Unlocking Fiscal Capacity: Experimental Evidence from Sierra Leone

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Abstract

Through the digitization of tax systems, recent tax reforms promised substantial revenue gains for local governments across low-income settings. Yet, despite important benefits, these reforms have mostly failed to curb widespread tax evasion, thus failing short of their newly created revenue potential. We conduct a field experiment within a property tax reform in Sierra Leone to test two hypotheses on converting digital tax tools into compliance. First, rather than marginally boosting general perceptions of enforcement among taxpayers, governments must implement targeted tax enforcement itself. Second, enforcement can be complemented by leveraging local social structures that shape taxpayers' behavior. We test these through two interventions. The first is an enforcement program involving enforcement notices, court hearings chaired by traditional chiefs, and penalties implemented by the local government. The second is a public campaign where religious authorities motivated taxpayers to comply with the tax through direct door-to-door visits using normative appeals and references to religious scripture. Each treatment is allocated following a factorial experiment design and we exploit variation in geographic treatment saturation to evaluate spillovers. We find that enforcement action increases the compliance rate by 53.4 p.p. This is 16 times the average effect in the main literature on compliance. The visits by religious leaders increased compliance by 4.9 p.p. Both interventions cause spillovers from treated property owners towards their neighbors. Finally, survey data on over 6,000 property owners suggests substantive improvements in taxpayers perceived credibility of enforcement and peer compliance, willingness to comply with the tax, and legitimacy of compliance.

1 Introduction

Local governments in lower-income settings often struggle to achieve high tax compliance. This is a fundamental obstacle to building well-functioning tax systems that promote state capacity. Mechanically, without sufficient revenues, local governments cannot invest in public goods nor sustain development (**besley˙taxation˙2013**). Beyond this, high evasion inhibits the equitable allocation of the tax burden of financing the state, essentially redistributing wealth from compliant taxpayers to free-riders. Finally, a lack of dependence of the government on locally-raised revenues weakens the ability of their respective societies to hold those governments accountable (**jibao˙political˙2015**; **weigel˙participation˙2020**). Thus, governments must craft reforms to boost compliance while minimizing social backlash and preserving the legitimacy of the tax system.

Current policy and academic literature does not provide a straightforward prescription on how to substantively increase tax compliance. Over the past decade, tax-digitization reforms have spread across developing economies, promising to modernize fiscal administration and strengthen compliance through different channels (**gadenne˙tax˙2017**; **ali˙using˙2020**; **dzansi˙technology˙2022**; **kapon˙using˙2024**; **knebelmann˙discretion˙2024**). First, better revenue management, fewer leakages, and lower compliance costs enhance state legitimacy, boosting compliance (**slemrod˙tax˙2019**; **bellon˙digitalization˙2022**; **okunogbe˙technology˙20**
Second, better monitoring of payments should increase the perceived probability of detection of evasion and of penalties, again increasing compliance (**pomeranz˙no˙2015**). Yet, from a conceptual standpoint, technology is an enabler, not a substitute for fiscal institutions. In practice, despite the benefits promised by technological reforms, local governments in lower-income settings continue to suffer from high rates of evasion (**okunogbe˙increasing˙2023**). Durable state capacity requires the integration of information systems with credible, rules-based enforcement and mechanisms that sustain citizen consent.

This paper examines the social and institutional drivers of tax compliance and how local governments can leverage them to convert past reform gains into actual compliance. We embed a city-wide field experiment involving 37.5% of tax defaulters in Kenema City, Sierra Leone, building on the innovations from a broad property tax reform in 2023 and 2024. In doing so, we evaluate two hypotheses on the forces driving compliance. First, marginal increases in the general perceived probability of enforcement are not enough to motivate compliance. Instead, it is the act of tax enforcement itself that leads to changes in compliance behavior. Second, to complement their enforcement efforts, local governments can leverage social norms and structures that guide taxpayers' behavior to motivate compliance.

To test these hypotheses, we evaluate two main strategies, implemented in collaboration with the local governmental and civil society organizations. First, we collaborate with the Kenema City Council (KCC), the city government, and with Kenema's Council of Traditional Chiefs (CC), to evaluate a new tax enforcement program targeting tax defaulters. In

Sierra Leone, traditional chiefs retain some authority over tax collection and the justice system in rural areas, a pattern common across Sub-Saharan Africa. Second, we work with the country's main Muslim and Christian organizations to test a public campaign to motivate compliance. In this campaign, religious leaders used religious scripture and normative appeals to personally encourage property owners to pay the tax. We use a factorial experiment design to assess the independent and interacted effects of the interventions and document large positive effects for both on compliance. We find substantive improvements in attitudes towards taxation across all treatment groups. Finally, we document geographic spillovers from treater property owners to their nearby neighbors.

Our setting, Kenema City, represents an ideal case study to evaluate these interventions. In 2023, the KCC invested in substantially increasing its fiscal capacity. It digitized and updated its property registry, re-evaluated all tax rates based on property characteristics, and modernized its previously unreliable records of tax payments. Despite these improvements, over two-thirds of properties had not complied with the tax by the end of the 2024 fiscal year. Thus, our results reflect the effects of our interventions within an ongoing reform that enables their implementation in the first place.

We exploit data from a diverse set of sources in our analysis. First, through our collaboration with the city's tax authority, we access administrative data on the timing and quantity of all tax payments. Similarly, we obtain access to census data on property characteristics for all properties in the city, including the property's location and rental value. We then conduct five rounds of surveys measuring respondents' willingness to comply with the tax, and perceived credibility of enforcement and legitimacy of the local government. We merge these data sources into a novel dataset with which we can assess both the attitudinal and the behavioral effects of our interventions.

The enforcement arm of the factorial experiment proceeds in several escalating actions, where each subsequent step is triggered if the property owner does not pay approximately a month after the previous step. Together with the KCC, we send defaulters an enforcement notice explaining that they are selected for potential future penalties if they do not pay the tax. They then receive a formal court warrant requiring their appearance in one of four specialized tax courts, established by the KCC and led by the CC. At these courts, property owners have the chance to argue administrative wrongdoing by the KCC and potentially avoid further penalties for not paying. If the chief leading the court finds them at fault, they are instructed to pay within two days or otherwise risk imminent penalties by the KCC. These final penalties, overseen by the KCC, typically involve seizing small assets equivalent in value to the tax from each property.

This enforcement intervention is different from commonly tested nudges in the public finance literature (**luttmer˙tax˙2014**; **mascagni˙lab˙2018**; **slemrod˙tax˙2019**; **antinyan˙nudging˙2025**). These come in two varieties: the first is deterrence nudges that remind citizens of general penalties against taxation while tax morale nudges remind them of other social or intrinsic

reasons to comply. Contrary to deterrence nudges, we test an actual enforcement program, involving preliminary communications, a formal court hearing, and state action. Its impact is also quite different. The enforcement increases the compliance rate from 14.6 p.p. at the baseline group to 68 p.p. in the treated group, among individuals who had not paid at the start of the experiment. Similarly, it increased average revenues by 391%. This effect is about 16 times larger than the average nudge (**antinyan˙nudging˙2025**).

Furthermore, we argue against the view that nudges are a preferable policy because of their low costs of implementation relative to enforcement action. In our setting, the first two steps of the enforcement intervention, the delivery of enforcement notices and court summons, involve the same logistical cost of delivering a nudge. Yet, most of the impact in the intervention is found after each of these two interventions. A conservative estimate of the first enforcement intervention led to a 6% net gain when comparing increases in tax revenues to implementation costs. We replicate the enforcement campaign in November 2025, now targeting only property owners in the top quintile of the distribution of wealth. While the costs of implementation remain the same, the returns to enforcement action among this group increases by a factor of 3.5, suggesting much larger gains to enforcement action. Both of these calculus likely underestimate revenue gains by not considering the spillovers from both interventions.

The second intervention consists of a door-to-door public campaign, where local religious authorities motivated tax defaulters to comply with the tax. Alongside the main inter-faith organization in Sierra Leone, we recruited 20 teams, each comprising one Imam, one Pastor, and an enumerator to guide them to targeted properties. Each team then engaged with the property owner and followed a pre-specified script consisting of three core messages: First, tax compliance collectively promotes development in the city and enables the provision of public services. Second, a good citizen of Kenema has the responsibility to not only pay their taxes, but also to hold the KCC accountable and demand better services. Third, tax enforcement is a fundamental part of a healthy tax system and is necessary to ensure everyone's compliance. Finally, these messages were complemented with references to religious scripture and teachings. For example, by Imams would regularly make a parallel between taxation and the Zakat, the Muslim practice and duty of giving a portion of one's wealth to those who need it.

The intervention was designed to align with several features of the local context. Religious authorities are respected in Kenema, with survey data showing that 95% of citizens say that they would comply more if their religious leader advocated for it. Furthermore, in-person visits are potentially more impactful than written messages in a context of high illiteracy such as Sierra Leone. We document that the campaign increased tax compliance by 4.9 p.p. compared to the control group, which is three times larger than the average normative message intervention (**antinyan˙nudging˙2025**). These results were replicated in another similar intervention implemented between February 2025 and June 2025, after finishing the survey data collection for the first intervention. Finally, we also assess the effect of being

targeted by enforcement and the public campaign jointly. We find no complementarities between the two interventions, suggesting a lack of a "backlash" effect from enforcement that could attenuated by the religious visits.

We complement these main results by documenting indirect geographic spillovers. We show that higher treatment saturation in a property owner's vicinity leads to a higher probability of compliance for that owner. Since we sought to ensure the progressivity of the enforcement intervention, our sampling and randomization strategy over-samples wealthier property owners in the city. Yet, this means that treatment saturation is confounded by neighborhood wealth. Thus, rather that simply measuring the correlation between saturation and compliance, we identify the causal effect of higher treatment exposure on compliance by instrumenting actual treatment saturation with the difference between expected and realized saturation. We find that going from 0% saturation of the enforcement treatment to 100% saturation leads to an increase in compliance of at most 10.6 p.p. This increase is equal to 3.4 p.p. for the visits by the religious leaders. To test whether it is geographic proximity to the interventions that matters for the transmission of spillovers, we repeat this analysis through a different network —namely, religious networks— and fail to find spillovers. A similar estimate of spillovers from having one extra neighbor treated leads to increases in compliance similar in magnitude to common nudges.

Finally, we examine the mechanisms behind our results, and the political consequences of enforcement. We collect survey measures on taxpayers' perceived peer tax compliance, their credibility of enforcement action, their willingness to comply, and their perceived legitimacy of the local government. First, we find null treatment effects of our interventions on survey attitudes across all dimensions. This again suggests a lack of 'backlash' effects to enforcement that could hinder its political feasibility and undermine the legitimacy of the tax system. Second, we observe substantial improvements in all survey measures across all respondents between the baseline and midline survey waves. This suggests an increased acceptability and legitimacy of the broader property tax reform.

Our design allows us to isolate how enforcement intensity and social legitimacy interact with tax digitization reforms to shape compliance behavior. The analysis contributes to several strands of research. First, it extends the growing literature on technology and tax administration (**pomeranz˙no˙2015**; **bellon˙digitalization˙2022**; **okunogbe˙technology˙2022**; **dzansi˙technology˙2022**) by emphasizing the institutional processes required to make technology effective. Second, it connects to work on enforcement and deterrence under weak state capacity (**carrillo˙dodging˙2017**; **kleven˙unwilling˙2011**), highlighting that credible, even-handed enforcement can raise compliance without triggering backlash. Third, it complements studies of fiscal legitimacy and taxpayer trust (**levi˙rule˙1988**; **slemrod˙tax˙2019**) by showing how socially trusted intermediaries—here, religious leaders—can frame tax obligations as fair and collectively beneficial, thereby supporting a high-compliance equilibrium.

