THE OPERATIONALIZATION OF THE DLREV

SOFTWARE FOR IMPROVED REVENUE

MOBILIZATION AT LOCAL GOVERNMENT

LEVEL: A COST-BENEFIT ANALYSIS

GOVERNANCE FOR INCLUSIVE DEVELOPMENT / SUPPORT FOR
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The operationalization of the dLRev software for improved revenue mobilization at local government level: a cost-benefit analysis

Ghana Priorities

Governance For Inclusive Development / Support for Decentralisation Reforms (SfDR),

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Academic Abstract

Revenue mobilization and management are critical to local government service delivery. Whereas traditional practices emphasized personal interactions and manual record-keeping, geospatial data, internet and information networks have the power to streamline these municipal processes. In this paper, we conduct a cost-benefit analysis of a web-based application that facilitates digital billing, collection and data management of property taxes at the municipal level in Ghana. Based on analysis of data before and after the introduction of the system, results indicate as much as a 57% drop in the number of days to issue demand notices or pay rates, a time savings for both local government and compliant ratepayers. The efficiency benefits of expanding the software to other municipalities, including training and technical accompaniment, far outweigh the costs by a factor of 9.

Key Words: local government, revenue mobilization, digitization

Policy Abstract

The Problem

A key indicator of successful decentralization processes is the ability of local governments to generate their own income. Although Ghana's fiscal decentralization framework allows for fiscal autonomy of local governments, the Metropolitan, Municipal and District Assemblies (MMDAs) still depend principally on central government transfers to fund their development. Despite their jurisdictional advantage, MMDAs only generate, on average, approximately 20 percent of their total budget from their own sources, known as Internally Generated Funds (IGF).

MMDAs have important planning and coordination functions, as well as the responsibility for infrastructure and service delivery in key sectors: waste management, transport, roads, housing, disaster prevention, births and deaths, among others (World Bank, 2018). Before the introduction of dLRev, most assemblies issued demand notices to clients for the payment of the rates, rents and other bills. The majority of these were not computerized but hand-written bills. As most buildings were not numbered, even the distribution of the bills posed a major challenge to the MMDA's revenue collectors. In some MMDAs the billing was decentralized; that is, sub-districts printed their own bills and issued them to taxpayers. This caused a lot of leakages.

There have also been regulatory and monitoring challenges associated with the practice of outsourcing revenue collection. MMDAs have raised concerns about the proprietary nature of the data collected, the extent to which they can monitor and sanction service providers, the modalities for procurement, among others.

Finally, there was (and still is) no legal backing for the policies and procedures to guide the MMDA management in the outsourcing process, including the selection of revenue sources to be outsourced and those to be collected "in-house" by the MMDA.

Despite these challenges, the efficient taxation of properties within their respective jurisdictions is a huge untapped potential to increase local governments' IGF.

Intervention 1: The Implementation of dLRev management software in a model MMDA in Ghana

Overview

The dLRev is a web-based application with a digital address map (local plan) of a district produced using a geographic information system. The local plan has a spatial database and with a corresponding fiscal cadastre of revenue items, the software is used to manage data, billing, and collection. The software is currently set-up for property rates and business operating permits, but also provides for other revenue items namely rents (district infrastructure given for public use such as market sheds, stalls and stores), fees (for use of market grounds and lorry parks), fines (for flouting by-laws of the local authority) and investment (investment in securities). The application was funded by GIZ, who also partake in some of the implementation activities with government. A historical overview of the development of the dLRev software can be found in Appendix 1.

In January 2020, the GovID programme and the Copenhagen Consensus Center agreed to conduct a cost-benefit analysis of the deployment of the dLRev revenue management software in 9 MMDAs in Ghana, which used the dLRev software in the fiscal year 2019.

These are:

Central Region:	Agona West Municipal Assembly, Cape Coast Metropolitan Assembly, Komenda-Edina-Eguafo-Abirem (KEEA) Municipal Assembly
Eastern Region:	Suhum Municipal Assembly
Greater Accra:	Adenta Municipal Assembly, Ga South Municipal Assembly
Western Region:	Bibiani-Anhwiaso-Bekwai District Assembly, Shama District Assembly, Prestea Huni - Valley District Assembly

Intervention

While fifty-two MMDAS (52) were set-up on the dLRev platform by the end of 2019, nine (9) municipalities have been using the dLRev software throughout the year 2019 to collect rates for both properties and businesses. The intervention proposed here is to use the cost and revenue data obtained from those nine (9) municipalities in order to estimate the costs and benefits of implementing the dLRev software in a model MMDA.

The model MMDA is essentially a weighted average of the contributing municipalities; the weight based on their respective population sizes of the total population served throughout

the sample, with the assumption that the number of properties and businesses are proportional to population.

The parameters used for the model MMDA are as follows:

Parameter	Value
No., data collectors	20
Annual revenue, pre-dLRev, GHS million	3.0
Annual revenue, post-dLRev, GHS million	4.7
Annual revenue growth rate	54.5%
No., properties	9,956

The intervention is analysed over four years: the first year consisting of implementation activities (i.e. acquisition of equipment and training) and three subsequent years of revenue collection. After which, it is assumed some hardware would require maintenance or replacement.

Costs and Benefits

Costs

The dLRev is an open-source data tracking and revenue collection software and is free to use. There are several pre-conditions to be satisfied in order to qualify for the dLRev software. These pre-conditions include aerial imagery for spatial databases, street-naming and property addressing, property valuation, and fee-fixing.

The cost components for the implementation of the dLRev management software are listed below, by activity:

1. Uploading local plan to dLRev server

2. Data collection

To keep the cost of data collection at a minimum, data collection teams usually include National Service personnel, Nation Builders Corps (NABCO) and salaried district assembly staff. This process is facilitated by the GIZ programme's regional advisors.

Training for the fieldworkers is either executed by GIZ staff or consultants. During the training, the district teams (fieldworkers and district staff) are provided with user credentials to use the Data Collection App for data collection.

1. Uploading of new data/quality checks

2. Training of dLRev Management Team

This team comprises a Management Information System (MIS) Officer, Physical Planning Officer (PPO), Finance Officer, Budget Analyst and Coordinating Director. The GIZ team assigns individual user credentials to the members of the dLRev team and revenue collectors to use the system for their operations.

1. Hardware costs

2. Internet costs

3. Revenue collector training and revenue collection

The GIZ technical team visits the MMDA to provide user training to the dLRev-team for two or three days depending on their ability to grasp the operation of the system. The revenue collectors from those districts are also given a specific training on the distribution of bills (demand notices).

1. Printing of demand notices

Once an MMDA is fully setup, a new, very important and intensive phase of support begins. With printing of the demand notices (bills), and the distribution of bills, MMDA needs to change their practices of revenue management. To support the regional advisors in guiding MMDAs through this change management process, GIZ deploys consultants for several days to assist new MMDA using dLRev.

