training module was prepared by experts from the GIPA. According to Respondent 4, this module included four key areas: environmental protection, waste management, energy efficiency, and renewable energy. Such targeted training ensured that residents were well-prepared to address environmental and energy challenges

Project implementation emerged as one of the primary roles of LAGs as evidenced by various interviews. Respondent 2 noted the creation of digital hubs in schools, a direct result of the efforts by Akhalkalaki LAG. Similar success stories were shared by other respondents representing the UNDP, underscoring the crucial role LAGs play in translating strategic plans into tangible outcomes.

In Tetritskaro, the LAG operated without an implementing partner, positioning itself as the sole implementer of projects (Respondent 3). This autonomous approach required the LAG to cultivate a wide range of competencies internally. However, depending on the project's nature, there was also a willingness to engage in partnerships with more specialised organisations when necessary (Respondent 3). This flexibility allowed for the integration of additional expertise, further strengthening the capacity to deliver effective and sustainable solutions

Overall, LAGs have proven to be pivotal in both capacity building and project implementation across various municipalities. By training local individuals and businesses, coordinating comprehensive educational modules, and effectively managing projects, LAGs ensure that rural development initiatives are both locally driven and professionally executed. These efforts not only enhance local competencies but also contribute significantly to the sustainability and resilience of rural communities.

- ***Project Sustainability***

According to Respondent 3, the problem with the smart projects is often that there is no one to take care of the resulting infrastructure after the project is completed. Sometimes, the solutions created from the implemented projects need financial and human resources to maintain and operate. Therefore, Respondent 3 believes that there needs to be a commercial interest in transferring the ownership of the products created within the project such as infrastructure or websites for it to be sustainable and for it to be able to keep functioning even after the project ends. Unfortunately, it has been highlighted in several interviews, that since LAGs are a non-profit, non-governmental organisation, they cannot take it upon themselves to maintain the end products of the projects they implement. Examples of such challenges can be the B2B website created within the scope of Tetritskaro LAG’s Smart Villages project, which, unfortunately, ended up sinking as there was nobody to take care of the website. Since a website needs regular maintenance and updates, it needs a separate team to work on keeping up with it and keeping it functional. Additionally, another reason projects such as B2B website failed is because there were too many websites of similar content (Respondent 3). It has also been highlighted that one of the challenges faced in the municipalities is that the younger generation keeps on leaving the rural areas and moving to the urban ones (Respondent 3).

This then turns into a problem as the older generation does not want to learn new things, while there is less and less of the younger generation who should take over the work and usher in the usage of new technologies.

Moreover, there is a problem with how LAG operates currently. Adding to the point of Respondent 3, Respondent 4 has expressed concern with the sustainability of LAG as it operates as a non-profit NGO, meaning that the sustainability of the whole organisation is dependent on the donors. It was also highlighted that this is a problem specific to Georgian LAGs as the ones in the EU have more authority and therefore operate differently and with more freedom. Furthermore, Respondent 5 further drove the point across as they underlined the problem of being dependent on donors. According to them, as projects end, the fact that the LAG cannot decide for itself what types of projects to implement and instead needs to adapt to donors' requirements, makes it even more challenging to build upon the achievements made beforehand. That is to say, they do not find the answer to a problem but rather they are forced to find a problem that would correspond to a set solution.

The LAG representatives are highly involved in the projects even after they end (Respondent 4). As these people are basically volunteering to work for their municipalities and bring change to their communities, they are the people who take care of the community and are aware of the needs of the people of their municipality. However, even though there is a lot of motivation and readiness from the volunteers in the municipality, there is a lack of basic necessities to carry out such ambitions (Respondent 5). For Kazbegi and Akhalkalaki Municipalities, for example, even though there is a readiness to work on projects, to plan and carry them out, there is a simple lack of office space (Respondents 4 and 5).

6.5 Cooperation Between Stakeholders

The government was aware of the projects and as Respondent 1 stated, they did not actively get in the way or oppose the projects. This, however, implies that there was no cooperation in the smart villages or the solar panels project with the local government. Moreover, it needs to be underlined that Respondent 1 also mentioned that in some cases, the members of the LAGs are, at the same time, working at the local governments. According to Respondents 3 and 5 LAGs do indeed have local government representatives as members who participate in the development of project proposals and strategies, and even give out recommendations during this process. This might show involvement in the projects on an individual level but not on the local government level.