Beyond the literature on tax compliance and tax reforms, we engage with previous

work on the impact of religious messages (**bursztyn˙moral˙2019**; **wang˙religion˙2021**; **davidescu˙could˙2022**; **hoem˙sjursen˙leveraging˙2024**) by evaluating a real-life campaign, where religious actors who enjoy widespread legitimacy directly motivate tax compliance. Thus, we estimate the total impact of this "bundle" treatment defined by real in-person interactions. We also connect to a broad literature on the factors shaping taxpayers' willingness to comply. Most previous work analyzes cultural norms separately from enforcement or as a residual phenomenon (**dwenger˙extrinsic˙2016**; **kao˙mistrust˙2025**; **gottlieb˙fiscal˙2025**; See **prichard˙unpacking˙2022** for a review on the Tax Morale literature). Instead, with our factorial experimental design, we also evaluate the effect of norms and enforcement jointly, understanding their (lack of) complementarities.

This project also serves as a case study on how traditional centers of power, such as religious and traditional authorities, can collaborate with the formal government to promote development (**holzinger˙dualism˙2016**; **grzymala-busse˙beyond˙2020**). Political scientists and economists debate whether this coexistence leads to higher state capacity and development or whether it inhibits it. Religious and traditional authorities have been found to promote pro-social norms (**noauthor˙cultural˙2013**; **bursztyn˙moral˙2019**; **burgess˙changing˙2021**; **le˙rossignol˙social˙2023**; **avdeenko˙power˙2024**; **buccione˙religious˙2024**) promote security (**magaloni˙state-evading˙2024**) and coordinate service provision (**diaz-cayeros˙tradit**; **baldwin˙paradox˙2015**). Yet, they often lack accountability (**mamdani˙citizen˙1996**; **acemoglu˙chiefs˙2014**) and promote sub-optimal economic norms (**butinda˙importance˙2023**), while also competing for power with the formal government (**migdal˙strong˙1988**).

Previous work has identified the role that traditional authorities can play in targeting defaulter taxpayers (**balan˙local˙2022**). We build on this knowledge by showing a case where traditional chiefs and religious leaders became an integral part of the tax system. For example, chiefs served the role of both serving as a counter-balance to the formal government and protecting taxpayers from wrongdoing, while at the same time supporting the legitimacy of the tax system. Similarly, religious leaders served as an important intermediate messenger between the formal government and taxpayers. Qualitatively, both organizations attempted to not be sidelined in a transformative social process. The political entrepreneurship at the KCC was crucial in identifying these objectives and framing their cooperation as a non-zero-sum game.

Section 2 describes the institutional context and the property tax reform that modernized Kenema's tax system and administration. Section 3 describes our experimental interventions. Section 4 describes our research design, including our data and measurements, our sampling and randomization procedure, and our estimation strategy. Section 5 describe our results, including our primary outcome, our description of spillover effects, and analysis of attitudinal shifts. Section 6 concludes.

2 Kenema's Property Tax Reform

We implement our study in Kenema, Sierra Leone, a city that recently underwent deep structural property tax reforms. Already the third largest city in the country, Kenema City is rapidly increasing (**brima˙sierra˙2017**), following a trend found in many other African cities (**african˙development˙bank˙africa˙2011**). The result is that the Kenema City Council will increasingly face demands for more and better public services. The Councils in Sierra Leone are a set of local administrative units in Sierra Leone. These were formally established by the Local Government Act of 2004, which aimed to establish the terms of major decentralization reforms in the country. Crucially, these councils are the main entities with the legal responsibility to collect local taxes and mobilize revenues towards public service provision (**gaima˙establishing˙2009**).

While KCC historically faced deep challenges to collecting revenues, it recently implemented a still-ongoing property tax reform aiming to increase its fiscal capacity. This makes it a real-time case study on the transition from low to high fiscal capacity. Drawing from a diagnostic study produced in the context of the reform (**wilson˙property˙2023**), this section describes KCC's fiscal capacity before and after the reform.

2.1 Historical Obstacles to Revenue Collection

Before 2024, KCC generally struggled with raising local revenues. KCC estimates show that 60% of properties had payment arrears from previous years in 2023, though data reliability is questionable. Total collection in 2023 was equivalent to less than 31 NLe ($\approx$ 1.29 USD) per property in the city[1]. Instead, the city mainly relies on transfers from the central government, which constitute more than half of public funds in the city (**jibao˙political˙2015**). Yet, the data on the exact amount both budgeted and actually transferred from the central government to city councils remains relatively subjective and unreliable (**wilson˙property˙2023**).

KCC lacked a proper system to track existing properties in the city, partly explaining this low fiscal capacity. All information about properties was in hard-copy paper trails in KCC's cadastral office. This list was outdated, and any efforts to revisit regions of the city were arbitrarily determined, based on KCC's valuation team's memory of previously searched regions. Any such search was done primarily by student volunteers, as part of the process to deliver tax bills. These students had no incentive to perform any extra labour and had no supervision. The result is that KCC failed to identify and register the existence of about half of the properties in the city, as of 2024.

[1]As of February 2023, the national minimum wage in the country is 800 NLe ($\approx$ 33 USD) per month (**sierra˙leone˙gazette˙joint˙2023**), though keep in mind the country's high levels of informality (**united˙nations˙development˙programme˙baseline˙2022**))

Similarly, KCC had no clear system to assess the value of existing properties. Property records did not include any information on property location nor characteristics. Because of this, tax rates were barely related, if at all, to property value[2].

Finally, KCC faced plenty of obstacles in tracking property tax payments. Until 2023, property owners paid taxes at commercial banks, then presented receipts to KCC, who then physically recorded the receipts. If the taxpayer did not bring the receipts to KCC, it would have no knowledge of their payments. Even if they did, physically recording payments meant that compliance information was not readily accessible even for KCC officials. This made collection records highly unreliable, sometimes creating large gaps between KCC and Ministry of Finance revenue reports.

All of these obstacles heavily limited enforcement capacity and equity. Because of the lack of quality data on properties and payments, KCC could not identify nor target tax defaulters. Instead, enforcement officers identified defaulters by going door-to-door and asking for property owners' proof of compliance. This process involved no supervision and no tracking of performance, opening ample opportunities for corruption and abuse. Since KCC also had no appeal system in place, property owners accused of not complying has little recourse to resolve their situation. Meanwhile, anecdotal evidence suggests that enforcement officers would target lower value properties, who showed less resistance than economic elites in the city, making the process less fair.

2.2 Structural Reforms Improved Fiscal Capacity

To overcome these challenges, KCC started an on-going property tax reform in 2023, tackling each of the obstacles previously mentioned and significantly improving its ability to collect revenues. This reform is part of a broader movement towards building fiscal capacity in low-income countries, and particularly in West Africa (**okunogbe˙increasing˙2023**). In Ghana, equipping collectors with GIS-enabled tablets raised bill deliveries and increased revenues by 103% redirecting collection efforts towards those more likely to comply (**dzansi˙technology˙2022**). In Senegal, implementing rules-based property valuation approaches reduced undervaluation at the top of the distribution, increasing the progressivity of the system (**knebelmann˙discretion˙2024**). Similar benefits to the digitization of their tax systems have been reported in Brazil and Rwanda (**gadenne˙tax˙2017**; **ali˙using˙2020**).

Figure 1 shows a rough timeline of the reform. First, KCC updated its property registry using satellite imaging to identify all structures in the city. Based on the satellite images, a team of GIS technicians identified all the properties in the city and then trained KCC officials to replicate the procedure for future discovery waves. Immediately, this approach

[2]60% of properties had to pay a 50 NLe (≈ 2 USD) tax as of 2023. 26% paid between 51 NLe and 100 NLe (≈ 4 USD). 9% paid between 101 NLe and 200 NLe (≈ 8 USD). The rest paid more than 201 NLe.

had the added advantage of including exact location data for all properties. The result is that the tax registry more than doubled in size, reaching 25,409 properties in total.

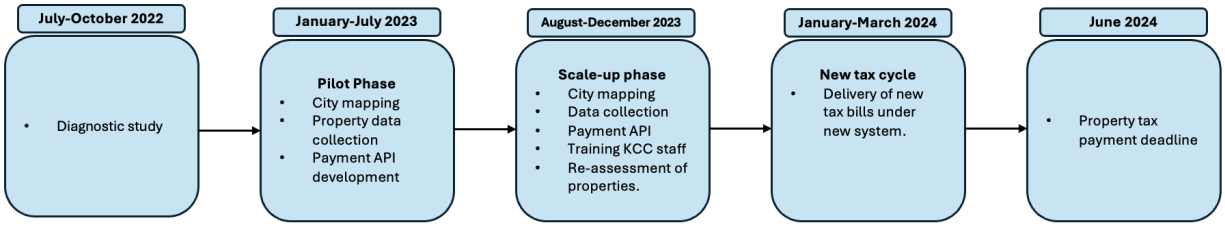


Figure 1: Timeline of the property tax reform

Similarly, KCC implemented a property census that could support a re-assessment of all property values in the city. Several teams of enumerators visited all old and newly registered properties at least once, taking a picture of each property. Then, enumerators recorded property characteristics such as access to pipe water and electricity or whether the property had an indoor toilet[3]. The final assessment of each property then was simply a linear function of these property characteristics. This also enabled a progressive tax system where tax rates increased with property values determined from census data.

Importantly, the city implemented a new digital system to receive and track property payments. Unlike property tax administration systems in the region, there was no intermediaries (tax collectors). All taxpayers had to pay through a commercial bank or through mobile money. All payments, were now automatically recorded and immediately updated in a digital database hosted by KCC, giving KCC officials easy access to the most up-to-date payment information. Finally, a combination of administrator rights and an "audit function" prevented tampering of the system, minimizing the risk of payments happening "off the records".

While substantial, these improvements to the administration system were not sufficient on their own. By October 2024, KCC had collected 1,629,302 NLe ($\approx$ 67,887.5 USD), more than twice the amount that it had collected in the 2023 fiscal year. Nevertheless, this represented only a small fraction of its revenue potential. As shown in Figure 2, tax compliance across the city remained below 30%, consistent with previous trends in the city since at least 2015 (**jibao˙political˙2015**). Potentially, compliance remained hindered by taxpayers' lack of information about institutional changes, skepticism about enforcement implementation, or continued distrust in the tax system. Thus, the city's increased revenue potential would

[3]This is the full list of all property characteristics recorded in the census: access to well water, access to privately provided pipe water, access to a water tank, access to privately provided electricity, wall condition, whether it had a finished wall, whether it had a fence, roof material, roof condition, veranda type, window type, door material, whether it had air conditioning, whether it had a garage, whether it had an indoor toilet, whether it had a guard post, whether it had boy's quarters, whether it had a swimming pool, the community in which it was located, whether the front street was paved, the condition of the front street, ease of access to the property, whether it had street drainage

remain latent until the city strategically applied the increased capacity created by the reform towards penalizing defaulters and increasing its legitimacy.

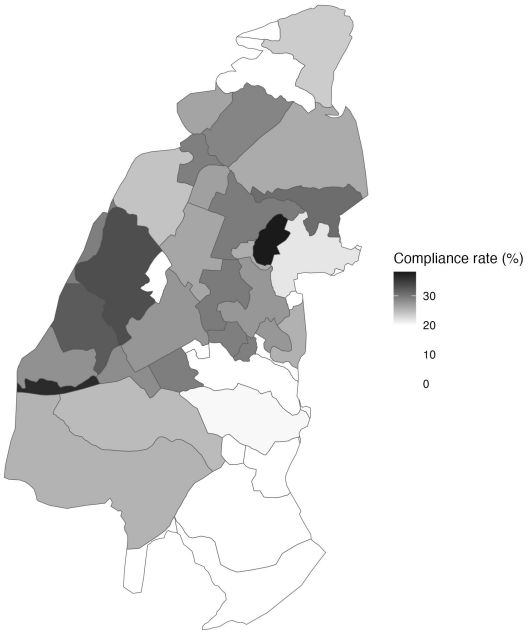


Figure 2: Rate of compliance across the city of Kenema as of July 1st, 2024, a month after the deadline to comply with the property tax. All but 5 communities have a compliance rate below 30%.