Distribution of costs over the intervention period, GHS

Activities	Y1	Y2	Y3	Y4
Uploading local plan to dLRev server	6			
Data collection	22,000	40	40	40
Uploading of new data/quality checks	6	7	7	7
Training of dLRev Management Team	79,200	67,900	70,400	72,900
Hardware costs	9,100			
Internet costs	1,500	1,200	1,200	1,200
Revenue collector training	12,200	11,300	11,300	11,300
Printing of demand notices	22,800	49,800	49,800	49,800
Total costs	146,900	130,200	132,700	135,200

Total discounted costs (8%) are GHS 488,600 for a single MMDA.

Benefits

The anticipated benefits of digitizing revenue mobilization and management are:

Reduction in the cost of data collection

The data collection process, the identification of business and property ratepayers, was completely manual and not comprehensive, given the lack of geospatial data and addressing. The annual activity lasted approximately 120 man-days per 10,000 parcels. Providing a mobile app, the dLRev management software has reduced this to 20 man-days per 10,000 parcels. The data collectors now undergo training and use tablets to upload new information immediately to the local map.

Efficiency gains from issuing demand notices

The efficiency gains in issuing demand notices emanates from the faster printing and distribution of bills and was measured by the number of man-days it takes revenue collectors to distribute the bills, which decreased from 25 days to 2 for the municipality. The municipalities in the sample ranged from 15 to as many as 80 days to issue demand notices, prior to dLRev implementation.

Efficiency gains from paying collectors

There was also a reduction in the time it takes to prepare the paperwork to pay revenue collectors, which ranged from 20 to 80 days (weighted average 40) in the municipalities prior to dLRev and dropped to a range of 10 to 20 days (weighted average 17). In the model MMDA, it is an efficiency gain of 23 days for the municipality.

Increase in revenues

This benefit relates to better coverage of the tax base; that is, an increase in the number of ratepayers and an increase in the rate of compliance. The weighted average growth rate of revenue collected in the year after implementation of dLRev is 54%.

Benefits not captured

There are a few benefits that could not be readily measured at the time of this analysis. The widening of the tax base is one source of the increase in revenues. That is, because of the lack of mapping and addressing, there were ratepayers who were unknown to the municipality and have now been captured by the geodatabase. There is however a subgroup of pre-existing registered ratepayers, who, even after having received demand notices, failed to pay. This has been estimated to be as high as 30% (Dzansi et al., 2018). In order to identify this group, an accounting of the number of demand notices sent pre-intervention against the number of compliant ratepayers would have been needed.

Another benefit that has not been captured is the reduction in the time to process payments. The average time of 2 days remains the same. Processing time is the time from the moment when the revenue (e.g. property rate) has been collected, until the payment has been made into the MMDA's bank account (including accounting / registration at the Finance department,). As the revenue collection process in all MMDAs was still "conventional" in 2019, there was no change in the processing time. With the introduction of fully automatized mobile / instant payments into the transaction management of dLRev in 2020, a significant reduction of processing time is expected. Automatizing the transaction management process will further reduce potential leakages.

Distribution of benefits over intervention period, GHS

Benefits	Y1	Y2	Y3	Y4
Reduction, data collection cost		100	100	100
Efficiency gains, issuing demand notices		1,100	1,200	1,200
Efficiency gains, paying collectors		12,400	12,400	12,400
Increase in revenues		1,648,600	1,648,600	1,648,600
Total benefits		1,667,100	1,667,300	1,667,600

Total discounted benefits (8%) are GHS 4.3 million, with the vast majority of the benefit coming from increased revenues.

BCR Summary Table

Interventions	Benefit	Cost	BCR	Quality of Evidence
Digitized tax collection for a single MMDA	4,296,800	488,600	8.8	Strong

Notes: All figures assume an 8% discount rate

1. Introduction

A key indicator of successful decentralization processes is the ability of local governments to generate their own income. Although Ghana's fiscal decentralization framework allows for fiscal autonomy of local governments, the Metropolitan, Municipal and District Assemblies (MMDAs) still depend principally on central government transfers to fund their development. Despite this jurisdictional advantage, MMDAs only generate, on average, approximately 20 percent of their total budget from their own sources, known as Internally Generated Funds (IGF).

A typical case is that of the Asante Akim South District Assembly, as presented by Akudugu and Pepprah (2013). From 2001 to 2004, the period under study, IGF did not surpass 25% of total revenue. They identified poor collection methods as one of the reasons for the low level of internally generated funds; i.e. the misapplication of revenue tickets; the use of one receipt book to issue tickets to different revenue sources such as market stores, lorry parks, drinking bars; the irregular issuing of revenue tickets, sometimes monthly, other times, daily. The reporting system was also identified as contributing to the fluctuations of the revenue sources: revenue collectors committed errors in reporting, and they were also not compelled to report regularly. Related to the poor reporting system was the high level of illiteracy among the commission collectors.

Local government in Ghana is made up of three types of MMDA (Metropolitan, Municipal and District Assemblies): (a) District Assemblies (DAs), minimum population of 75,000 people (b) Municipal Assemblies (MAs), 95,000 people and (c) Metropolitan Assemblies (Metros), 250,000 people. In total, there are currently 260 MMDAs: 145 DAs, 109 MAs and 6 Metros. MMDAs have important planning and coordination functions, as well as being responsible for infrastructure and service delivery in key sectors: waste management, transport, roads, housing, disaster prevention, births and deaths, among others (World Bank, 2018).

Digital products and software can help local government to improve its revenue collection processes and boost IGF. This paper investigates the costs and benefits of digitizing such processes for a representative, 'model' MMDA. The data used for this analysis comes from a GIZ-implemented program that assisted MMDAs in overhauling the collection process that led to efficiency improvements and a large 54% jump in revenue. The analysis indicates that over four years, the costs of the intervention are around GHS 488,600, for a

representative MMDA, most of which comes with the installation of a revenue management team and the printing of demand notices for newly mapped properties. The cost is more than offset by an estimated benefit of GHS 4.3 million. Most of the benefit is the increase in legally paid rates and fees. The benefit-cost ratio is estimated at 9.

1.1 Historical overview of Ghana's experience with ICT in public administration

Osei Kojo (2017) gives a thorough recounting of the Government of Ghana's experiences with integrating information technology in public service provision. In 2000, the then Ministry of Communications and Technology was established to champion the e-government revolution in Ghana, by developing a robust telecommunications infrastructure and providing e-government services. One early initiative was the Ghana Community Network (GCNet) system, launched in 2000 as part of a larger plan to establish the country as a transit hub for landlocked countries in West Africa. It entailed among other things the digitization of port operations and eventually spread to other public services like the Computerized School Selection and Placement System (CSSPS). The Ghana e-government strategy was released in 2005, and, in 2006, all e-government efforts were merged under the e-Ghana project, which focused on three components: creating an overall enabling environment; attracting IT-enabled services, such as Business Process Outsourcing, promoting the development of local ICT business; achieving greater efficiency, transparency, and accountability in selected government ministries, department, and agencies. To streamline implementation of e-government projects, government established the Ghana Information, Communication and Technological Directorate, which metamorphosed into the National Information Technology Agency in 2009, as the national e-government implementation and coordination body.

The adoption and implementation of e-government was expected to improve the quality of public service in Ghana. Despite these efforts, of the 260 MMDAs in Ghana, only 33% have an electronic database for either businesses or properties; 17.8% use software to send bills/demand notices; 16% use a software for maintaining and updating valuation lists and 41% use a software for maintaining and updating street names and addresses (Dzansi et al., 2018). On average, 21.4% of total revenues in 2016 were internally generated by MMDAs (World Bank, 2018).