However, Respondent 3 also agrees with Respondent 1 and Respondent 2 and said that the government was in fact informed about the projects, however, they did not play an active role. The Mayor of Tetritskaro tried to help by facilitating some help, e.g. asked his assistants to help with field research. However, when it came to approving official documents, LAGs were met with barriers caused by bureaucracy and time constraints (Respondent 3). Moreover, Respondent 2 also noted that the involvement of the government was minimal in the projects they oversaw. Finally, Respondent 7 had stated about the Solar Panels project:

"The municipal governments were more in the mode of awareness, that is, they were just receiving information, and the NGOs were the implementers of the project"

Overall, all LAG representatives and the UNDP representatives agreed on the fact that local governments were not actively cooperating with either UNDP nor LAG in the Smart Villages and Solar Panels projects. Respondent 4 even went as far as to state that

"The fact that they do not interfere is already regarded as assistance"

Respondent 4 added that there is a big issue with bureaucracy and the lack of infrastructure, as there are projects the LAG would like to carry out but there is no space to do so. Moreover, it was also highlighted in this interview that the relationship between the local government officials and the residents is a bit rocky as they were referred to as having a "bad reputation". However, Respondent 4 also mentioned that the Akhalkalaki LAG gets a lot of support from the local Resource Centre. The Resource Centre is governed by the central government and it must be mentioned that it has no relation to the local government.

In addition, Respondent 5 conveyed disappointment with the existing perspective on LAG and emphasised the potential for collaboration between the government and LAG to leverage the vast amount of knowledge and expertise gathered inside LAG. Furthermore, Respondent 5 stated:

"The sad thing is that we, LAG in general, are considered in Europe as a tool for uniting different sectors of society and which can be used well even by the self-government … unfortunately LAGs are not yet perceived in this way in Georgia"

LAGs express a clear need for continuous funding rather than additional training or knowledge access (Respondent 5). They often rely on the sporadic and varying projects announced by donor organizations, which are neither numerous nor varied. This reliance on external funding highlights the dependency of LAGs on donor initiative timelines and

priorities, underscoring a critical area for improving stakeholder cooperation and support (Respondent 5).

Nevertheless, the government and the LAGs are entering a new phase. Respondents 1 and 3 have reported that the authorisation process has begun for LAGs, indicating that the authorised LAG will receive state financing, albeit the amount will be rather modest. Respondent 5 stated that UNDP served as the facilitator for this programme, actively working on it and organising meetings for all parties involved to convene. As per Respondent 6, the ministry will grant authorisation, after which the implementation of payments would be carried out by RDA.

According to Respondent 1, agencies like the RDA play a significant role in formulating grant packages. These grant packages undergo thorough review and planning by both the UNDP and the RDA, reflecting a robust cooperative effort (Respondent 1).

Partnerships can also extend to specific projects, such as the financing of solar panels for businesses, which involved cooperation between the RDA and the UNDP. Despite the RDA's active involvement in implementing the green grants project, public interest and participation were notably low (Respondent 7). This suggests that while inter-agency cooperation can be effective at the technical and administrative levels, it must also address public engagement to achieve broader success.

Respondent 7 provides additional insights into this cooperation, highlighting the RDA's involvement in green initiatives and renewable energy projects alongside the UNDP. This collaboration underscores the importance of the RDA in advancing environmental projects in Georgia (Respondent 7). Despite these efforts, Respondent 7 also notes that local government participation in these initiatives remains minimal (Respondent 7), shedding light on a recurring theme of local government inactivity corroborated by other interviews.

Respondent 7 thinks that it will be very hard to achieve long-term results unless the government has a set approach to environmental protection, be it subsidies or raising awareness. Respondent 7 believes that there is still a lot of work to be done in this regard in the country. In the interview with Respondent 7 it became clear that there is a lack of incentives and awareness on the national and local levels. According to Respondent 7, there is difficulty in convincing the rural residents even when there is a high, 80-20 co-funding scheme active, as long-term benefits are not seen as immediately useful by the rural population.

On the other hand, agencies like GITA also play an active role in fostering innovation through grants. As noted by Respondent 8, there was a period when GITA was particularly active in transferring grants, indicating a phase of intensified grant issuance (Respondent 8). According to Respondents 8 and 9, the agency is very active in the municipalities that have Tech Parks and FabLabs. Here, GITA is very active in implementing and funding different projects such as trainings or smart city hackathons.

Therefore, sometimes, the government also takes on the role of the implementer (Respondent 6). Respondent 9 believes the local governments should be more active with regards to the smart city initiatives in rural areas. When asked if they were aware of any smart city projects by the local governments, respondent 9 could only list a few from the three big cities in Georgia, including the capital Tbilisi, but underlined that they did not have up-to-date information on the topic.