3 Interventions

We experimentally study the impact of two activities complementing the reform in promoting tax compliance. The first activity discourages non-compliance by systematically implementing a deterrent against defaulters, increasing the expected penalties for evasion. We call this the *enforcement intervention*. The second activity promotes quasi-voluntary tax compliance by leveraging on taxpayers' intrinsic motivation and employs respected religious authorities disseminating relevant information. We call this the *intrinsic motivation intervention*.

3.1 Implementing Credible, Transparent, and Systematic Tax Enforcement

In the enforcement intervention, KCC engages with taxpayers in four sequential steps. Each step escalates KCC's effort to enforce the property tax. The first step is to send the taxpayer

an *enforcement notice*. This notice explains that the taxpayer is in default and that, should they decide not to pay, future penalties are imminent. The second step is a *court summons*, which informs the taxpayer that they are required to appear in a formal court hearing chaired by the city's traditional authorities. The third step is the *court hearing* itself, where taxpayers are given an opportunity to argue whether there was any procedural mistake by KCC. These first three steps so far represent an innovation in the enforcement procedures followed by KCC in the past.

Finally, the fourth step applies the potential penalties that the KCC can implement to motivate compliance. In practice, these penalties involve the seizure of small-valued assets from the property by enforcement officers, which can be returned after providing proof of payment for the tax. Each step is triggered if the taxpayer fails to comply after the previous step takes place. Figure 3 shows the total amount of individuals that ultimately participated in each phase on enforcement.

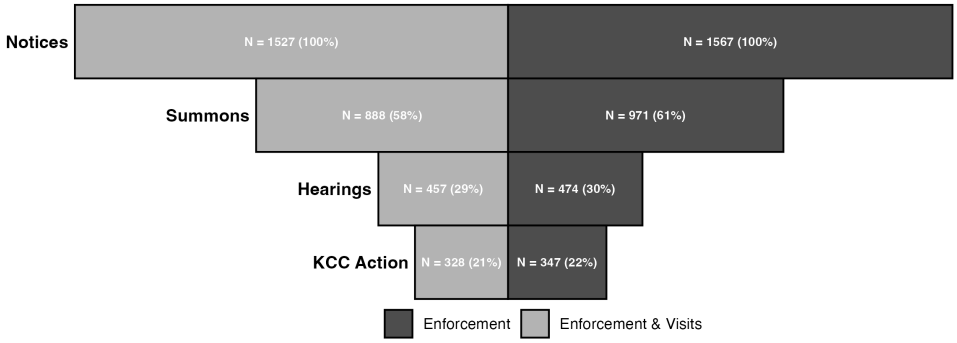


Figure 3: Evolution of the enforcement intervention. N represents the total number of individuals assigned to each step of enforcement. To continue to the next stage of enforcement, an individual must remain in default after the previous step is implemented. Numbers in parenthesis represent the proportion of individuals in each stage of enforcement relative to the total amount of people in their treatment arm. The relative size of each size represents their share of their sample size relative to the experimental sample size.

The first step —the enforcement notice— served three purposes. Firstly, it conveyed enforcement capacity by KCC. It demonstrated its administrative capacity by showing the ability and intent to deliver communication, and by including property-specific information (location, characteristics, payment history, and images), showing it was tailored to each recipient. Secondly, it outlined penalty procedures, including a 5% late payment fee and all future enforcement steps: the court summons and asset seizure. Finally, it provided relevant information such as instructions on how to pay, information on how to appeal the tax, and general information about the reform. All information was provided in written[4] and verbally. Ultimately, 3,094 properties, about 20% of all defaulters in the city, received this notice.

[4]See Appendix A

The second step consisted in a formal court summons, instructing defaulters to attend a Customary Court Hearing instituted by KCC in collaboration with the Nongowa Council of Chiefs (CC)[5]. Like the enforcement notice, the court summons included information on property characteristics and payment instructions, and all information was provided in writing and verbally[6]. The court summons, however, also included more detail on the specific penalties that KCC could pursue after the Court Hearing. Furthermore, it indicated that a property could still avoid having to appear in Court by paying its tax liability by a given deadline. Representing KCC, the court summons was signed by both the Mayor of Kenema and the Chief Administrator of KCC. Representing the CC, the court summons was signed by the Nongowa Chiefdom Court Chairman and Court Clerk. Out of the original 3,094 properties that received a notice, 1,860 properties received the court summons.

Collaborating with the CC has several benefits. While traditional chiefs are not chosen through democratic elections, they regularly enjoy high levels of support among the population relative to other organizations in Sierra Leone and elsewhere in Africa (**afrobarometer˙afrobarometer logan˙selected˙2009**; **logan˙roots˙2013**; **robinson˙inventing˙2024**). Their presence has been found to facilitate cooperation and collective action among the population, leading to higher tax compliance (**balan˙local˙2022**; **baldwin˙traditional˙2025**; **grieco˙building˙2024**). At least temporarily, they may support the country's formal courts, which are often lacking in resources, local knowledge and are overloaded (**kpaka˙chiefs˙2025**). This in part explains why it is common for citizens to rely on traditional courts to resolve disputes. Finally, Sierra Leonean law grants traditional authorities the right to collect taxes to provide services, both by themselves, and in collaboration with formal local councils (**noauthor˙local˙2004**; **noauthor˙chiefdom˙1960**).

The third step involves the Court Hearings. Each court was chaired by a section Chief and a Clerk working for the CC. Each Chief was provided with evidence of delivery and receipt of both the original tax bills sent as part of the 2024 tax cycle and the enforcement notice sent as part of enforcement procedures[7]. This included the date when the receipt was made, the signature and name of the recipient, and a picture of the property taken by the messenger of the notice. Taxpayers could appeal by either showing evidence of payment or showing that there was a procedural error by KCC.

In most cases, the Court instructed the taxpayer to immediately pay their tax liability. After this, failing to pay the tax liability and associated penalties would trigger the final step of enforcement. This involved either the locking down of a property, or the seizure of

[5]As in other African countries, traditional authorities in Sierra Leone represent a parallel system of government, also legally responsible for raising tax revenues and providing local public goods (**acemoglu˙chiefs˙2014**). The CC is composed of all the traditional chiefs of Kenema, each representing a hierarchical set of jurisdictions. The highest of these jurisdictions is the Nongowa Chiefdom, which encompasses the city of Kenema and at the time of writing was presided by Paramount Chief Sadiq Mattoe Kapuwa IV.

[6]See Appendix B

[7]See Appendix C

small-valued assets for a value equivalent to the tax liability. In practice, KCC enforcement officers rarely locked properties, and the seizure of assets would be the norm. Out of the 3,094 properties that received an enforcement notice as part of the enforcement intervention, 2,162 had paid their property tax before the start of the courts. Thus, only 932 property owners were required to appear in Court. In reality, only 78 property owners attended their Court Hearings, which means that the 854 properties were assigned to the final step of enforcement.

Fundamentally, the enforcement intervention involves a sequence of escalating actions in which the institutions in charge of the property tax system directly engage with taxpayers to deter evasion. This means direct communication of imminent enforcement to taxpayers and targeted information about the capacity to enforce the tax. This is followed by judicial proceedings and the implementation of penalties as a last resort. On the contrary, most interventions in the literature on evasion consist of a single engagement with taxpayers. These include deterrence messages that are subtle or indirect reminders of the general likelihood of penalties, embedded within other procedural notices and without targeted information.

This is an important distinction, as compliance is substantively more sensitive to direct and repeated enforcement than to indirect messages, or nudges. As will be seen below, after the first step of enforcement —the enforcement notice—, compliance already increases by over 24 percentage points. Even more, the cumulative effect of all enforcement steps is to increase compliance by 53 percentage points. This is 7.5 to 16.7 times larger than the average effect of indirect communications, estimated at 3.2 percentage points by a previous meta-analysis of the literature (**antinyan˙nudging˙2025**). While nudges represent a useful tool absent investments in enforcement, they are not a substitute to a complete enforcement strategy.

Our intervention also compares favorably to other studies that go beyond nudging interventions. The closest studies to our setting study property taxation in Democratic Republic of Congo (**weigel˙participation˙2020**; increase in tax payments by 11.5 p.p.) and how GIS-technologies improve collections in Ghana (**dzansi˙technology˙2022**; increase in revenues of 103% relative to baseline.). While both studies examine important property tax reforms, their interventions focus on tax bill delivery and collection during the initial taxpayer engagement, not enforcement. This is closer to the tax bill deliveries that occurred earlier in the Kenema tax reform, potentially explaining the difference with our results. Had these studies evaluated the impact of further enforcement action in their settings, perhaps they would have found similar effects as ours.

3.2 Encouraging Tax Compliance and Legitimizing Property Tax Enforcement

In our *intrinsic motivation intervention*, KCC worked with the Inter-Religious Council (IRC) to run a non-partisan public campaign addressing taxpayers' intrinsic motivation for tax compliance. The IRC is a respected, independent body with broad moral authority and no political affiliation. In this intervention it played a role analogous to the "tax advocacy" often undertaken by civil-society organizations. Together, the IRC and KCC assembled 20 outreach teams, each comprising two religious leaders—one Muslim imam and one Christian pastor— and one enumerator. Each team visited assigned properties, introduced themselves as an IRC-KCC collaboration, and delivered a standardized message encouraging compliance and providing guidance on how to pay. Enumerators provided logistical support and documented compliance with the outreach schedule. The religious leaders remained in charge of the engagement with taxpayers.

These religious leaders followed a script that emphasized three core ideas legitimizing the tax reform, compliance, and enforcement: First, complying with the property tax contributes to collectively bringing development to the city. Second, a good citizen of Kenema must both pay their taxes *and* demand better public services from KCC. Third, systematic and transparent tax enforcement is a fundamental part of any well-functioning tax system. Appendix D shows the complete script that was used to train religious leaders. Religious leaders would then complement this script by referencing examples from either Muslim or Christian scripture, depending on the religion indicated by the taxpayer.

The quotes below show examples of Christian and Muslim scripture that parallel taxation with religious teachings. In the Christian case, the Bible's *Romans book, chapter 13, verses 6 and 7* provides a rationale to complying with taxes imposed by earthly authorities. Similarly, the Quran's *chapter 73, verse 20* references the responsibility of Muslims to provide Zakat to contribute to the poor and to the rest of the community, providing a parallel to taxation.

> *This is also why you pay taxes, for the authorities are God's servants, who give their full time to governing. Give to everyone what you owe them: If you owe taxes, pay taxes; if revenue, then revenue; if respect, then respect; if honor, then honor.*
>
> - Romans 13:6-7

> *So recite what is easy from it and establish prayer and give zakat and loan Allah a goodly loan. And whatever good you put forward for yourselves - you will find it with Allah . It is better and greater in reward.*
>
> - Quran 73:20

This intervention is likely to influence tax compliance through a combination of three mechanisms. First, the religious visits can be thought as increasing taxpayers' intrinsic motivation to comply with the tax (**luttmer˙tax˙2014**). By this we mean that the religious visits might convince taxpayers that complying with the tax is inherently *good*, based on religious teachings. As such, taxpayers should be more likely to comply, all other beliefs being held equal.

Second, the religious visits might impact compliance by evoking cultural norms. In particular, the intervention increases the saliency of the connection between the payment of taxes and the religious norm. In this case, even if tax compliance is not an established norm, respect for religious messaging definitely is. In a pilot survey conducted in March 2024, and involving 585 survey participants, 95% either agreed or strongly agreed[8] that if their religious leader said that individuals should pay their taxes, then they should try harder to pay their taxes. Thus, if a religious authority solicits taxpayer compliance based on religious motives, the taxpayer might be compelled to pay.

Third, this intrinsic motivation intervention should improve the perception of peer beliefs and behavior in other citizens. Having a religious leader preach about the virtues of compliance potentially provides information about both the beliefs and behavior held by the preacher. It also provides information on the beliefs and behavior of other members of the religious community. To the extent that compliance decisions depend on broader peer behavior (**besley˙norms˙2023**; **besley˙state˙2020**), this intervention might then tilt the balance in favor of complying.