1.1.1 Digitization efforts at local government level

There have been several efforts in recent years to marry information technology with revenue collection and service delivery. Examples include:

- In 2013, the Accra Metropolitan Assembly extended the use of Point of Sale devices to cover all revenue collection in all sections of the AMA. They experienced a 10.3% increase in IGF in the following financial year (Adu et al, 2020).

- Cangiano et al. (2017) discuss Ghana's e-Zwich biometric payment system, which facilitates digital payments without full or reliable internet connectivity. It was implemented to address both the existence of government ghost workers and the prevalence of cash-based payments across the economy. In its rollout, the service was extended to large employers, and it was anticipated that it would strengthen tax administration by ensuring that a greater number of formal sector employees would see their wages and salaries being paid into digital accounts. E-Zwich has been a mixed success. Transactions went up from 2.2 million in 2014 to 5.3 million in 2016 as its usage increased to pay beneficiaries of public programs, but initial plans to pay all public salaries have encountered opposition, particularly from Ghana's public sector unions.

- The use of GIS to build a geodatabase and cartographic visualization of existing water and sanitation facilities in Aboabo, Kumasi, Ghana. The outputs were used to develop cartographic and mathematical models to analyse, predict and visualize the effect of population increase on public water and sewage facilities in this densely populated area. This provides an efficient and effective means of mitigating water-borne diseases and informs planners and assembly members of the effects of increasing population on public facilities (Quaye-Ballard and Ru, 2010).

- The Port of Tema receives an average of over 1,650 vessels calls per year. Import clearance at the port involves interactions between port authorities, clearing agents (working on behalf of the importer) and customs, and these processes were largely manual. The Ghana Community Network Services Limited (GCNet), is a joint venture (PPP) to provide e-Solutions to the Government, developed and deployed the Ghana Customs Management System (GCMS) for clearing of goods at ports.

In collaboration with the Customs Division of the Ghana Revenue Authority (GRA), GCNet deployed the paperless clearing system at the Tema Port. Prior to digitalization, import clearance was time-consuming, burdensome and prone to petty and arbitrary charges. The system now ensures a secure and seamless electronic process of documents to promote paperless transactions to deepen the Single Window concept, reducing clearance time from three weeks to at most three days (Amankwah-Sarfo et al., 2018).

1.2 GIZ support to decentralization reforms

The efficient taxation of properties within their respective jurisdictions is a huge untapped potential to increase local governments' IGF. Between 2014 and 2016, the GIZ implemented Support for Decentralization Reforms (SfDR) programme supported 40 partner districts in all regions of Ghana in cooperation with the Ministry of Local Governance and Rural Development (MLGRD) to implement the national Street Naming and Property Addressing (SNPA) guidelines to facilitate the establishment of a cadastre system and help MMDAs to generate their own funds through the use of the dLRev software. Between 2016 and 2019, the SfDR programme with additional funds from USAID and Global Affairs Canada (GAC) continued the support with additional 20 MMDAs. In 2019, with support from Switzerland, the GIZ implemented Good Financial Governance programme, which supported 27 additional districts in adopting the dLRev software. 3 MMDAS introduced dLRev without support.

Since September 2019, the GIZ implemented Governance for Inclusive Development (GovID) programme continues the support for 90 MMDAs to improve their domestic revenue with the dLRev software. The Government of Ghana states in the 2020 National Budget that 83 MMDAs will introduce the dLRev software. Currently, 52 MMDAs are preparing their bills for property rates and business operating permits with dLRev, whilst 38 are at various stages of the SNPA and data collection processes.

In January 2020, the GovID programme and the Copenhagen Consensus Center agreed to conduct a cost-benefit analysis of the deployment of the dLRev revenue management software in 9 MMDAs in Ghana, which used the dLRev software in the fiscal year 2019.

These are:

Central Region:	Agona West Municipal Assembly, Cape Coast Metropolitan Assembly, Komenda-Edina-Eguafo-Abirem (KEEA) Municipal Assembly
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Greater Accra:	Adenta Municipal Assembly, Ga South Municipal Assembly
Western Region:	Bibiani-Anhwiaso-Bekwai District Assembly, Shama District Assembly, Prestea Huni - Valley District Assembly

1.3 Domestic revenue collection prior to the introduction of the dLRev software

In line with Sections 137-169 of the Local Governance Act (LGA) 2016 (Act 936) amongst others (such as financial memoranda), the items that local governments were - and still are - able to levy are grouped into six main areas, Rates, Lands, Fees and Fines, Business Operating Permits (BOP), Rent and Investment.

Table 1: Sources of revenue, available to MMDAs, by type

Revenue Source	Description
Rates	Basic rate levied on individuals above 18 years of age, property rate on immovable properties, and rates on cattle and bicycles, (prevalent in the Northern regions)
Lands	Revenues associated with land use involving natural resource exploitation, for examples stool lands, building permits, royalties, concessions and cemetery fees.
Fees and Fines	Fees are charges for public services or places, e.g. market tolls, fees for marriages and divorces, waste management services, slaughterhouses, on-street parking and public toilets. Fines are penalties paid for non-compliance with assembly by-laws e.g. stray animals, parking restrictions and floating building regulations.
Business Operating Permits (BOP)	Levies on businesses operating in the local government jurisdiction. The range of items depends on the extent of economic activity sophistication within a district.
Rent	Charges for use of MMDA owned assets, e.g. residential accommodation, market stores and stalls, classrooms, lorry parks and billboards.
Investment	Income in the form of interests, dividends and properties acquired by the MMDA for hiring purposes.

Already before the introduction of dLRev, most assemblies issued demand notices to clients for the payment of the rates, rents and other bills. The majority of these were not computerised but hand-written bills. As most buildings were not numbered, even the distribution of the bills posed a major challenge to the MMDA's revenue collectors. In some MMDAs, the billing was decentralised; that is, sub-districts printed their own bills and issued them to taxpayers. This caused a lot of leakages.

The MMDAs used a mix of commissioned collectors, salaried collectors, and private collectors to collect revenue from their clients.

- Salaried collectors are on government payroll,

- Commissioned collectors get a commission, commonly around 20% of the takings,

- Private collectors are usually companies given the responsibility to collect from institutions and companies for a commission of commonly 30% of the takings, e.g. from telecom companies, financial institutions and filling stations. Some MMDAs also go into partnership with stakeholders like the Ghana Private Road Transport Union to collect fees from their members on their behalf for a fee.