When asked about the cooperation of GITA with local governments, Respondent 9 stated that they are trying their best to involve local governments into the projects implemented by GITA, but some are more active than others. Moreover, Respondent 8 mentioned that the local government is usually collaborating about information dissemination or giving out separate rewards to Hackathon winners.

When it comes to government agency's collaboration with international organisations, both Respondent 8 and 9 have stated that GITA actively cooperates with international organisations such as GIZ and USAID. Usually this cooperation takes place where the international organisations have target municipalities (Respondent 8).

The insights from these interviews underline the complexity of stakeholder cooperation in development projects. The effectiveness of such cooperation hinges on continuous funding, active participation from local governments, and strategies to boost public engagement and interest in development initiatives.

7 Discussion

This section discusses the main findings of this thesis, answering the research question that guided this study. Reflecting on the research question of this thesis regarding what roles stakeholders such as government, international organisations and civil society organisations play in the implementation of smart city initiatives and their collaboration efforts, it suggests several potential contributions.

As mentioned by Lombardi et al. (2012), smart cities are considered to be anything from a city with IT infrastructure to a city with educated people. However, the importance of human capital, or the smart people dimension is getting more and more recognised (Arroub et al., 2016; Campbell, 2009; Kourtit & Nijkamp, 2012; Nam & Pardo, 2011; Zubizarreta et al., 2016). Gil-García (2015) asserts that "using data and information is central to making cities smart" (p. 73). However, it is imperative to expand the understanding of smart city initiatives beyond merely data and ICT technologies to include a spectrum of simpler initiatives that contribute to a city's or village's journey towards becoming smart. Often, discussions on smart cities heavily emphasise mobility, data, and urbanisation, potentially overlooking critical facets such as smart people, smart economy, and smart environment. This oversight is exemplified by the definition provided by Respondent 9, which, while encompassing aspects of mobility and urbanisation (including environmental protection), leaves out the importance of smart people and smart economy.

Thus, a comprehensive approach to smart cities should integrate all dimensions—smart governance, smart mobility, smart environment, smart people, smart living, and smart economy—to truly enhance the quality of urban life in a holistic manner. This broader perspective ensures a balanced and inclusive development strategy that aligns with the multifaceted nature of urban ecosystems.

The roles of international organisations, such as the UNDP, the World Bank, GIZ and USAID (international from Georgia's point of view), remain underexplored with regard to smart cities in academic research. While much of the existing literature concentrates on the roles of government, industry, universities, and governance frameworks through the triple helix model—and, to a lesser extent, on citizens within the quadruple helix model—international organisations are frequently excluded from these discussions. However, this research has shown that international organisations take up quite an important role when it comes to smart city initiatives in upper-middle income countries such as Georgia. Therefore, to identify the roles of the selected stakeholders, I use the classification of the roles as presented by Borrás and Edler (2020). An overview of the main findings regarding the roles of stakeholders can be seen below in Table 8.

Roles of International Organisations	Explanation
Initiator	International organisations identify opportunities for transformation, such as the smart village initiatives funded by the European Commission, utilizing their resources to initiate projects that address local needs and global challenges.
Enabler of Societal Engagement	Organisations like UNDP facilitate societal engagement by involving various stakeholders in projects and policy-making processes, ensuring inclusiveness and participatory development, especially in projects aimed at rural development.
Promoter	As funders and advocates for smart villages and sustainable development, international organisations promote these changes within the sociotechnical system, championing new ideas and financial support for transformative projects.
Roles of Government	**Explanation**
Facilitator	The government often acts as a facilitator through initiatives like policy-making with UNDP and collaboration in green grant programs. This is seen where the government supports and enables frameworks for rural development and environmental protection.
Lead-user	As demonstrated in the Zugdidi Smart City Hackathon, the government takes on the role of a lead-user by funding and implementing innovative local projects, effectively driving market creation through direct involvement.
Roles of Civil Society Organisations	**Explanation**
Promoter	LAGs actively promote concepts like smart villages within their strategies and outreach efforts. They work to spread awareness and information about sustainable development projects through various campaigns and direct engagement.
Enabler of Societal Engagement	By conducting studies to identify the needs of residents and initiating discussions around those needs, LAGs play a critical role in engaging society and ensuring that community voices are heard and integrated into project planning and execution.

Facilitator	LAGs facilitate the implementation of projects by working closely with the community and other stakeholders to ensure that the projects are well-suited to the local context. They also help in drafting project proposals that reflect the community's needs.