Finally, the intrinsic motivation intervention might complement the enforcement intervention. Previous work has reported that there might be a *backlash effect* to attempts to collect taxes (See **krause˙balancing˙2020**). The net impact of the enforcement intervention may combine both a positive and a negative effect stemming from material and intrinsic motivation, respectively. By explaining the role played by enforcement in sustaining compliance in the city, the religious visits might mitigate the negative effect, thus further increasing compliance on those that already received enforcement.

We remain agnostic about the specific mechanism and instead test this intervention's effectiveness as a *bundle* of these mechanisms. Note that all three of these mechanisms fall under what compliance scholars usually label as *Tax Morale* (**luttmer˙tax˙2014**; **allingham˙income˙1972**). Similarly, **prichard˙unpacking˙2022** further classifies these into "Unconditional" rather than "Conditional" tax morale. Our intervention can be broadly thought as moving in this direction, and improving Unconditional tax morale.

[8] 57% agreed and 38% agreed strongly.

4 Research Design

4.1 Data and Measurements

We use government administrative data on the amount and exact date of tax payments to measure compliance in real time. For each property, we compute compliance in both the intensive and extensive margin. Meaning, we compute the total amount paid towards their taxes for each property. Then, we compute whether the total amount paid is equal to their tax liability. We compute these measures at different benchmark dates corresponding to different phases of our enforcement intervention. Finally, we compute differences in total payments and compliance status between November 4th, 2024 (the beginning of our intervention) and each benchmark date. These variables are used for our main estimation of the impact of our interventions.

We complement our payment data with property level census data collected in 2023 as part of the effort to update the tax registry in the city. The dataset includes precise location data, estimated annual rental values, and other property characteristics, such as access and exposure to public services. The location data and rental value data allow us to implement our sampling procedure. We also use property characteristics to assess whether there are heterogeneous treatment effects across properties with different access to services.

We then use original survey data on attitudes towards taxation and tax enforcement to understand how we impact fiscal capacity and tax norms. First, following the canonical formulation of the individual's tax evasion problem (**allingham˙income˙1972**), we consider our impact on the perceived probability of being penalized for not paying taxes. We measure these directly by asking respondents for their perceived likelihood that an average individual in the city is penalized if they do not pay their property taxes. We then also ask for the likelihood of penalties for a wealthy individual in the city and for the likelihood of penalties if the respondent themselves do not pay their taxes. In what follows, we present responses in a 4-point Likert scale where the respondent finds the statement "Very unlikely" on one extreme and "Very likely" on the other.

Drawing on research on the intrinsic motivation to comply with property taxes (**luttmer˙tax˙2014**; **hallsworth˙behavioralist˙2017**; **acemoglu˙social˙2017**; **del˙carpio˙are˙2013**; **castro˙tax˙2015**; to name just a few), we measure respondents' perceived peer compliance, equity in taxation, and equity in enforcement. Specifically, we ask for the respondent's perceived likelihood that an average and a wealthy individual comply with the property tax, one question for each. The first question provides a measure of horizontal equity. The difference between responses for wealthy individuals and for average individuals provide our measure of vertical equity. Finally, to measure perceived enforcement equity, we measure the gap between the likelihood of penalties for wealthy individuals and the likelihood of penalties for the average individual. Similar to before, all responses are reported in a 4-point scale from "Very unlikely" to "Very

likely".

After that, we include *tax morale* measures by asking for respondents' agreement with statements about their willingness to comply with property taxes. We distinguish between respondents' unconditional tax morale and conditional tax morale. The former refers to a *general* willingness or perceived duty to pay taxes or the *general* right of the government to compel compliance. The latter refers to the extent to which an individual perceives a willingness or duty to comply *only as long as* certain conditions — such as provision of quality public services — are met (**prichard˙unpacking˙2022**).

We then measure respondents' notions of reciprocity between themselves and the state by asking for taxpayers' satisfaction with their local government (**prichard˙innovations˙2019**). We ask how corrupt, responsive, and efficient they perceive KCC to be. We also ask for their overall level of satisfaction with KCC and with different public services provided in the city. These perceptions of reciprocity, combined with perceptions of peer compliance, determine the individuals' *quasi-voluntary* tax compliance (**levi˙rule˙1988**). In Levi's words, taxpayers comply when they "have confidence that rulers will keep their bargain and the other constituents will keep theirs" (**levi˙rule˙1988**). Finally, we measure a set of demographic variables and secondary measures. These include data on ethnicity, gender, age, and education. Secondary outcomes include measures of respondents' payments of informal taxes in the city, of their social capital, and of their consumption and financial constraints. We also ask for respondents' political connections.

Ultimately, among the 6,274 property owners in the experiment, we successfully located and surveyed 6063, for a proportion 96.6% of the experimental sample. Among the 211 properties that could not be surveyed, table 1 shows the reasons why they could not be surveyed. For example, out of the 211 properties that we attempted to survey, the property owners of 33 of these refused to answer the survey, roughly 15.6%. Similarly, for about 118 (55.9%), enumerators could not locate the property owner and thus were not able to survey them.

Reason for non-response	Proportion (%)
Property owner refused to answer the survey	15.6
Property owner could not be reached	55.9
Property owner was already interviewed for another property	9.48
Property is destroyed	7.11
The property misclassified and is a government building	10.4
The treated property owner died or sold the property	1.42

Table 1: Distribution of the reasons for non-response among the 211 property owners that were not surveyed during the first two waves of survey data collection.

4.2 Sampling and Randomization procedure

Our study population consists of all property owners in Kenema who had not fully paid their 2024 property tax liability by September 9, 2024 (15,006 properties in total). To ensure geographical representativeness, we divided these defaulters into 328 geographic clusters of roughly 45 properties each. Furthermore, within each cluster, properties were classified into five wealth quintiles using their estimated annual rental values. We then over-sampled from the top two quintiles. This ensured a more equitable distribution of enforcement, as the probability of being in the enforcement intervention increased with wealth. Table 2 shows the distribution of our final sample across the different rental value strata.

Strata	1	2	3	4	5
Proportion	13.7%	11.1%	11.8%	30.8%	32.6%

Table 2: Proportion of observations in the study from each Strata. Individuals from higher strata are over-represented in the experiment.

From this frame, we randomly drew 12,000 properties for potential inclusion. Of these, 6,000 properties were randomly assigned to receive a baseline survey, while the remaining properties served as replacements in cases of non-contact, refusal, or failed quality checks. After fieldwork and cleaning, we obtained a final experimental sample of 6,274 distinct property owners. Importantly, assignment to the enforcement treatment was not conditioned on survey participation: all engaged defaulters, whether surveyed or not, were randomized to potentially receive enforcement with an equal probability.

Treatment assignment followed a 2×2 factorial design. Each property was randomized with equal probability into one of four groups: (i) control, (ii) enforcement only, (iii) religious visits only, or (iv) both enforcement and religious visits. We then validate the randomization procedure by testing for balance between the different treatment conditions. In particular, we compare each group's baseline attitudes, demographics (age, gender, ethnicity), property characteristics (annual rental value), and pre-experiment compliance (some defaulters paid between baseline and intervention launch on November 4, 2024). All this is described in Appendix E, which shows the differences in means for different outcomes across all treatment groups.

4.3 Estimation and Inference

We first estimate the causal impact of our interventions on the probability of compliance. To do so, we fit Equation 1 on our experimental data. Index i represents each property owner in the sample and $\Delta_t Compliance_i$ represents the change in compliance status between the start of the implementation in November 4th, 2024; and a date $t \in \{$December 6th, 2024, Decem-

	No Enforcement	Enforcement
No Religious Visits	**Control Group** $n = 1638$	**Enforcement Group** $n = 1567$
Religious Visits	**Religious Visits Group** $n = 1542$	**Joint Group** $n = 1527$

Table 3: Factorial Design

ber 27th, 2024, January 30th, 2025, April 1st, 2025}[9]. Variables E_i, R_i, and J_i are dummy variables recording whether individual i is assigned to either of the treatment groups and vector and $\mathbf{T} = [E_i, S_i, J_i]$ includes all of the dummy variables. Finally, estimands β_1, β_2, and β_3 represent the Intention-to-Treat (ITT) effect of being assigned to the Enforcement, Religious Visits, and Joint Group respectively. Causal identification is ensured by the successful randomization of our treatment assignments.

$$\Delta_t Compliance_i = \beta_0 + \beta_1 E_i + \beta_2 R_i + \beta_3 J_i + \epsilon_i \;\; s.t. \;\; \mathbb{E}[\epsilon_i \mid \mathbf{T}] = 0 \tag{1}$$

We then evaluate whether we observe any "spillover" effects: if our interventions also impacted individuals not directly exposed to them. To evaluate this, for defaulters who are not treated by our experiment, we compute the share of an observation's geographically proximate neighbors targeted by each treatment, i.e. the treatment saturation. We then estimate the causal relation between this share and the likelihood that each individual will comply. As might be recalled, our sampling strategy oversamples properties with higher rental value. Thus, among individuals that live in higher value regions, the share of neighbors treated might be higher. Thus, we cannot simply look at the correlation between saturations and compliance. Instead, we implement a recentered instrumental variable approach (**borusyak˙nonrandom˙2023**) to estimate this relationship.

Formally, for every defaulter in the city who is not treated, we measure their expected saturation, as defined by Equation 2. $Strata_{cwk} = 1$ if k belongs to strata (c, w) and $Neighbor_{ikr} = 1$ if k is within a radius r from i's property. $Defaulter_k = 1$ if k was in default status at the beginning of the study. Prob $(Treated \mid c, w)$ is the probability of being selected into the study and treated given that the person belongs to strata (c, w). These probabilities are the direct result from our randomization procedure. We then compute the deviation from their expected saturation, ES_i and their actual observed saturation, the share

[9]December 6th, 2024 marks one week after the final enforcement notice was delivered. December 27th, 2024 marks one week after the Final Court Summons was delivered. January 30th, 2025 marks one week after the final Court Hearing took place. Finally, April 1st, 2025 marks the beginning of the tax bill delivery for the next fiscal cycle.

of treated neighbors within a radius r. Finally, we use this deviation to instrument for the actual saturation, using a 2SLS approach, as shown in Equation 3.

$$ES_i = \sum_{c,w} \left(\frac{\sum_{k=1}^{N} Strata_{cwk} Neighbor_{ikr} Defaulter_k}{\sum_{k=1}^{N} Neighbor_{ikr} Defaulter_k} \right) \times \text{Prob}\left(Treated \mid c, w\right) \tag{2}$$

$$\begin{aligned} \hat{Saturation}_i = \ & \hat{\lambda}_{1,0} + \hat{\lambda}_{1,1}(Saturation_i - Expected\ Saturation_i) \\ \Delta_t Compliance_i = \ & \lambda_{2,0} + \lambda_{2,1} \hat{Saturation}_i + \eta_i \end{aligned} \tag{3}$$

We complement this by evaluating if there are also spillovers across a different network: religious congregations. We define a new network based on whether two property owners are affiliated to the same religious congregation. We use the census data to identify all of the Churches and Mosques in the city. Then, we use survey and property location data to assign each property owner to the nearest religious congregation of their same affiliation. Thus, instead of using geographical proximity, two individuals are in the same religious network if they share the same religious congregation. We then repeat the previous exercise in an analogous manner, instead defining $Neighbor_{ik} = 1$ if k and i share the same religious congregation.

Unlike property location data, we have religious affiliation data for only 6,274 individuals from our original survey and 2,607 surveyed in the summer of 2025. Yet, we have data on property characteristics and property owner names for almost the whole universe of defaulter properties in the city. Thus, we train and test a random forest classifier using survey data on religious affiliation as the outcome, and with property characteristics and owner names as features. More concretely, a tree algorithm partitions our sample by recursively dividing observations based on their covariates. At each step of the algorithm, a covariate division is selected as to minimize the prediction error of the outcome variable within each side of the division. A random forest, then, builds and averages the predictions from a set of tree models. Where each tree is built such that divisions are implemented by considering a radom subsample of the available covariates. We use this model to predict the religious affiliation of the remaining defaulters in the city. And implement our instrumental variable approach with the religious networks built using these predictions.