Table 2. Description of billing and administration of revenue collection, by MMDA under analysis

MMDA	Billing approach	Administration of Revenue Collection
Suhum	Hand-written bills and demand notices	23 revenue collectors: 12 salaried collectors and 11 commissioned Collectors (20% commission). Institutional collection: private company (30 % commission)
Adenta	N/A	N/A
Ga South	Hand-written bills and demand notices	48 collectors: 19 salaried collectors and 29 commissioned collectors.
Agona West	Hand-written bills and demand notices	56 collectors: 26 salaried collectors and 30 commissioned collectors. Institutional collection: 2 private companies (30% commission).
Cape Coast	Hand-written bills and demand notices	33 collectors: 15 salaried collectors and 18 commissioned collectors. Institutional collection by private company (25% commission years 1-2; 20% years 3-4, 15% fifth year and beyond)
K.E.E.A.	Property rate bills generated electronically, BOP manually	37 collectors: 17 salaried (management of the GCR) and 20 Commissioned Collectors (responsible for ticketing). Institutional collection: private company (30% commission).
Bibiani/Anhwiaso/Bekwai	Hand-written bills and demand notices	16 collectors: 5 salaried collectors and 11 commissioned collectors.
Prestea Huni - Valley	Hand-written bills and demand notices	18 collectors: 8 salaried collectors and 10 commissioned collectors.
Shama	Hand-written bills and demand notices	17 collectors: 1 salaried collector and 16 commissioned collectors.

Source: GOPA Revenue Landscape Assessment (2013) and SfDR Baseline Survey (2016).
N/A: not available

The use of information technology by private companies was already a common practice around 2012. For example, the Agona West District Assembly introduced technology to facilitate the billing, and collection of revenue, via Optimum Revenue Solutions. To enhance their work, commissioned collectors were equipped with handheld devices to be used in issuing tickets to their clients. It was assumed that the use of technology would reduce leakages and promote accountability. However, the low level of education among revenue collectors hampered the effective use of the device.

There have been regulatory and monitoring challenges associated with the practice of outsourcing revenue collection. MMDAs have raised concerns about the proprietary nature of the data collected, the extent to which they can monitor and sanction service providers, the modalities for procurement, among others.

Far from rewarding, where revenue collection has been outsourced, mutual revenue targets were not met, and questions were raised about the ownership of the revenue data. In 2013, Cape Coast faced a major challenge with regards to the database is its ownership. The database was built as a public-private partnership between the Assembly and a private company (RevNet). Alarmingly, the municipality did not have access to the database and the data used by RevNet. As a result, updating of the data was not possible, with the municipality having no back-up of the database.

Finally, there were (and still are) no documented policies and procedures in place to guide the MMDA management in the outsourcing process, including the selection of revenue sources to be outsourced and those to be collected "in-house" by the MMDA.

Revenue services outsourced to the private companies comprised a wide range of sources including property rates, business operating licenses, lorry park and market tolls. In addition to collection, outsourced revenue companies were engaged in other related functions such as data collection in respect of ratepayers and rate payer database management. The MMDAs used various processes in contracting the services of outsourced revenue collectors. The main ones included sole sourcing, limited invitation, national competitive tendering and "unsolicited" proposals. The general procurement and tendering processes in most of the cases appeared to be shrouded in secrecy.

In a rather large survey by Dzansi et al. (2018), the common reasons most MMDAs gave for the outsourcing of revenue collection were proximity of external collectors to ratepayers; external collectors had more information about the area, and the lack of requisite skill and personnel internally. Out of the 189 MMDAs, who hire the services of external collectors to aid in internal revenue mobilisation, approximately 35 percent of them indicated they engage external collectors due to the nearness of external collectors to ratepayers, the comparative advantage external collectors has over information of the area and lastly the lack of requisite personnel and skill of salaried revenue collectors. Further reasons were less resistance from ratepayers when external collectors are used, better accountability from external collectors and concerns of leakages by salaried collectors.

2. The introduction and operationalization of the dLRev software

2.1 Introduction of dLRev software

The dLRev is a web-based application with a digital address map (local plan) of a district produced using a geographic information system. The local plan has a spatial database, and with a corresponding fiscal cadastre of revenue items, the software is used to manage data, billing, and collection. The software is currently set-up for property rates and business operating permits, but also provides for other revenue items namely rents (district infrastructure given for public use such as market sheds, stalls and stores), fees (for use of market grounds and lorry parks), fines (for flouting by-laws of the local authority) and investment (investment in securities). A historical overview of the development of the dLRev software can be found in Appendix 1.

2.1.1 Preconditions to using the dLRev software

Spatial databases/Street Naming and Property Addressing (SNPA)

Ghana adopted the Street Naming and Property Addressing (SNPA) Policy in 2012. Since then, all MMDAS in Ghana are expected to provide street names and house numbers to all settlements in their jurisdiction, and even more, develop digital address maps and local plans using a software called Land Use and Planning Management Information System (LUPMIS).

Technically, the link between a parcel of land and its revenue data is the Unique Parcel Number (UPN). The number is assigned on the address map at the end of the Street Naming and Property Addressing (SNPA) process. Completing the SNPA process is a prerequisite for the use of dLRev because districts in Ghana do not have accurate address maps, or often none for settlements in their jurisdiction. Thus, for many settlements, street names and house numbers do not exist.

In the absence of an accurate address map or local plan, the SNPA process begins with the support of the inauguration of a Street Addressing Team (SAT) and the provision of spatial data, either as a satellite image (produced by satellite) or as an ortho-photo (captured by a plane) or captured locally using a drone. Satellite images often have issues with cloud coverage, which makes digitization difficult but are slightly cheaper than the photos. Also, images which are current may be more expensive than archived ones, which is one reason

why many districts did not start the SNPA process even though the policy was already adopted in 2012. Drone photos often show distortions due to the lower altitude at which they are captured. In many districts therefore, a mix of spatial data is used to create digital local plans.

Valuation of Properties

For official rating purposes, MMDAs require to keep their valuation rolls up to date. This is important for the collection of the property rate, as the rate depends on the value of the property, in addition to registering the owners and the type of use. The sole legal mandate for valuation for official rating purposes lies with the Lands Valuation Division (LVD) of the Lands Commission. The lack of assessment of the property values has led to a situation where although it constitutes huge revenue potential, it remains one of the least exploited.

LVD has introduced a digital approach to valuation which reduces the cost by about half and the duration from six months to three. The output of a valuation exercise is called the valuation roll. With the digital approach, valuation becomes more sustainable, since it eliminates the execution of revaluation exercises for entire settlements as has been done in the past, to only executing valuation for new developments and executing mass appraisals as and when required.

GIZ has collaborated with LVD to address the first critical challenge of its partner districts. This is where SNPA spatial database is available and a digital valuation roll has also been prepared but are not linked as databases. A script has been prepared for LVD to merge the two data sets to produce a common geographical reference for use by the dLRev software. The development of the script was funded in 2018, when partner districts such as Tema Metropolitan Assembly, Ga South Municipal Assembly and Ga East Municipal Assembly had executed valuation from a pilot initiative by LVD. This effort by SfDR now affords to produce a valuation list linked to the geographical reference of the SNPA's spatial database, which is the UPN. This effort does not only make it easy for districts to use the valuation roll for their IGF operations but presents the opportunity for the valuation data to be used for rental tax by the Ghana Revenue Authority.

However, with the limited coverage of valuation across the country, setting up a valuation cadastre requires labour and cost intensive investment. Therefore, valuation as important as it is to revenue generation, most MMDAs are unable to fund the cost of valuing their properties for property rate collection. Based on the initial pilot executed by LVD in some

selected partner districts and the revenue return, SfDR started intense discussions with LVD and MLGRD to explore potential support for partner districts in the valuation of properties. Based on these discussions, SfDR negotiated an agreement with LVD and MLGRD to support the 49 MMDAs performing best in the introduction of dLRev with valuation in 2020.