Table 8 – The Roles of Stakeholders (based on the roles identified by Borrás and Edler (2020))

In the implementation of smart city initiatives in rural areas, governments play essential roles, in facilitating, and leading projects that integrate digital technologies into local infrastructure and services. This aligns with the perspectives of various researchers who have examined the multi-faceted nature of smart city implementations across different environments (Caragliu et al., 2011; Nam & Pardo, 2011).

7.1 International organisations

In the context of implementing smart city initiatives in rural areas, international organisations play a pivotal role in facilitating, funding, and steering these initiatives towards sustainable development goals. International organisations act as enablers of societal engagement by bringing together diverse stakeholders, including governments, local businesses, civil society, and academic institutions. This convening power is crucial for integrating varied perspectives and resources essential for the successful implementation of smart initiatives. For instance, the UNDP and the ENPARD have been instrumental in fostering collaborations that bridge local needs with global technological advancements (UNDP Georgia, 2021). For instance, the UNDP's role in the authorisation process for LAG financing showcases their pivotal role in overcoming bureaucratic hurdles and ensuring continuous funding for LAG. As Respondent 2 noted, it is also part of international organisation's responsibility to collaborate with the government in order to exchange and discuss about their expertise. Such collaborations underscore the integral role of international organisations in supporting and enhancing local governance structures and capacities.

Furthermore, these organisations play a crucial role of a promoter in providing funding, which is often a significant barrier for rural areas looking to implement advanced technological solutions. Through grants and financial aid, international organisations like the EU enable the deployment of smart city technologies that may otherwise be unaffordable for rural communities (European Commission, 2018; Paneva, 2017). This financial support is vital for pilot projects that demonstrate the viability of smart technologies in enhancing rural living standards and economic opportunities. Moreover,

The initiator is another critical role played by international organisations. They guide projects to ensure alignment with broader sustainable development goals, such as improving local governance, enhancing environmental sustainability, and boosting economic development. The EU's LEADER approach exemplifies this steering role, promoting a decentralised and participatory approach to rural development that aligns with both local and international sustainability goals (European Network for Rural Development & European Commission, n.d.).

These organisations bring a global perspective to local challenges, introducing best practices and innovative solutions that have been successful in other contexts (Respondent 2). This transfer of knowledge is crucial for avoiding common pitfalls and accelerating the adoption of smart solutions tailored to the specific needs and characteristics of rural areas. For example, the smart villages project in Akhalkalaki municipality was evaluated as "something that really brought light to that area and that community" by Respondent 2. The role of international organisations like the UNDP extends beyond funding to encompass policy development and monitoring. While they provide financial resources and policy guidance, interviews revealed that sustainability efforts were largely delegated to LAGs. The UNDP officials noted their involvement in ensuring project sustainability was minimal, with a significant portion of responsibility resting on the LAGs. This collaborative approach highlights the importance of combining global insights with local implementation to foster long-term success in rural development initiatives.

In conclusion, international organisations are essential catalysts in the development and implementation of smart city initiatives in rural areas. By facilitating multi-stakeholder collaborations, providing necessary funding, steering projects towards sustainable outcomes, and sharing global knowledge and best practices, they enable rural communities to leverage smart technologies to improve their quality of life and economic well-being. The strategic lobbying and support provided and the collaborative efforts of the UNDP have been key to shaping rural development policies in the region. These initiatives have not only facilitated the establishment and authorisation of LAGs but also ensured that local development practices are harmonised with broader EU policy frameworks, thereby fostering more effective and sustainable rural development.

7.2 Government

The government’s role as facilitator and lead-user is vital for successfully implementing smart city initiatives in rural areas. In the Georgian context, the government's engagement varies significantly across municipalities, reflecting disparities in resource allocation, priority setting, and strategic focus. For instance, on one hand, as shown during the

interviews, while government agencies like GITA and RDA support technology adoption and development in rural areas, there are instances where government involvement is minimal or passive. GITA, for example, fosters innovation in rural areas by supporting and educating the younger generation. This demonstrates the government's commitment as a Facilitator of smart technologies, contributing to the groundwork necessary for smart city initiatives. However, the level of engagement is not consistent across all regions. As noted by Respondents 1 and 9, some local governments play a more passive role. At times doing no more than being informed, but not actively participating, and sometimes even buffering when it comes to issuing official documents (Respondent 3).