Focusing on the mediators behind our results, we look at the direct effect of our interventions —enforcement action and visits by religious leaders— on any changes in attitudes reported by survey respondents. We fit Equation 4 on our data. $Attitudes_{a,i}$ represents the attitude a at midline reported by survey respondents. Recall that all of the relevant outcome variables were measured as a four-point likert scale from something akin to strong disagreement to strong agreement. We report results using the standard deviation units for each

outcome. As before, variable E_i, R_i, and J_i represent treatment assignments for individual i and $\mathbf{T} = [E_i, R_i, J_i]$. Finally, estimands $\gamma_{a,1}, \gamma_{a,2}$, and $\gamma_{a,3}$ represent the Intention-to-Treat (ITT) effect of being assigned each treatment group on attitude a.

$$Attitudes_{a,i} = \gamma_{a,0} + \gamma_{a,1}E_i + \gamma_{a,2}R_i + \gamma_{a,3}J_i + \epsilon_{a,i} \;\; s.t. \;\; \mathbb{E}[\epsilon_{a,i} \mid \mathbf{T}] = 0 \tag{4}$$

Finally, we complement these results by looking at the changes in survey attitudes over time within the control group. We report the change in the proportion of respondents that answered the maximum possible belief (For example, that a statement is "Very likely") between the baseline survey wave before the factorial experiment and the second survey wave after the factorial experiment. In appendix H, we also report the changes in the proportion of respondents choosing a neutral response ("Somewhat likely" or "Somewhat unlikely") and the changes in the proportion choosing a minimum response ("Very unlikely"). While these do not show a *causal* impact of our interventions on our survey measures, they may provide suggestive evidence of the general impact of the reform on general attitudes in the city.

5 Results

5.1 Primary Outcome: Significant Increases in Compliance

Both interventions substantially increase compliance and tax payments among previous defaulters. Enforcement, in particular, compels more than half of property owners to comply and increases tax payments by 391%. The religious visits' effect on compliance and tax payments resembles previous nudging studies.

As described in Table 4, we find that enforcement significantly increased tax compliance compared to the control group. Focusing on December 6th, 2024 —one week after the last enforcement notice was delivered— enforcement increased compliance compared to the control group by 24.3 p.p. At the end of the enforcement program, on January 30th, 2025, the gap between the enforcement group and the control group increased to 54.1 percentage points p.p. This effect remains stable after this date until April 1st, 2025, when the demand notices for the next fiscal cycle were delivered. Appendix I shows the evolution of compliance over time as a continues measure.

Defaulter property owners who were visited by religious leaders also increased their compliance relative to the control group. That being said, the increase in compliance — between 4.1 p.p and 4.9 p.p — is about 16% of the enforcement effect as of December 6th, 2024, and about 9% of the effect of enforcement at the end of the study. Its impact remained near constant throughout the study period. This is not surprising, given that this intervention

consisted of a single engagement compared to the enforcement intervention, which involved several engagements for most participants.

Finally, as mentioned before, the religious visits and enforcement action could be complements if the impact of enforcement also includes a negative "backlash" effect reducing compliance. Our evidence does not support this. In fact, at the end of the study period, compliance within the Joint Group is slightly below the Enforcement group. Thus, we do not observe any backlash effect.

Table 4: Impact of interventions on compliance

	Dependent variable: $\Delta_t Compliance$			
	Post-Notice	Post-Summons	Post-Hearings	Next Cycle
	Dec 6th, 2024	Dec 27th, 2024	Jan 30th, 2025	Apr 1st, 2025
	(1)	(2)	(3)	(4)
Enforcement	0.243***	0.400***	0.541***	0.534***
	(0.014)	(0.015)	(0.015)	(0.015)
Religious Visits	0.041**	0.046**	0.046**	0.049**
	(0.014)	(0.015)	(0.015)	(0.015)
Joint Treatment	0.252***	0.411***	0.527***	0.524***
	(0.014)	(0.015)	(0.015)	(0.015)
Control	0.085***	0.108***	0.136***	0.146***
	(0.010)	(0.010)	(0.010)	(0.010)
Adj. R^2	0.077	0.169	0.271	0.264
Observations	6,274	6,274	6,274	6,274
$H_0 : \beta_1 + \beta_2 = \beta_3$			**	**

Note: *p<0.05; **p<0.01; ***p<0.001

The rows marked by "Enforcement", "Religious Visits" and "Joint Treatment" represent the β_1, β_2, and β_3 coefficients in equation 1. The outcome variable of interest is the change in compliance status for each individual i between the beginning of the experiment in November 4th, 2024, and a given date of measurement. Each column in the table represents a different reference date for estimating this change in compliance. Thus, the first column marked "Dec 6th, 2024" shows the increase in the probability of changing from not having paid your property taxes to having paid your property taxes between November 4th, 2024 and December 6th, 2024. The "Control" row represents the rate of compliance among the control group while the other rows represent the difference in compliance relative to the control group.

Our estimated effect of enforcement on tax compliance represents quite a large magnitude relative to other estimates in the experimental tax compliance literature. In a meta-analysis of tax nudges, **antinyan˙nudging˙2025** reports that the average effect of a deterrence nudge is 3.2 p.p. Our estimated effect is 7 times larger after one month of starting and 16 times larger at the intervention's end. This gap suggests that while nudges usefully increase marginal compliance, they cannot substitute for actual enforcement action.

The impact of enforcement on compliance is large even by the standards of interventions beyond subtle nudges. To our knowledge, the closest study to our intervention is **kapon˙using˙2024**, which randomizes enforcement action following a "divide and conquer" approach. They find an increase in tax revenues of approximately 11.3%, including the largest payers in the distribution. Similarly, **weigel˙participation˙2020** evaluates which taxpayers are first exposed to initial —pre-enforcement— tax collection in the DRC. They find increases in tax payments by 11.5 p.p.

The impact of the religious visits on compliance is consistent with that of other tax morale interventions in the empirical literature. We find that religious visits increases tax compliance by about 3 times the effect of the average tax morale nudge (1.4 p.p. **antinyan˙nudging˙2025**). Still, as shown in Table 5, the effect is similar in size to other —written, and presumably less labor intensive— interventions. It is still worth mentioning that in person religious visits might be a good alternative to written normative letters in a context with relatively high rates of illiteracy.

Estimate	Baseline	Source	Type of intervention	Setting
Deterrence interventions				
2.1 p.p.	19 p.p.	Kleven et al. (2011)	Audit	Denmark
3.2 p.p.	25 p.p.	Antinyan and Asatryan (2024)	Enforcement nudge	Meta-Analysis
5 p.p.	40 p.p.	Castro & Scartascini (2015)	Enforcement nudge	Argentina
9.4 p.p.	6.5 p.p.	Brockmeyer et al. (2023)	Enforcement reminder	Mexico
11.5 p.p.	0.1 p.p.	Weigel (2020)	Tax collection	DRC
53.4 p.p.	**14.6 p.p.**	**This study**	**Enforcement**	**Kenema, SL**
Tax morale interventions				
1.4 p.p.	25 p.p.	Antinyan and Asatryan (2024)	Tax morale nudge	Meta-Analysis
4.8 p.p.	6.5 p.p.	Brockmeyer et al. (2023)	Public good message	Mexico
4.9 p.p.	**14 p.p.**	**This study**	**Tax Morale**	**Kenema, SL**
7.1 p.p.	2.5 p.p.	Hallsworth et al. (2017)	Normative message	United Kingdom
8 p.p.	42 p.p.	Del Carpio (2022)	Normative message	Peru

* Represents percentage increase in revenues rather than rate of compliance.

Table 5: Summary of treatment effects in the experimental literature on tax compliance.

We also present the impact of our interventions on total collected revenues, rather than a binary measure of compliance. Table 6 presents the result of fitting Equation 1 on experimental data about total paid amount rather than a binary measure of compliance. We see that, on average, the control group paid 19.2 NLe (1 USD $\approx$ 24 NLe, on the September 2024 at the informal exchange rate). Individuals that received the religious visits paid on average 5.7 NLe ($\approx$ 23 USD cents) more at the end of the study, a 30% increase relative to control. Those in the enforcement group and the joint treatment group paid 75.19 NLe ($\approx$ 3.13 USD) and 72.81 NLe ($\approx$ 3.03 USD) more. This is an increase of 391% and 379% compared to control, respectively.

While our intervention substantially increased government revenues[10] relative to the low baseline, the absolute increase remains small. As mentioned, enforcement leads to an increase in tax payments of about 75 NLe (≈ 3 USD), which is also the minimum tax rate applicable to slightly under half of the population. This is equivalent to about 0.7% of the annual minimum wage[11].

This also means that there were little to no liquidity constraints in paying the tax. As can be seen in Table 6, the impact on the total amount paid mirrors the impact on compliance closely. This is partly because most people who made any payments chose to pay the entire tax amount at once rather than paying in installments. In fact, among those assigned to enforcement and who made any payments, about 92% only made one payment. We can take this as evidence of no liquidity constraints. Since ultimately 78%[12] of those in the enforcement group complied, at least 71.76% of the broader population had no liquidity constraints to pay the tax.

The implications from this analysis represent two sides of the same coin. On one side, the low tax burden from the tax rates explain the large elasticity of compliance to our interventions, and to enforcement in particular. On the other side, it also means that baseline compliance was low *despite* the relatively low tax burden from the tax reform. Low tax rates were not sufficient in motivating widespread compliance, and enforcement action is key in motivating individuals to pay their taxes. This is particularly relevant for low-income economies trying to build their fiscal capacity and establish a culture of quasi-voluntary compliance.

5.2 Spillover Effects: Neighbors Are Impacted Too

The previous discussion concerns the direct effects of our interventions. We also find evidence of spillover effects on a spatial dimension. Our interventions impact a wider population beyond those targeted, potentially increasing its total impact.

Table 7 shows the estimated effect of going from 0% saturation to 100% saturation. To define i's network, we first consider neighbors within 50 meters, 100 meters and 150 meters of i respectively. We see clear indication that an individual for whom all neighbors are enforced, is between 7.2 p.p. to 10.6 p.p. more likely to comply with the treatment intervention. This

[10] In fact, since about two thirds of the population had not complied at the start of the experiment, extrapolating the enforcement treatment effect to the rest of the population would yield an increase in compliance of about 36 p.p. across the general population.

[11] The monthly minimum wage is 800 NLe (≈ 32 USD) per month since 2023. This is consistent with consumption data from our baseline survey, where about 85% of respondents reported weekly expenditures of at least 200 NLe (≈ 8 USD). Non-response rate was about 15%.

[12] 14.6% at baseline + 53.4% caused by the treatment + 10% that paid between the survey and the experiment.

Table 6: Impact of interventions on total tax payments

	Dependent variable: Δ_tPaid Amount			
	Post-Notice	Post-Summons	Post-Hearings	Next-Cycle
	Dec 6th, 2024	Dec 27th, 2024	Jan 30th, 2025	Apr 1st, 2025
	(1)	(2)	(3)	(4)
Enforcement	33.151***	55.139***	76.087***	75.188***
	(2.177)	(2.540)	(2.776)	(2.927)
Religious Visits	4.885**	5.525**	5.209*	5.791**
	(2.186)	(2.551)	(2.787)	(2.939)
Joint Treatment	33.145***	56.557***	72.886***	72.809***
	(2.192)	(2.557)	(2.794)	(2.946)
Control	10.143***	12.679***	16.495***	19.200***
	(1.523)	(1.776)	(1.941)	(2.046)
Adjusted R^2	0.059	0.121	0.174	0.156
Observations	6,274	6,274	6,274	6,274
$H_0 : \beta_1 + \beta_2 = \beta_3$			*	

Note: *p<0.1; **p<0.05; ***p<0.01

The rows marked by "Enforcement", "Religious Visits" and "Joint Treatment" represent the β_1, β_2, and β_3 coefficients in equation 1. The outcome variable of interest is the change in the average amount paid towards property taxes for each individual between the time at the beginning of the experiment in November 4th, 2024, and the time of measurement. Each column in the table represents a different reference date for estimating this change in payment. Thus, the first column marked "Dec 6th, 2024" shows the increase in the average amount paid between November 4th, 2024 and December 6th, 2024. The "Control" row the average amount paid per person among the control group, while the other rows represent increases relative to the control group.

represents 13% to 19% of the direct effect of compliance. Similarly, an individual for whom all neighbors received the religious visits is at least 3.4 p.p. more likely to comply with the property tax, representing about 70% of the direct impact of the religious visits.