Fixing Resolution

The Fee Fixing Guideline was developed by the Ministry of Local Government and Rural Development in 2017 as an outcome of the collaboration between the ministry and the GIZ-implemented Support for Decentralisation Reforms Programme (SfDR). Prior to the publication of the guideline, items, fees and procedures were not harmonised. Furthermore, not all FFRs were gazetted regularly. According to the GOPA Revenue Landscape Assessment (2013), only 6 out of 11 assessed assemblies had gazetted their FFRs for the 2011 and 2012 financial years (including Suhum and Agona West). The cost of gazetting ranged from GHC 1,500 to GHC 6,000, and the time it took to gazette the FFR ranged from two weeks to several months, depending on the willingness of the assembly to follow up. The recognition that gazetting the FFR allows the assemblies to take legal action against defaulters and to have legal backing to charge the levies were the motivating factors.

Tracking system, enforcement, participation

The assemblies used a mix of methods to track the billing and payment processes. This includes surprise checks on the collections in their electoral areas. Others have adopted zoning to track bills distribution and collection in larger communities to ensure that specific collectors are held responsible for IGF issues in those locations. However, as earlier mentioned the non-availability of the data has rendered tracking weak.

2.1.2 dLRev Implementation process

The following is an outline of the implementation process:

Uploading of local plan

For the digitization exercise, districts use the Land Use Planning and Management Information System (LUPMIS) which has Map-Maker Pro and Quantum GIS as tools for digitizing ortho-photos and satellite images. LUPMIS is an official tool of Ghana's Land Use and Spatial Planning Authority (LUSPA) for development and management of spatial plans. Post-acquisition of the satellite images and ortho-photos, support was provided to the partner districts during the ground-truthing exercise, which involved verification of the

imagery and the digitised local plan on the ground to establish parcel, access boundaries and entry ways. Once the local plan was digitized, street names and house numbers were assigned and Unique Parcel Number (UPN) were generated for the parcels using the LUPMIS software.

Data Collection on businesses and properties

After the successful upload of the local plan onto the dLRev server, the next step is to prepare for the data collection. The critical output of the data collection is to develop a fiscal cadastre for businesses (owner, type, activity description and location of business) and properties (owner, type, location and number of rooms of the building) using the spatial database developed during the SNPA exercise.

Until 2017, the data collection on businesses and properties was organised as a manual process, that is paper-based questionnaires were hand-filled in the field and digitised using professional document scanners. This process was prone to errors. For example, questionnaires had a unique barcode to aid optical character recognition scanning. But often, MMDAs photocopied the questionnaires, which made scanning impossible. Manual data entry often led to typographical errors and long periods of processing.

As primary data collection led often to delays, districts were supported in the interim in 2018 to access existing secondary data to speed up the process of setting up fiscal cadastre for businesses using the Integrated Business Establishment Survey (IBES) Registers developed by the Ghana Statistical Service (GSS) or process legacy data on properties to develop fiscal cadastre for properties. However, linking the secondary data to the UPNs turned out to be a time-consuming process.

Following a series of testing of the Data Collection Application (App), its full-scale use started in mid-2018. MMDAs with GIS-based local plans can have it uploaded on the dLRev software, receive user credentials for their field staff and gather relevant fiscal data for use directly on dLRev. Data is uploaded first on the test server for quality control, before it is uploaded to the dLRev production server. To accelerate the data collection, GIZ procured 160 tablets provided as a pool for data collection under the supervision of the programme's regional advisors. Alternatively, mobile phones or other mobile devices can be used for the data collection.

The development of a Data Collection Application (App) as part of the dLRev software established the basis for using a digital approach to address the challenges that have confronted data gathering in the past. The introduction of the Data Collection App has led to a significant acceleration of the data collection process from the previous questionnaires and scanning based approach which took about four months to complete for 10,000 parcels to about 20 days for the same number of parcels, using less fieldworkers. This marked reduction in the time spent in managing the data collection exercise has been due to the elimination of the testing of printed questionnaires, scanning and editing of scanned data, which slowed down the processes of setting up the fiscal cadastre in the past.

Fee Fixing

The data collection is aided by the fee-fixing module introduced in the dLRev in 2018 using the national guidelines launched in 2017. To ensure that districts are well prepared to use the fee fixing module, support was provided to the partner districts to reformat their fee-fixing resolution (price list for local revenue items) for dLRev upload.

Combined with the Data Collection App, more districts can set-up their fiscal cadastre within a shorter period once they developed their local plan and reformat their fee fixing items in line with the national Fee Fixing Guidelines.

Upload on production server

Once all data is uploaded on the test server in the form the local plan, fiscal data (business and property) and amounts to be charged, it is quality checked and subsequently transferred to the production server.

There are functionalities to upload the signature of the authorizing officer and the logo of the district on the production server. With all these done, an MMDA is set-up and ready to print bills with dLRev.

The Revenue Collection App has been developed for android devices. Development of the Revenue Collection App started in 2018 and is ready for use since 2019. It allows revenue collectors to capture revenues on the spot. It can work fully offline and therefore enables revenue collection in areas with poor internet coverage.

2.1.3 Current status of districts on dLRev

Sixty of the 90 partner districts have their spatial data set-up. Of the 60, a total of 49 MMDAs has formatted their Fee Fixing Resolution unto the system. In addition, 45 of the

60 MMDAs have businesses to charge rates and 49 have properties to collect property rates registered in dLRev.

Table 3 Status of MMDAs participating in the GIZ support programme

Status of districts in the set-up of dLRev processes	No. of Districts
Districts with spatial data	60
Districts with Fee Fixing information on Business	49
Districts with Fee Fixing information for Properties	49
Districts with registered businesses for collection of BOP	45
Districts with registered properties for collection of rates	47

Source: dLRev software, February 2020

During 2019, the following MMDAs were already using dLRev. Brief profiles of each MMDA can be found in Appendix 2.

Table 4 MMDAs currently running the dLRev management software

Districts using dLRev in 2019	
Central	Agona West Municipal Assembly
Central	Cape Coast Metropolitan Assembly
Central	Komenda-Edina-Eguafo-Abirem Municipal Assembly
Eastern	Suhum Municipal Assembly
Greater Accra	Adenta Municipal Assembly
Greater Accra	Ga South Municipal Assembly
Western	Bibiani-Anhwiaso-Bewai District Assembly
Western	Shama District Assembly
Western	Prestea Huni - Valley District Assembly

3 Calculation of Costs and Benefits

3.1 Description of intervention

Nine (9) municipalities have been using the dLRev software, for both properties and businesses. The intervention proposed here is to use the cost and revenue data obtained from those municipalities in order to estimate the costs and benefits of implementing the dLRev software in a model MMDA.

The model MMDA is essentially a weighted average of the contributing municipalities; the weight based on their respective population sizes of the total population served throughout the sample, with the assumption that the number of properties and businesses are proportional to population.