Borrás and Edler (2020) have identified the various roles of government in socio-technological systems, suggesting that these roles are inherently active. Moreover, Rodriguez Bolivar (2016) characterises the governance framework in smart cities as a collaborative network led by local governments. This structure aims to foster an urban environment that is interactive, participatory, and driven by information, ultimately enhancing public value, increasing wealth, and improving citizens' quality of life (Rodríguez Bolívar, 2016). However, this perspective overlooks the instances where government roles are more passive when they are “being informed but not actively participating” (Respondent 1), a critical point highlighted by the responses from the interviews conducted in this research.

While some of the government agencies actively try to promote smart projects, the local governments in Georgia have been revealed to be involved in field research and recommendations given to LAGs. Members of local government occasionally contribute to the drafting of LAG strategies and project proposals, thereby assuming a facilitator role. However, as noted by Respondent 3, these contributions typically occur on an individual rather than an institutional level. Furthermore, according to Respondent 3, local government’s participation diminishes significantly when formal documentation or official approvals are required, at which point they demonstrate considerable hesitance and delays. This passive stance highlights a critical bottleneck in the implementation process of smart city projects, underscoring the need for a more proactive and streamlined approach from local governments to enhance the efficiency and effectiveness of these initiatives.

Governments act as facilitators, connecting various stakeholders such as international organisations, local businesses, and civil society to ensure cohesive action and resource allocation. This is particularly important in rural areas where resources may be limited and expertise in digital technologies is not as prevalent. By acting as a bridge, governments can facilitate the development and implementation of technologies that are

appropriate to local contexts, as observed in Zugdidi municipality (Hollands, 2008; Vanolo, 2016). Therefore, an example of this would be the government agency GITA aiding residents in rural areas in creating innovative prototypes at their Tech Parks.

Moreover, governments take on lead-user roles, spearheading initiatives that push smart city projects forward. This involves strategic planning and active participation in the execution of projects to align them with broader socio-economic goals, which is crucial in rural settings where smart city initiatives can significantly impact community development and economic growth (Giffinger et al., 2007; Lombardi et al., 2012). For instance, GITA organised hackathons in which the state aimed to find innovative solutions to public needs (Georgia's Technology and Innovation Agency, 2023).

Regulation is another critical aspect of government involvement in smart city initiatives. Policymaking and the establishment of standards and frameworks are necessary to guide the deployment of new technologies and ensure they are used safely and ethically. Effective regulation is vital for fostering innovation while protecting citizens' rights and promoting sustainable development. In this regard, according to respondent 6,

"the national policy framework does not restrict and gives full freedom to various civil actors even at the local level to develop a smart village strategy. "

The implications of granting full freedom to develop smart villages are significant. This autonomy allows local communities to tailor their strategies to suit their unique needs and contexts, promoting innovative solutions that are locally relevant and effective. It encourages grassroots involvement and ownership of smart initiatives, which can lead to higher levels of engagement and more sustainable outcomes. Additionally, such freedom can stimulate competition and creativity among local actors, potentially leading to the discovery of best practices that can be shared and replicated in other regions. However, it also requires robust mechanisms to ensure that this freedom does not lead to a fragmentation of efforts or the creation of inequities between different regions. Therefore, there must be a balance between freedom and coordination to harness the benefits of localised innovation while ensuring broad, inclusive progress.

Finally, governments often serve as mediators in rural smart city initiatives, fostering cooperation among international donors, non-governmental organisations, and local communities to develop inclusive and sustainable solutions. This mediating role ensures that the initiatives not only deploy advanced technologies but also integrate into the socio-economic environments of rural areas, facilitating broader community engagement and long-term sustainability (Caragliu et al., 2011; Lombardi et al., 2012).

In conclusion, the roles of government in the development of smart cities in rural areas are crucial to ensuring that such initiatives are successful, sustainable, and aligned with the needs and goals of local communities. These roles, facilitated by multi-level governance and strategic leadership, allow for the effective integration of digital technologies into rural development strategies.

7.3 Civil Society Organisations

Civil society organisations are integral to the implementation of smart city initiatives in rural areas, performing crucial roles that bridge community engagement, ensure transparency, and foster local innovation. Their involvement ensures that smart city solutions are tailored to the specific cultural and social fabric of rural communities, addressing unique local needs and aspirations. LAGs are critical in this process, as they facilitate the implementation of strategic priorities through advocacy, awareness campaigns, and the development and introduction of fair and transparent project evaluation systems (Kazbegi Local Action Group, 2016). This comprehensive approach ensures that the benefits of smart city initiatives are equitably distributed and aligned with the community's long-term goals.