A potential explanation for these spillovers is that it is not uncommon for properties in the city to be part of a larger complex . This means that most properties share a backyard with others such that the presence of a stranger (such as an religious leader or an enforcement officer) is highly visible to neighbors. This also means that residents of individual properties share a common space where they can share share daily events with neighbors. In practice, as shown in Figure 4, most people had a saturation of enforcement of at most 50%. Similarly, most individuals did not have neighbors within a 50-meter radius. This means that the increase in compliance probability due to spillovers is at most 3.6 percentage points for most individuals. This also means that there might be space to target individuals to maximize spillovers.

We then evaluate if there are any spillovers across religious networks in the city. We build a random forest classification model to predict the religious affiliation (either Christian or Muslim) of 6,125 defaulters in the city. We train the model with a sample of 6,661 randomly selected survey observations and test it on another sample of 2,220 survey observations. To predict religious affiliation, we include property characteristics as well as names characteristics such as whether the name has an Islamic or a Christian origin. Using these features, we achieve an AUC-ROC statistic of 0.72. Similarly, the probability that we correctly predict that someone is Muslim is 96%, while the likelihood of correctly predicting that someone is Christian is 18%. Finally, we use these predictions to build religious networks in the city and evaluate spillovers across these networks. As shown in Table 8, we do not find statistically significant evidence that the compliance rate increases as the saturation of treatment in religious congregations increases.

Table 7: Spatial Spillovers

	Pre- and Post- Diff in Compliance					
	Enforcement			Religious Visits		
	50 meters	100 meters	150 meters	50 meters	100 meters	150 meters
	(1)	(2)	(3)	(4)	(5)	(6)
Indirect exposure to treatment	0.072***	0.085***	0.106***	0.034**	0.037	0.058
	(0.015)	(0.026)	(0.037)	(0.016)	(0.027)	(0.039)
Constant	0.107***	0.102***	0.097***	0.115***	0.112***	0.107***
	(0.005)	(0.007)	(0.009)	(0.005)	(0.007)	(0.009)
Observations	9,158	9,537	9,568	9,158	9,537	9,568

Note: *p<0.1; **p<0.05; ***p<0.01

This table presents the spatial spillovers of both the enforcement treatment and the religious visits as estimated through an instrumental variable approach. Columns 1-3 present the enforcement spillovers and columns 4-6 present the spillovers from the religious visits. The dependent variable is the change in compliance status of the observation from November 4th, 2024 to January 30th, 2025. The independent variable is the saturation of either the enforcement treatment or the religious visits treatment among all neighbors that are located within an X radius of the unit of analysis. Columns labeled "50 meters" include all neighbors within a 50 meter radius. We instrument for exposure using the deviations from the a priori expected saturation by each observation in the data. The coefficients presented in this table are numerically equivalent to $\frac{\lambda_{2,1}}{\lambda_{1,1}}$ in equation 3, estimated through 2SLS regression.

Table 8: Religious Network Spillovers

	Pre- and Post- Diff in Compliance	
	Enforcement	Religious Visits
	(1)	(2)
Number of co-congregants treated	0.071	0.080
	(0.043)	(0.042)
Constant	0.105***	0.104***
	(0.010)	(0.010)
Observations	9,423	9,423
Note:	$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$	

This table presents the spillovers along religious networks for both the enforcement action and the religious visits as estimated through an instrumental variable approach. Column 1 presents the enforcement spillovers and column 2 presents the spillovers from the religious visits. The dependent variable is the change in compliance status of the observation from November 4th, 2024 to January 30th, 2025. The independent variable is the saturation of either the enforcement treatment or the religious visits treatment among all individuals within the same religious congregation as the unit of observation. We instrument for exposure using the deviations from the a priori expected saturation of treatment by each observation in the data.

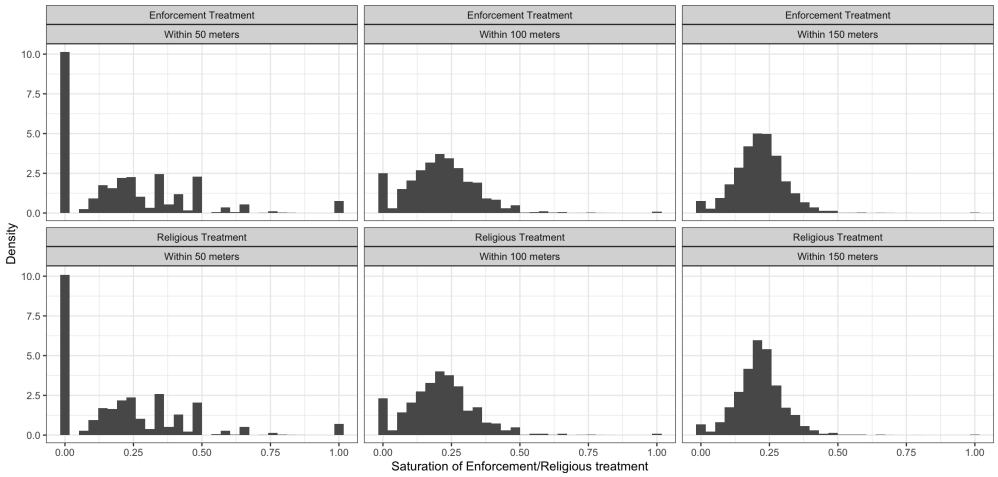


Figure 4: Distribution of the indirect exposure to enforcement and religious visits

5.3 Mediator Analysis: Impact on Tax Attitudes

We do not find evidence of direct treatment effects of our interventions on any of the main attitudinal outcomes of interest. Nevertheless, we do observe substantive attitudinal changes between baseline and midline, leading credence to the impact of the wider reform on people's perceptions, norms, and attitudes.

We report the impact of our interventions on four different set of survey outcomes. First, we look at perceptions of KCC's fiscal capacity and the equity of the tax system. We ask about the perceived likelihood that peers will comply and be penalized for non-payment. We then measure individuals' conditional and unconditional tax morale[13]. Specifically, we ask questions related to individuals' general belief in their responsibility to pay their property taxes. Finally, we measure individuals' satisfaction with KCC and report the impact on individuals' perceptions of whether KCC is clean, efficient, and responsive.

We find precise null effects of our treatment assignments on each outcome. Figures 5 to 8 show the ITT estimates of the treatment conditions on standardized versions of each survey outcome, where each measure was transformed by subtracting the mean at control and then divided by the standard deviation also at control. These null results suggest that the survey attitudes cannot explain the changes in compliance that we observe by themselves.

Despite the null treatment effects, the interventions appear to have influenced attitudes toward taxation in a broader manner. Specifically, respondents' reported belief in state capacity, duty to comply, and satisfaction with KCC, increased between baseline and midline. Figure 17 shows that respondents' perception that of peer compliance and enforcement capacity substantively increased. The share of respondents believing the average citizen would "Very likely" be penalized for defaulting increased by over 15 percentage points. The share of respondents believing that the average citizen would pay in the first place also increased (by this time, 1 in 2 properties had complied with the tax). Finally, similar shifts occurred when asking about Wealthy citizens instead of the average citizen and when asking about the respondents themselves.

Figure 18 shows a significant increase in respondents willingness to comply with the property tax. The share of respondents strongly agreeing that they have a duty to both pay their tax *and* demand better services increased by 20 p.p. Similar increases occur when asked about a general collective duty to pay their taxes and the legitimacy of enforcement action against defaulters. At the same time, there was a decrease in "conditionality" considerations. Individuals found it less justifiable to not pay the tax if KCC failed to provide services or if the respondent was not doing well financially. Finally, Figure 19 shows improvement in respondents' satisfaction with KCC. In particular, respondents reported believing that KCC was less corrupt, less wasteful, and overall being more satisfied with KCC.

[13]Recall that unconditional tax morale refers to the general willingness to comply with taxes regardless of government behavior. The latter refers to the willingness to comply if certain conditions are met.

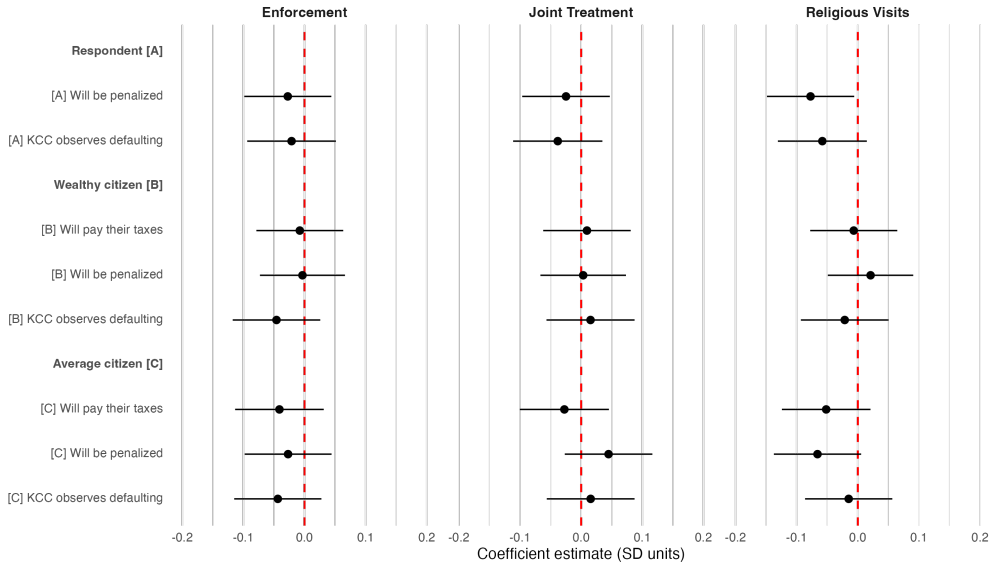


Figure 5: Perceptions of State Capacity/Tax Equity. How likely is it that ... ?

The figure presents the ITT coefficient estimates on perceptions of State Capacity and Enforcement Equity. Each question measures the respondent's percepetion of how likely is it that an individual will be pay their taxes, that the Kenema City Council is able to observe whether that individual defaulted on their property tax, and that the individual will be penalized if they do not pay their taxes. Results are presented in standard deviation units relative to the measure's mean and standard deviation in the control group.

Overall, these shifts suggest increased beliefs about KCC fiscal capacity, willingness to comply with property tax, and satisfaction with KCC. While this remains suggestive—we cannot rule out concurrent factors—we are unaware of any other major taxation-related changes in the city, unrelated to our intervention. Anecdotally, the enforcement intervention and the religious visits became the talk of town and would be the topic of discussion at the city plaza and football games. And over 65% of respondents reported believing that there was an increase in enforcement action from KCC at midline.

Similarly, given defaulters' increased belief in the likelihood of penalties, improvements in KCC satisfaction and willingness to pay may reflect increased social desirability bias. Respondents may perceive enumerators as KCC-related and thus be less willing to provide negative answers. We find this unlikely. At midline, 56% report that they find KCC not corrupt and 47% report that KCC is responsive. This is consistent with responses from a list experiment, from which we estimated that 51% of respondents found KCC "competent to manage and address the needs of the city". The exact question from the list experiment and the regression results are included in Appendix F.