The parameters used for the model MMDA are as follows:

Table 5 Model MMDA parameters

Parameter	Value
No., data collectors	20
Annual revenue, pre-dLRev, GHS million	3.0
Annual revenue, post-dLRev, GHS million	4.7
Post intervention boost to revenue (%)	54.5%
No., properties	9956

The intervention is analysed over four years: the first year consisting of implementation activities (i.e. acquisition of equipment and trainings) and three subsequent years of revenue collection. After which, it is assumed some hardware would require maintenance or replacement.

3.2 Costs

The dLRev is an open-source data tracking and revenue collection software and is free to use. As noted above, there are several pre-conditions to be satisfied in order to qualify for the dLRev software. These pre-conditions are part of the regulatory framework that guide

municipality operations, and thus are not included among the marginal costs of integrating and operationalizing the software. They include aerial imagery for spatial databases, street-naming and property addressing, property valuation, and fee-fixing.

The cost components for the implementation of the dLRev management software are listed below, by activity:

- Uploading local plan to dLRev server

- Data collection

To keep the cost of data collection at a minimum, data collection teams usually include National Service personnel, Nation Builders Corps (NABCO) and salaried district assembly staff. This process is facilitated by the GIZ programme's regional advisors. A training for the fieldworkers is either executed by GIZ staff or consultants. During the training, the district teams (fieldworkers and district staff) are provided with user credentials to use the Data Collection App for data collection.

- Uploading of new data/quality checks

- Training of dLRev Management Team

This team comprises a Management Information System (MIS) Officer, Physical Planning Officer (PPO), Finance Officer, Budget Analyst and Coordinating Director. The GIZ team assigns individual user credentials to the members of the dLRev team and revenue collectors to use the system for their operations.

- Hardware costs

- Internet costs

- Revenue collector training and revenue collection

Most MMDAs were already engaged in revenue collection, prior to dLRev implementation. In general, the vast majority of collectors working on commission will be retained, as they are considered indispensable. The weighted average number of commissioned collectors among the participating municipalities was estimated to be 22, but the expenses associated with their wage bill is considered part of the counterfactual. Furthermore, it is assumed here that the same number of revenue collectors will be needed,

at least in the short-run, to undertake what was previously a sub-optimal collection from businesses and properties.

Regarding technical accompaniment, the GIZ technical team visits the MMDA to provide user training to the dLRev-team for two or three days depending on their ability to grasp the operation of the system. The revenue collectors from those districts are also given a specific training on the distribution of bills (demand notices).

- Printing of demand notices

Once an MMDA is fully set up, a new, very important and intensive phase of support begins. With printing of the demand notices (bills), and the distribution of bills, MMDA needs to change their practices of revenue management. To support the regional advisors in guiding MMDAs through this change management process, GIZ deploys consultants for several days to assist new MMDA using dLRev.

Table 6 Itemized costs for the set-up and use of dLRev

Item	Description	Cost
Software for digitization	Q-GIS and LUPMIS are both free of charge	Already available in absence of intervention and marginal costs assumed to be negligible
Hardware for digitization	Usually available at the Physical planning department	Already available in absence of intervention and marginal costs assumed to be negligible
Hardware for data collection	Tablets with internet connectivity and an internet browser. Smart phones may be used as well.	Optional: 10-20 tablets for 600 GHS each are enough for a small team
Internet (bandwidth) for data collection	Internet bundle for use with tablet / smartphone	GHS 10 for a week; averagely use 2-4 weeks for data collection
Hardware for dLRev use	dLRev is browser based and can be operated from any computer with browser and internet access. However, a dedicated workstation is recommended.	Optional: 1 workstation per 5,000 properties / businesses
Internet (hardware) for dLRev Use	Many MMDAs do not have internet broadband connection. Therefore, purchase of a dedicated MiFi is recommended	MiFi: GHS 200 (Vodafone) Turbo Net: GHS 300 (MTN)
Internet (bandwidth) for dLRev Use	Internet bundle for use with MiFi	100 GHS / month (if data is used solely for dLRev)
Hardware for revenue collection	Tablets / POS devices. One device per revenue collector.	Optional: 10-20 tablets for 600 GHS each are enough for a small team
Internet for dLRev use	Internet bundle for use with tablet / smartphone	GHS 10 per week

The moment during which a cost is incurred throughout the four-year cycle depends on the nature of the cost itself. The one-off costs include the action of uploading the initial map to the dLRev server and the purchase of computing and internet hardware. Some cost items require significant front-loaded investments, like the recruitment and training of data and revenue collectors, as well as the tablets they require to do their work. Finally, there are

recurrent costs, such as the salaries of the dLRev management team, internet connectivity, and the annual printing of demand notices.

Table 7 Distribution of costs over intervention period, GHS

Activities	Y1	Y2	Y3	Y4
Uploading local plan to dLRev server	6			
Data collection	22,000	40	40	40
Uploading of new data/quality checks	6	7	7	7
Training of dLRev Management Team	79,200	67,900	70,400	72,900
Hardware costs	9,100			
Internet costs	1,500	1,200	1,200	1,200
Revenue collector training	12,200	11,300	11,300	11,300
Printing of demand notices	22,800	49,800	49,800	49,800
Total costs	146,900	130,200	132,700	135,200

Total discounted costs (8%) are GHS 488,600.

3.3 Benefits

The anticipated benefits of digitizing revenue mobilization and management are:

3.3.1 Reduction in the cost of data collection

The data collection process, the identification of business and property ratepayers, was completely manual and not comprehensive, given the lack of geospatial data and addressing. The annual activity lasted approximately 120 man-days per 10,000 parcels. The dLRev management software has reduced this to 20 man-days per 10,000 parcels. The time savings of 100 man-days was valued based on the average annual wage of GHS 13,105. The data collectors now undergo training and use tablets to upload new information immediately to the local map.

3.3.2 Efficiency gains from issuing demand notices

The efficiency gains in issuing demand notices emanates from the faster printing and distribution of bills and was measured by the number of days it takes revenue collectors to distribute the bills, which decreased from 25 days to 2 for the municipality. The municipalities in the sample ranged from 15 to as many as 80 days, prior to dLRev

implementation. The 23 man-days saved were valued based on the average annual wage of GHS 13,105.

3.3.3 Efficiency gains from paying collectors

There was also a reduction in the time it takes to prepare the paperwork to pay revenue collectors, which ranged from 20 to 80 days (the weighted average is 40) in the municipalities prior to dLRev and dropped to a range of 10 to 20 days (weighted average is 17). In the model MMDA, it is an efficiency gain of 23 days for the municipality. With the municipality receiving its revenue earlier, the calculation of this benefit is based on the time value of money; that is, a daily interest rate of 0.02% based on a real annual interest rate of 7%.

3.3.4 Increase in revenues

This benefit refers to better coverage of the tax base; that is, an increase in the number of ratepayers and an increase in the compliance rate. The weighted average growth rate of revenue collected in the year after implementation of dLRev is 54%.

3.3.5 Benefits not captured

There are a few benefits that could not be readily measured at the time of this analysis. The widening of the tax base is one source of the increase in revenues. That is, because of the lack of mapping and addressing, there were ratepayers who were unknown to the municipality and have now been captured by the geodatabase. There is however a subgroup of pre-existing registered ratepayers, who, even after having received demand notices, failed to pay. This has been estimated to be as high as 30% (Dzansi et al., 2018). In order to identify this group, an accounting of the number of demand notices sent pre-intervention against the number of compliant ratepayers would have been needed.