Civil society organisations act as community advocates, deeply involving local populations in the decision-making processes. This engagement ensures that smart city projects are collaborative, incorporating local perspectives which are vital for developing practical and beneficial initiatives. By engaging local residents, civil society organisations help build trust and enthusiasm, which are crucial for the long-term success and sustainability of these projects (Caragliu et al., 2011; Nam & Pardo, 2011).

Concrete examples of such initiatives include the solar panels project and the Digital Youth Hubs in Akhalkalaki. These projects contribute to the smart people dimension by preparing residents to embrace new technologies more easily. The role of civil society organisations, such as LAGs, is particularly significant because they intimately understand the needs and challenges of their communities. They are the "boots on the ground," closest to the residents and best positioned to identify and address local issues.

Individuals in these organisations, often volunteers, possess unique tools and perspectives that allow them to develop innovative solutions tailored to benefit local populations. Their proximity and dedication enable them to foster a sense of community ownership and readiness for technological advancements. Consequently, civil society organisations not only address immediate practical needs but also lay the groundwork for greater acceptance and integration of new technologies, ensuring the long-term success of smart city initiatives. However, a major obstacle faced by LAG is the lack of consistent funding.

According to Respondent 5, if LAG is unable to build upon and expand the achievements of a project, there is a risk of losing both the interest of persons who were part and the progress that was achieved. This lack of sustained funding makes it difficult to further develop and enhance the skills acquired, thereby jeopardizing the continued success of these initiatives.

Furthermore, Civil society organisations enhance transparency and accountability in smart city initiatives. They monitor project execution and governance, ensuring that there is a clear and open line of communication between project implementers and the community. This oversight helps to maintain integrity and public trust in how projects are run and managed, aligning with the perspectives shared by Gil-Garcia et al. (2015) on the importance of transparency in urban innovations.

Moreover, civil society organisations stimulate local innovation by introducing new ideas and perspectives into the planning and implementation of smart city projects. They often bring examples of best practices from other regions or contexts, adapting them to the local rural environment to spur technological and social innovation (Angelidou, 2014; Lombardi et al., 2012). These organisations serve as catalysts for change, ensuring that innovative initiatives are grounded in community needs and realities.

Furthermore, LAGs face significant challenges due to varying recognition and support within different geopolitical contexts. According to Respondent 5, the lack of consistent funding is a major obstacle. Without the means to build upon and expand their project achievements, LAGs risk losing both the interest of the individuals involved and the progress made, thereby hindering the development of acquired skills. Respondent 5 explained that in Europe, LAGs are generally seen as effective tools for uniting diverse societal sectors and can be utilised efficiently even by local governments. This effectiveness is largely due to the extensive information gathered and the cooperation across various sectors, which facilitate joint efforts. However, in Georgia, LAGs have not yet been recognised in this manner (Respondent 5). In the EU, the process is comparatively easier because LAGs receive consistent funding, enabling them to continually contribute to development. In contrast, while some projects in Georgia have been successfully implemented, LAGs are still awaiting further opportunities (Respondent 5). This comparison underscores how differences in funding and recognition significantly impact the ability of LAGs to foster ongoing development.

The use of a multi-level governance framework highlights the importance of coordinated efforts across different levels of governance—local, national, and supranational—to address the challenges of bureaucracy and logistical constraints in implementing smart initiatives (Hooghe & Marks, 2001; Stephenson, 2013). Such coordination ensures that

smart city projects benefit from synergies between various governance tiers and align with international development strategies, as demonstrated by the collaboration between the government and UNDP.

7.4 Cooperation

Cooperation across different governance levels and sectors is crucial for the success of smart initiatives in rural areas. As Albino et al. (2015) highlight, smart governance involves actively working to overcome “barriers related to language, culture, education, and disabilities” (p.11). The Smart Villages project exemplifies this by uniting supranational entities such as the UNDP, local civil society groups like the LAG, business sectors and the academic sector, represented by GIPA. This collaborative effort aims to empower residents in rural villages by providing access to ICT technologies and using these tools to help ethnic minorities overcome language barriers, thereby enhancing their educational opportunities.

The success of the Smart Villages project illustrates the significant benefits of such multidisciplinary cooperation. By integrating various levels of government, international organisations, and local entities, these initiatives are well-aligned with the smart people, smart environment and smart economy dimensions of the smart cities concept, which emphasises human capital and social inclusion. The collaborative efforts of LAGs and international organisations prioritise the needs of residents and local businesses, driving the development of rural areas

For these initiatives to be truly effective, it is essential for local governments and LAGs to work in tandem. Their cooperation is vital to fostering community acceptance of new approaches and improving residents' quality of life. The synergy between local government bodies and LAGs can facilitate the dissemination of new technologies and practices, ensuring that they are well-received and effectively integrated into daily life.