To conclude this section, we find substantive increases in compliance resulting from our treatment intervention. Enforcement causes more than half of otherwise defaulters to comply with the tax. Visits by religious leaders increase compliance by a rate comparable to most

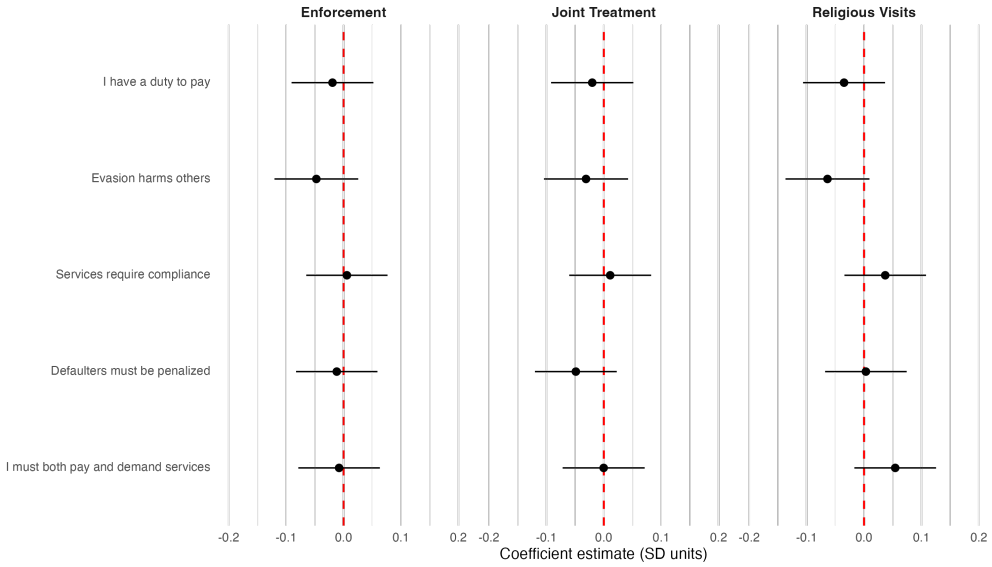


Figure 6: Unconditional Tax Morale: Agreement with...?

The figure presents the ITT coefficient estimates on self-reported unconditional tax morale. Each measure presents the respondent's self-reported agreement with the following statements: 1) "I have a duty to always pay my property taxes.", 2) "When I do not pay my property taxes, I am harming other inhabitants of Kenema.", 3) "The City Council can only provide public services if everybody pays their property taxes.", 4) "The City Council always has the right to penalize those that do not pay their property taxes.", and 5) "I must both pay my taxes and demand better public amenities". Results are presented in standard deviation units relative to the measure's mean and standard deviation in the control group.

nudging studies but an order of magnitude below enforcement. We find evidence of significant spatial spillover effects of both interventions across the immediate neighborhood of treated individuals. Finally, while we find null effects of either intervention on survey attitudes, we also find substantive shifts in attitudes across the broader population. This is suggestive evidence of the impact of the reform as a whole on beliefs and perceptions related to taxation.

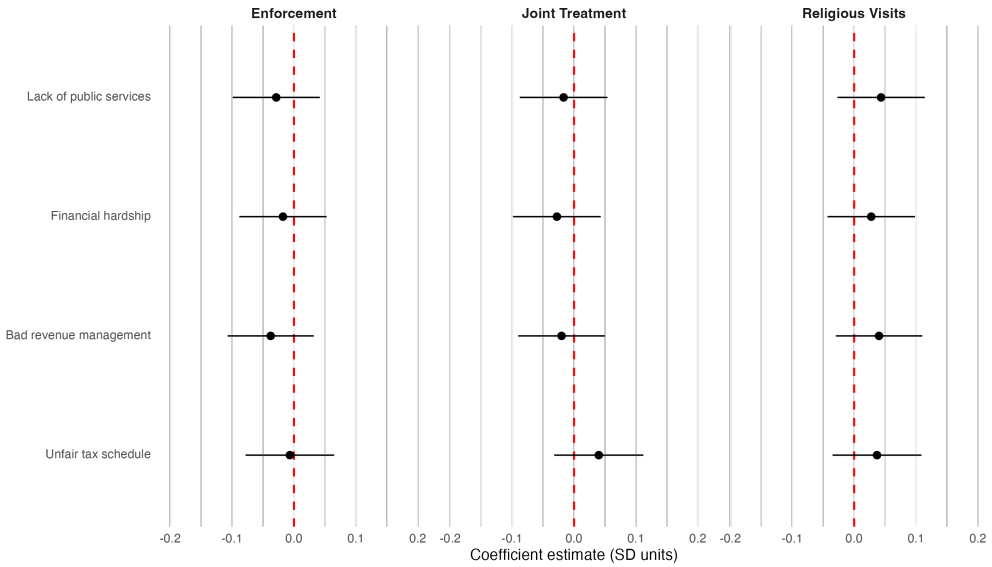


Figure 7: Conditional Tax Morale: Agreement with...?

The figure presents the ITT coefficient estimates on self-reported conditional tax morale. Each measure presents the respondent's self-reported agreement with the following statements on whether it is justified not to pay the property tax in specific conditions. Specifically, they were given the following statements: 1) "It would be justifiable NOT to pay my property taxes if the Kenema City Council failed to provide public amenities", 2) "It would be justifiable to NOTpay my property taxes if I (The respondent) were not doing well financially", 3) "It would be justifiable to NOT pay my property taxes if tax revenues were not well managed by the Kenema City Council", and 4) "It would be justifiable to NOT pay my property taxes if not all property owners pay their fair share". Results are presented in standard deviation units relative to the measure's mean and standard deviation in the control group.

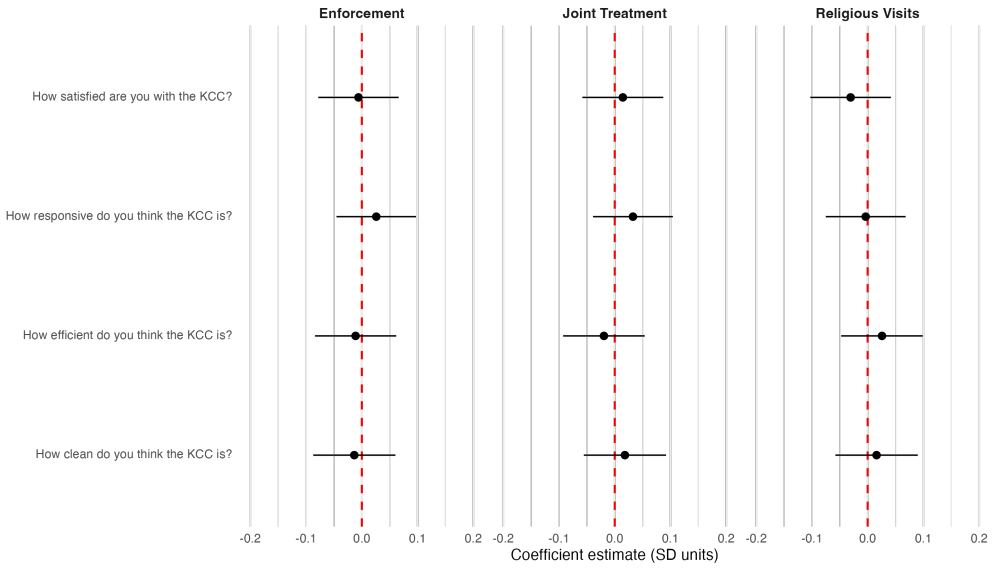


Figure 8: Legitimacy of the KCC

The figure presents the ITT coefficient estimates on self-reported satisfaction with the KCC on four different dimensions, measured on a likert scale from 1 to 4. In particular we ask respondents for their 1) general satisfaction with the KCC, 2) their perceived responsiveness of the KCC, 3) their perceived lack of corruption at the KCC, 4) and their perceived efficiency of the KCC. Results are presented in standard deviation units relative to the measure's mean and standard deviation in the control group.

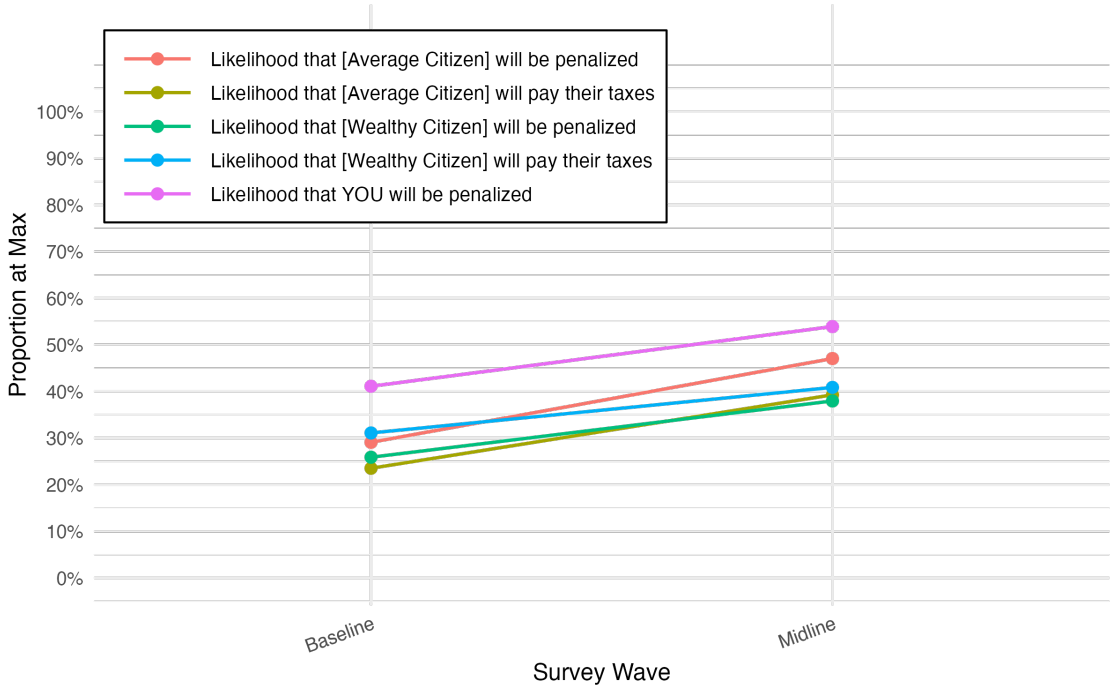


Figure 9: Shifts in Perceptions of Fiscal Capacity

6 Conclusion

Reducing tax evasion is a fundamental part of increasing fiscal revenues and improving the government's ability to provide public services. This often represents a challenge for local governments in low-income economies. Despite the adoption of reforms that modernize the infrastructure required to identify and penalize defaulters, governments often fail to actualize the potential gains from these reforms. Figuring out ways to do so while also investing in the perceived legitimacy of the tax system is a challenge for both academics and policymakers.

This paper evaluates two strategies to motivate tax compliance in the context of an ongoing property tax reform in Kenema, Sierra Leone. First, we estimate the impact on compliance of a four-step enforcement action program against tax defaulters. This enforcement program involves the communication of enforcement notices, a tax court hearing in collaboration with the city's traditional authorities, and the implementation of penalties for those that fail to comply by the end of the program. Second, we estimate the impact of a public campaign in which religious authorities visited defaulting properties, motivating them to pay their tax liabilities and explaining the role of enforcement in ensuring compliance.