Another benefit that has not been captured is the reduction in the time to process payments. The average time of 2 days remains the same. Processing time is the time from the moment when the revenue (e.g. property rate) has been collected, until the payment has been made into the MMDA's bank account (including accounting / registration at the Finance department,). As the revenue collection process in all MMDAs was still "conventional" in 2019, there was no change in the processing time. With the introduction of mobile / instant payments in 2020, a significant reduction of processing time is expected.

Table 8 Distribution of benefits over intervention period, GHS

Benefits	Y1	Y2	Y3	Y4
Reduction, data collection cost		100	100	100
Efficiency gains, issuing demand notices		1,100	1,200	1,200
Efficiency gains, paying collectors		12,400	12,400	12,400
Increase in revenues		1,648,600	1,648,600	1,648,600
Total benefits		1,667,100	1,667,300	1,667,600

Total discounted benefits (8%) are GHS 4.3 million.

3.4 Conclusion

Though the data coming from the 9 municipalities was incomplete; that is, not all reported fully on the various indicators, the analysis highlights the increase in productivity of municipal workers that comes simply from digitizing operations. The bulk of the benefits are derived from the reduction in the number of manual procedures and the time savings of clients (ratepayers).

In 2020, the dLRev software will be licensed and formally handed over to MLGRD. To assist the handover process, GIZ supports MLGRD in upgrading its IT Unit. An IT expert will be seconded to MLGRD to develop an IT concept including functional roles. Trainings of MLGRD staff will be conducted to prepare the team to serve as future helpdesk officers for dLRev.

There is a concern regarding sustainability of these newly adopted practices. All processes have been automated to enable a local system administrator at the district level to manage. Relevant user manuals for system administrators and other users at local level are being finalized to give users at all levels adequate information to manipulate the system with limited external guidance. When completed, the relevant actors will be trained to use the documents for the purpose.

4. BCR Summary Table

Interventions	Discount	Benefit	Cost	BCR	Quality of Evidence
dLRev software	5%	4,540,500	508,100	8.9	Strong
	8%	4,296,800	488,600	8.8	
	14%	3,870,900	454,500	8.5	

Notes: GHS

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6. Appendix 1 Overview: dLRev software development

The development of the dLRev software started back in 2013. During the 2014-16 phase of the SfDR programme, the software was tested as a beta-version in five USAID-supported LOGODEP districts in the Western Region in 2014/15. Since then, there have been considerable areas of enhancement of the software with two mobile applications.

Overview of dLRev enhancements and functionalities		
2017	dLRev hosted on Ghana's National IT Agency (NITA)	Setting-up dLRev on a national platform means that districts can be set-up without physically being present at the local level. Hence, there are no standalone operations with the system now.
2018	Data Collection App (mobile application)	This allows for the use of handheld devices for data collection operations which can be synced with the spatial database. it eliminates the paper-based and forms scanning approach which was fraught with operational challenges and errors.
2018	Fee Fixing upload and maintenance module	This provides districts with the option to upload their price list for fixing amounts to be charged in line with the national guidelines. It also provides functionalities for maintenance of the district list.
2019	Revenue Collection App (mobile application)	This provides for collections of local revenue from door-to-door and ultimately will eliminate the paper-based approach to revenue collections.
2019	Functionality for the upload of SHP file into the dLRev	The functionality allows districts to upload not only local plans developed with Mapmaker but with Quantum GIS (QGIS) or ArcGIS also.
2019	Reports	Reporting functions enhanced with registers for defaulters, payers, payments register to be used by the collectors, summary reports of payment by year, quarters, months and by items
2019	User Interface Security Features	New property and BOP details forms were developed which not expose some of the data to an experienced browser user
2019	Interface for collector zones	Allows printing by zones, analysis and the basis for GCR management
2019	Interface for all local revenue items operational	While property, BOP and rent are the main debit/credit accounts, the others, like fines, fees are just cashbook accounts that only accrue payments have also been provided for in dLRev
2019	Updated dLRev administration module	User management uses bcrypt encryption, local administrators enabled to manage local users, users can set own passwords. Additional admin modules developed for system configuration, district parameter, collector and GCR management

2019	GCR Management Module	For tracking of General Counterfoil Receipt (GCR) books allotted to collectors
2020	SMS solution for billing and collection	In order to use the SMS functionality, districts need to procure SMS credits from the SMS service provider.
2020	Mobile payments	Solution to enable MMDAs to receive mobile and credit card payments processed via Ghana Interbank Payment and Settlement Systems (GhIPSS) and automatically updated in dLRev

7. Appendix 2Short Profiles of the selected MMDAs

Adenta Municipal Assembly

The Adenta Municipal Assembly was created in 2008 and carved out from the Tema Municipal Assembly which is now Tema Metropolitan Assembly. It shares boundaries with Kpone Katamanso and Ashaiman Municipalities in the East, Ayawaso West, La Nkwantanang - Madina Municipality to the West, Kpone Katamanso Municipality to the north and Ledzokuku Krowor Municipality to the South. Adenta has a land area of about 123 square kilometres. The population is 106,423 based on the 2010 Population and Housing Census and a growth rate of 4.4%.

The Adenta Municipal Assembly received support in their IGF operations through the GIZ implemented Good Financial Governance (GfG) programme during 2019 and is now a partner MMDA of the Governance for inclusive development programme (GovID).

Adenta introduced the dLRev software in January 2019.

Ga South Municipal Assembly

The Ga South Municipal Assembly lies at the southwestern part of Accra and is one of the newly created assemblies in the Greater Accra Region. It was carved out as a separate municipality from the Ga South Municipal Assembly - today Weija Gbawe - in 2018. The municipality shares boundaries with the Accra Metropolitan Area and Ga Central Municipal to the Southeast, Akwapim South Districts to the Northeast, Ga West Municipal to the East, West Akim Municipal to the North, Awutu-Senya District to the West, Awutu-Senya East Municipal and Gomoa East District to the Southwest and the Gulf of Guinea to the South. It occupies an area of 385.23 square kilometres. The projected population for 2019 is 378,867 people.

Before the creation of the Ga South Municipal Assembly in 2018, the former "mother" district received support in their IGF operations through the GIZ implemented Support for Decentralisation Reforms (SfDR) programme since 2014. In 2019, Ga South was supported through the GfG programme and is now a partner MMDA of the Governance for Inclusive Development (GovID) programme.

Ga South set-up the dLRev software in November 2018 with first use in 2019.

Suhum Municipal Assembly

The Suhum Municipal Assembly is in the southern part of the Eastern Region and was created in 2012. It shares boundaries with the West Akim Municipality to the West, the Akwapim North and New Juaben Municipalities to the East, the Akwapim South District to the South and the East Akim Municipal to the North. It covers a land area of about 400 square kilometres and the population is 90,358 persons based on the 2010 population and housing census.