In conclusion, the success of smart initiatives in rural areas hinges on robust cooperation among various stakeholders. By working together, local governments, LAGs, international organisations, and academic institutions can overcome cultural, educational, and technological barriers, driving sustainable development and enhancing the quality of life for rural communities.

7.5 Challenges

The development and implementation of smart city initiatives face several significant challenges, particularly in regions like Georgia. These challenges stem from issues related to information sharing, funding, and monopolies.

One significant hurdle is the entrenched mindset of local populations, who are often resistant to deviating from established norms (Respondent 2). Breaking locals out of their traditional ways of thinking and encouraging them to come up with creative solutions requires considerable effort. In many cases, residents in rural areas need to witness success stories from within their own communities to become more accepting of new technologies and innovative approaches. As Respondent 5 noted, introducing new ideas and innovative concepts can be particularly challenging when individuals perceive that traditional methods still provide similar or slightly lower income levels. This familiarity frequently causes them to revert to old methods, underscoring the difficulty of changing established practices and mindsets, even when new methods promise long-term benefits.

Another significant barrier, highlighted by Respondents 4 and 5 is the perception that information is often withheld or prioritised for personal benefit. This lack of transparent information sharing creates barriers to effective collaboration and hinders the collective progress of smart city projects. When stakeholders are reluctant to share information openly, it can lead to inefficiencies and a lack of coordination, which are detrimental to the success of these initiatives.

Additionally, a major obstacle faced by LAGs is the lack of consistent funding. Respondent 5 pointed out that without stable financial support, it is challenging for LAGs to build upon and expand the achievements of their projects. This inconsistency in funding risks losing both the individuals involved and the progress made, making it difficult to further foster and advance the acquired skills. Continuous, reliable funding is crucial for sustaining momentum and ensuring long-term project success.

Furthermore, Respondent 7 raised concerns about the monopoly issues surrounding renewable energy sources in Georgia. Such monopolies can stifle innovation and limit the scope of renewable energy projects, which are essential components of smart city developments. Addressing these monopoly issues is necessary to create a more competitive and dynamic environment that encourages the adoption of renewable energy technologies.

Overall, these challenges highlight the complex and multifaceted nature of developing smart cities. Addressing issues of information sharing, securing consistent funding and

tackling monopolies, are all critical steps in the journey towards creating smarter, more sustainable rural environments.

7.6 Recommendations

The findings of this research emphasise the critical importance of multi-level governance cooperation to achieve effective outcomes in rural communities. In the context of Georgia, it is imperative for local governments to enhance their involvement and actively collaborate with their respective LAGs. The success of smart initiatives heavily depends on such cooperation. When government participation is lacking, these initiatives tend to remain underdeveloped.

To foster the growth and implementation of smart technologies in rural areas, it is recommended that governments collaborate closely with international organisations and civil society organisations. Such partnerships are vital for ensuring adequate support, financing, and dissemination of these technologies. This collaboration is not only pivotal for improving the quality of life in rural areas but also for mitigating urban overcrowding

Governments must take a proactive role in smart initiatives, providing policy support to other organisations involved in these efforts. Without active governmental involvement, the efforts and resources invested risk becoming short-term solutions rather than sustainable, long-term investments. As Campbell (2009) suggests, redirecting funds allocated for technical assistance and capacity-building from international project lending could enhance city learning. Development institutions and NGOs could utilise these funds to finance inter-city learning and capacity-building, rather than routing resources through donor agency headquarters. This approach could streamline the learning process and make it more productive.

As Respondent 2 noted, long-term success will require sustained government engagement. While external organisations and initial funding can kickstart projects, the government must eventually assume responsibility and continue these initiatives to ensure their sustainability. Significant investment from the government, such as a commitment of substantial financial resources, could yield impressive and impactful results.

These steps are essential for creating sustainable, smart rural communities that enhance the quality of life for residents and alleviate the pressures on urban centres.

7.7 Limitations

This study is not without its limitations. One significant constraint stems from the time limits and the non-responsiveness of some potential respondents, resulting in a limited

representation of organisations. Furthermore, the research focuses solely on Georgia, making it difficult to generalise the findings to other contexts. To mitigate this limitation, cases were selected systematically, ensuring congruence between conceptual and operational definitions, thus striving for conceptual validity.

As highlighted in the methodology, case studies and interviews inherently contain weaknesses in reliability and validity. Recognizing that respondents may exhibit bias due to their direct involvement in the projects, multiple representatives from each sector were interviewed to cross-examine the data, increasing reliability and validity in line with Van Thiel's recommendations (van Thiel, 2014).

Another limitation is associated with the documents used in the research, such as Low-Value Grant contracts and final reports. These documents, while providing valuable insights, are not publicly available, limiting the verifiability of the information about the cases.

The challenge of generalizing findings from a multiple-case study conducted within a single country was approached with careful consideration. This issue was addressed by transparently selecting cases based on their economic development and the presence of smart city initiatives in rural areas. Detailed descriptions of the municipalities and their economic parameters, along with thorough accounts of each project, make the research replicable and provide a foundation for comparison by future researchers.

While the chosen research methods—interviews, case studies, and secondary data analysis—are often criticised for their lack of reliability (Brown & Hale, 2014), it is noteworthy that none of the methods proposed as alternatives possessed significant advantages in reliability. In fact, five out of the seven proposed methods by Brown and Hale listed reliability as a disadvantage.

Additionally, it is essential to consider the impact of reflexivity on the research process. Reflexivity involves the researcher's awareness of their role and influence on the research, enabling them to acknowledge how their involvement affects both the processes and outcomes (Symon & Cassell, 2012). This awareness helps to mitigate the influence of biases and enhances the transparency and integrity of the research findings

8 Conclusion

Within the scope of this thesis, the roles of government, international organisations and civil society organisations in the implementation of smart city initiatives in four municipalities in Georgia were researched. The chosen cases aimed to contribute to several smart city dimensions such as smart economy, smart environment and smart people. Based on the literature review, key informant interviews and the case study, the research question was answered.

Even though the roles of stakeholders sometimes overlap, e.g. the role of the facilitator, there is still a clear distinction of roles that only certain stakeholders can take on. The findings of this study demonstrate that smart city initiatives in rural Georgian municipalities are not merely technological implementations but are deeply intertwined with socio-economic, cultural, and political dimensions. The roles identified for each stakeholder group—government entities, international organisations, and civil societies—underscore a complex interplay that underpins the operational success of these initiatives.

This thesis contributes to the academic discourse on smart cities by highlighting the significance of multi-level governance in rural settings—a relatively underexplored area in smart city research. By applying this framework, the study not only addresses a geographical and thematic gap but also enriches the understanding of how multi-stakeholder collaborations can be structured and mobilised in less urbanised areas. Furthermore, the findings advocate for a broader definition of smart cities, one that includes social and human capital dimensions, alongside technological advancements.

For practitioners and policymakers, this study offers several insights. Firstly, the importance of tailored governance structures that recognise the unique needs and capabilities of rural areas is clear. Secondly, the success of smart initiatives heavily relies on active and sustained community involvement, necessitating mechanisms that foster long-term engagement from local populations. Lastly, international collaborations provide not just resources but also serve as catalysts for innovation and change, suggesting that open channels for international cooperation should be prioritised.

8.1 Future research

Building on this research, it is recommended to undertake a comprehensive study involving multiple representatives from all three sectors—government, private, and civil society. Governance should not be viewed solely as a top-down approach led by the government. While governmental policy-making is crucial, other stakeholders play

equally significant roles. Therefore, it is essential to recognise the importance of a top-down approach by governments while also discussing the advantages of the LEADER/CLLD bottom-up approach to smart city governance. This dual perspective is crucial for understanding the social environment and gaining a complete picture of how smart city initiatives are implemented.

The focus on a limited number of cases within Georgia provides depth but may restrict the generalisability of the findings. Future research could expand the geographical scope to include other post-Soviet or upper-middle income countries to explore if the patterns observed here hold in different contexts.

However, in the case of Georgia, from the international sector, insights from e.g. World Bank, GIZ and USAID would be very valuable as they are considered as international organisations from Georgia's point of view. Moreover, including representatives from local governments would add another valuable perspective, drawing an even fuller picture of the processes happening in Georgia. Finally, including other civil society organisations would increase the reliability of data. Carrying out this research would increase the reliability and validity of the research

In conclusion, this thesis underscores the multifaceted nature of smart city initiatives in rural areas. It highlights the necessity of collaborative, multi-level governance structures that harness the strengths of governments, international organisations, and civil societies. In doing so, it provides a roadmap for future initiatives aiming to blend technological advancement with sustainable rural development, ensuring that the benefits of the digital age are equitably distributed.

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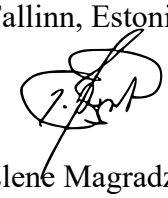

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