From 2014 to 2019, the Municipal Assembly received support from the GIZ implemented Support for Decentralisation Reforms (SfDR) programme. It is now a partner MMDA of the Governance for Inclusive Development (GovID) programme (2019-2022).

Suhum set-up the dLRev software in 2017 in the district capital Suhum and started using dLRev in the fiscal year 2018.

Komenda / Edina / Eguafo / Abirem Municipal Assembly

The Komenda/Edina/Eguafo/Abirem Municipal Assembly (KEEA) is in the Central Region of Ghana and was carved out of the Cape Coast Metropolis in 1988 and elevated to municipality status in 2008. It is bounded on the South by Gulf of Guinea, the East by the Cape Coast Metropolis, the North by the Twifo/Hemang/Lower Denkyira District and the West by the Mpohor/Wassa East District. It covers an area of 1,372.45 square kilometres with a population of 144,705 persons according to 2010 population and housing census.

From 2014 to 2019, the Municipal Assembly received support from the GIZ implemented Support for Decentralisation Reforms (SfDR) programme. It is now a partner MMDA of the Governance for Inclusive Development (GovID) programme (2019-2022).

KEEA started using the dLRev software in 2019 in several communities of the administrative capital Elmina. However, in other part, the Dutch VNG International pilots a different revenue collection system, Taxman, which is not based on spatial data and not aligned to Ghanaian policies.

Cape Coast Metropolitan Assembly

The Cape Coast Metropolitan Assembly (CCMA) was initially created as a district in 1988 and elevated to metropolitan status in 2007. It is bounded on the South by the Gulf of Guinea, West by the K.E.E.A. Municipal Assembly, East by the Abura/Asebu/Kwamankese District Assembly and North by the Twifo/Hemang/Lower Denkyira District Assembly. It covers an area of 122 square kilometres. The population is 186,159 persons, based in 169,894 in the 2010 Population and Housing Census and a growth rate of 1.8%.

From 2014 to 2019, the Municipal Assembly received support from the GIZ implemented Support for Decentralisation Reforms (SfDR) programme. It is now a partner MMDA of the Governance for Inclusive Development (GovID) programme (2019-2022).

CCMA started using the dLRev software in 2019 in the Southern part of Cape Coast. In the Northern part, the Dutch VNG International pilots a different revenue collection system.

Agona West Municipal Assembly

The Agona West Municipal Assembly is in the Eastern part of the Central Region. It was created out of the former Agona District Assembly in 2008. The administrative capital is Agona Swedru. It is bordered on the East and West by Effutu Municipal and Asikum/Odoben/Brakwa Districts Assemblies. On the Northeast, it is bordered by Akim West Municipal, Northwest by Brim-South District and on the South by Gomoa District. The area is 623 square kilometres. The projected population for 2019 is 149,014, based on 115,358 persons in the 2010 Population and Housing Census at a growth rate of 3.2%.

From 2014 to 2019, the Municipal Assembly received support from the GIZ implemented Support for Decentralisation Reforms (SfDR) programme. It is now a partner MMDA of the Governance for Inclusive Development (GovID) programme (2019-2022).

Agona West started using the dLRev software in 2018 in the district capital, Agona Swedru.

Bibiani/Anhwiaso/Bekwai Municipal Assembly

The Bibiani/Anhwiaso/Bekwai Municipal Assembly is in the Western Region and was created in 1988. It is bounded on the North by the Atwima Mponua District (Ashanti Region), South by the Wassa Amenfi District (Western Region), West by the Sefwi-Wiawso Municipal Assembly (Western Region) and East by the Upper Denkyira West (Central Region) and Amansie East Districts (Ashanti Region). It covers a total land area of 873 square kilometres and had a population of 123,272 in 2010 and with a growth rate of 1.8% per annum.

Bibiani was supported by LOGODEP, a three-year programme (2010-2013) benefiting 17 districts of the Western Region and funded by USAID. 2014 until 2019, the Municipal Assembly received support from the GIZ implemented Support for Decentralisation Reforms (SfDR) programme. It is now a partner MMDA of the Governance for Inclusive Development (GovID) programme (2019-2022).

Bibiani introduced the dLRev software in 2014 in the administrative capital Bibiani.

Shama Municipal Assembly

The Shama Municipal Assembly was carved out of the former Shama/Ahanta-East Metropolitan Assembly (SAEMA) in 2007 and inaugurated in 2008 with Shama as administrative capital. It is bordered to the West by the Sekondi-Takoradi Metropolis, to the East by the Komenda-Edina-Eguafo-Abrem Municipal in the Central Region, to the North by the Mpohor District and to the South by the Gulf of Guinea. It covers an area of 193.7 square kilometres with a population of 81,966 persons (GSS 2010 PHC).

Shama was supported by LOGODEP (2010-2013) and the SfDR programme (2014-2019). It is now a partner MMDA of the Governance for Inclusive Development (GovID) programme (2019-2022).

dLRev was introduced in 2014 in the Southern part of Shama. In the Northern part of the district capital, the Dutch VNG International pilots a different revenue collection system.

Prestea Huni - Valley Municipal Assembly

The Prestea Huni - Valley Municipal Assembly was carved out of the former Wassa West District in 2008 and elevated to Municipal status in 2017. The administrative capital is Bogoso. It shares boundaries with Wassa Amenfi East and Wassa Amenfi Central Districts in the North, Wassa Amenfi West Municipal to the West, Nzema East Municipal to the South West, Tarkwa-Nsuaem Municipality to the South, Mpohor and Wassa East Districts to the East and to the North East by Twifo-Atti/Morkwa District in the Central Region. It has a land area of 1,376 square kilometres. According to the 2010 Population and Housing Census, the population is 159,304 persons.

Prestea Huni - Valley was supported by LOGODEP (2010-2013) and the SfDR programme (2014-2019). It is now a partner MMDA of the GovID programme (2019-2022).

Prestea Huni - Valley introduced the dLRev software in 2014 in the district capital, Bogoso.

Valuation

MMDA	Type of Data (2013/2016)
Suhum	Property Valuation Roll 2010, Data on businesses in the municipality
Adenta	Property Valuation Roll 2010
Ga South	No database in place (rates of 1995)
Agona West	Property valuation roll in 2 of 6 zones
Cape Coast	Property Valuation Roll 2010
K.E.E.A.	No database in place (rates of 1995)
Bibiani/Anhwiaso/Bekwai	No database in place (rates of 1995)
Prestea Huni - Valley	No database in place (rates of 1995)
Shama	No database in place (rates of 1995)

Source: GOPA Revenue Landscape Assessment (2013) and SfDR Baseline Survey (2016)

GHANA
PRIORITIES

The Ghanaian economy has been growing swiftly, with remarkable GDP growth higher than five per cent for two years running. This robust growth means added pressure from special interest groups who demand more public spending on certain projects. But like every country, Ghana lacks the money to do everything that citizens would like. It has to prioritise between many worthy opportunities. What if economic science and data could cut through the noise from interest groups, and help the allocation of additional money, to improve the budgeting process and ensure that each cedi can do even more for Ghana? With limited resources and time, it is crucial that focus is informed by what will do the most good for each cedi spent. The Ghana Priorities project will work with stakeholders across the country to find, analyze, rank and disseminate the best solutions for the country.

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