We present three main sets of results. First, both interventions increased tax compliance in the city. The visits by religious leaders increased compliance by almost 5 percentage

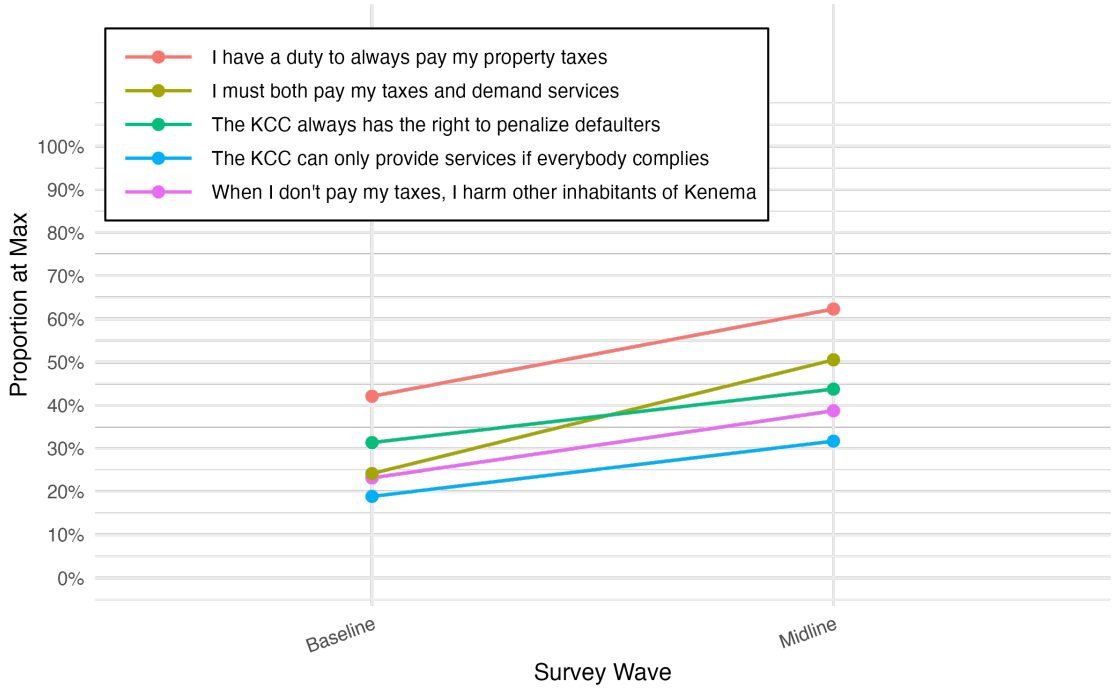


Figure 10: Shifts in Reported Tax Morale

points, at a comparable rate to other experimental studies in the tax morale literature. The enforcement intervention increased the rate of compliance by over 50 percentage points. Similarly, the enforcement intervention tripled the total amount paid in property taxes. Second, we employed a re-centered instrumental variable approach to document the presence of spillovers. Indirect exposure to the enforcement intervention could increase the rate of compliance by as much as 10 percentage points. Similarly, indirect exposure to the visits by religious leaders could increase compliance by 3.4 percentage points. Finally, across all experimental groups, we document substantial improvements in property owners' perceived likelihood that defaulters will be penalized, in their willingness to comply with the tax, and in their satisfaction with the local government.

These results suggest that enforcement action has a fundamental role in unlocking high rates of compliance. Before the start of the intervention, approximately 67% of the properties in the city were in default. A simple back-of-envelope calculation suggest that if the universe of defaulters had followed the same trend as the group that received enforcement, then the rate of compliance would have increased by 36 percentage points, over a third of the population.

A broad literature focuses on the benefits of reforms that increase the information available to local governments about their tax base. Without enforcement action, the benefits from these reforms are already substantive. Yet, an added benefit of these opportunities is that they provide an opportunity to implement credible enforcement action that sustains the

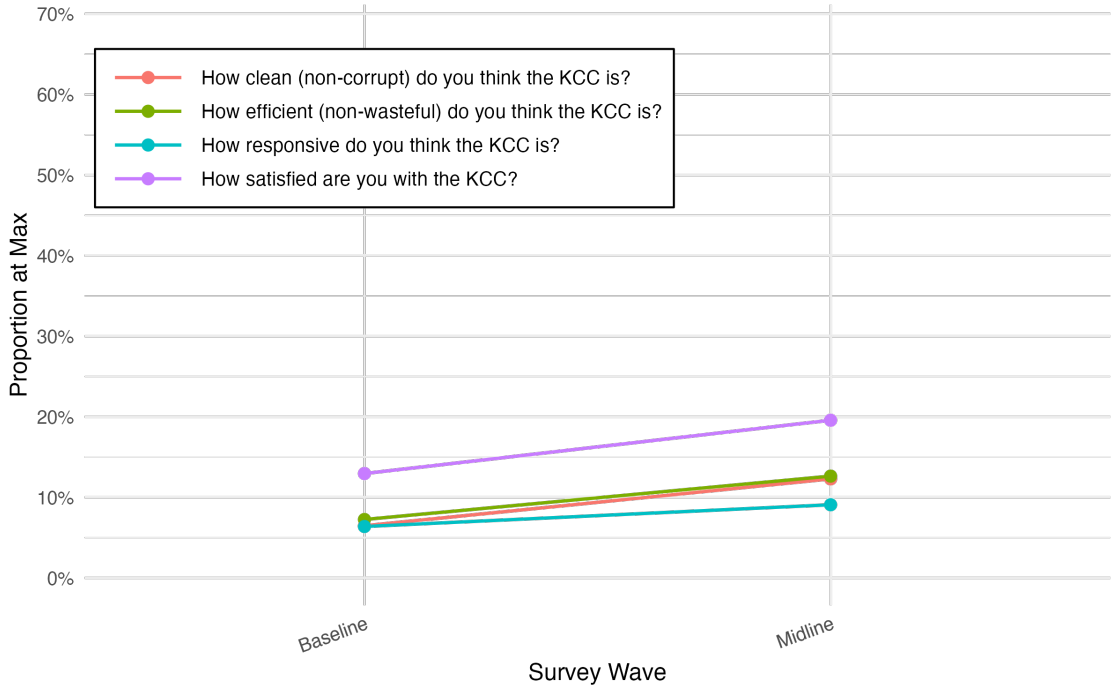


Figure 11: Shifts in Reported Satisfaction with KCC

perceived likelihood that defaulting will cause penalties. An implication of this study is that this enforcement is essential in unlocking the next level of compliance. Furthermore, while smaller in magnitude, there are real benefits to investing in taxpayers' perceived legitimacy with the tax system, increasing their quasi-voluntary compliance.

This project is the result of an ongoing collaboration between the research team and the Kenema City Council. Thanks to KCC's continued interest in exploring these subjects, this project opens the door to explore a general agenda on tax compliance. One line of research focuses on how to maximize the returns to enforcement through optimizing the spread of information about said enforcement. Similarly, what is the optimal allocation of resources towards implementing enforcement action vs. informing taxpayers about said action? And are there complementarities between the two?

A second line of research focuses on how to make enforcement action more effective, and transparent. Particularly, how can enforcement officers be incentivized to minimize the loss to the state originating from rent-seeking and corruption. Finally, an important question is how enforcement action impacts the fiscal contract between taxpayers and the State. The acceptability of enforcement action in part depends on the extent to which it is perceived as fair and as conducive to better public services. Future work should focus on when on identifying the factors required so that this is indeed the case, and added benefits from enforcement lead to better governance and service provision.

Statement of research support: This research was possible in part thanks to research grants from the International Growth Centre and from the Local Government Revenue Initiative.

A Example of Enforcement Notice

Abuja



KENEMA CITY COUNCIL

PROPERTY RATE ENFORCEMENT NOTICE 2024

RDN: 25207

To the Owner, In care of		**Signature: Date:**	

You are hereby served this **ENFORCEMENT NOTICE** for the payment of the Kenema City Property Rates for the year January 2024 to December 2024. This notice is pursuant to the Local Government Act 2022 Part VIII Section 76. Please read this notice carefully.

Property ID	KCC0043997	**Address:**	[redacted]
Plus Code [G]		6CVCRRPH+R72	

Property Class:	Domestic
Roof Line Measure (sq ft):	1554.71
Number of Floors:	1
Total Rateable Surface Area:	1554.71
Surface Area Value (weighted rateable surface area) [A]:	247.59
Base Value [B]:	10.71
Initial Assessed Value [C] = [A] x [B]:	2651
Total Adjustments [D]:	-25.10%
Assessed Annual Value [E] = [C] + [D]:	1986
Mill Rate [F]:	2%
Property Rate Calculated [E] x [F]:	**NLe 75**
Add: Penalties*:	**NLe 4**
Add: Arrears from 2023:**	NLe 0
Less: 2023 Early Payment Discount (5%)	NLe 0
FY2024 Balance Payable*:**	**NLe 79**

***Terms of Enforcement Action:** A penalty of 5% percent has been assessed to your account due to its default and non-payment as of June 30, 2024. Should the outstanding balance remain unpaid by **November 30, 2024**, you will be served with a formal summons to attend a court hearing, during which further enforcement actions may be authorized. In the event of non-compliance, you may be subjected to enforcement measures, including but not limited to the locking of properties or the seizure of assets. Should you have paid your 2024 property tax liability you may disregard this notice.

Payments must be made ONLY at banks and mobile money service providers noted on the reverse of this notice. No cash is to be paid outside of the banks and mobile money service providers since KCC DOES NOT register non-bank and mobile money payments. Unique KCC official payment receipts are issued to you, meaning you no longer have to visit the KCC office for an additional receipt. Any other receipt will NOT be valid for property taxes.

****Past Arrears: Note that any arrears owing under the previous property rates system will not show on this notice, but remain valid, and will be pursued separately by the KCC.**

***** Payments: full details on how to make payments are listed on the back of this notice.** Please bring this notice with you to make payments. Do not make payments to any non-bank or mobile money service provider since such payments will not be registered.

Mr. Thomas Baio
Mayor of Kenema City

Mr. Joseph G.T. Gando
Chief Administrator

KENEMA CITY COUNCIL

Further Information

How Your Property Was Assessed

The KCC used high-resolution satellite images to precisely and reliably measure the square footage of every roof in the city. The larger the roof and the more floors a building has, the higher the property rate. We also visited every single property in Kenema City to measure and record 25 property and location characteristics that were used in adjusting your property rate. This process of valuation was the same for every property in the city. If you believe that there has been an error in the recording of your property, contact details, or owner information, please call **+232 (74 888 110 / 33 079 022)** or come to the **Enquiries and Appeals Desk** at Kenema City Council at 7 Maada Bio Street. **The "care of" name is the administrative contact on KCC files and may not necessarily be the owner.**

If you would like to confirm the name of the property owner, please also bring a Certified Copy of the conveyance and/or Probate Document. **Please note that this RDN notice does not constitute proof of ownership.**

Why the KCC Collects Property Rates

Property rates are an important revenue source for city governments around the world. At the KCC, we worked hard to modernise our property rate system to make it as fair and equitable as possible and ensure that every property owner in the city contributes their fair share. These revenues are essential to fund essential and expanded services, including Infrastructural Development and Solid Waste Management to develop our city.

Minimum Property Rates

By Councill resolution, the KCC has instituted a minimum property rate of **NLe75**. If your assessment is above this minimum, and you would like to request a full explanation of the variables used in calculating your property rate, then please visit the Enquiries and Appeals Desk at the Kenema City Council at 7 Maada Bio Street. You can request a full report from the Front-Line Officer and that report can be printed on request for your personal information.

Explanation of Terms

[A] Surface Area Value: The surface area value tells you how much the size of your property increases its rateable value. It is calculated as the surface area to the power of 0.75. The value of a property increases as it gets larger, but that increase is proportionately smaller as properties get larger—an extra 100 sq ft of surface area matters more for smaller properties.

[B] Base Value: The base value is used to capture the average rateable value of a square footage in Kenema. As property values in the city increase over time, the base value will also increase.

[C] Initial Assessed Value: The initial assessed value is based on the total area of your property and is calculated as Surface Area Value x Base Value. The larger your roof and the more floors your building has, the higher the initial assessed value.

[D] Total Adjustments: The adjustment is based on 25 characteristics of your property. The less valuable these characteristics are, the more negative the adjustment and the lower the property rate.

[E] Assessed Annual Value: The assessed annual value is equal to the initial assessed value adjusted for property characteristics: Assessed Annual Value = Initial Assessed Value x (1 + Total Adjustments).

[F] Mill Rate: This is how much property rate citizens in Kenema are required to pay for every unit of the assessed annual points value. This rate is 2% for domestic properties, 2.5% for commercial/NGO properties and 2% for institutional or government properties.

[G] Plus Codes: These are codes that identify your property, to ensure that every property has a unique identifier and is included in the rates system.

Payment Details

Please ensure that you bring this Rate Demand Notice to make payments. Payments for property rates and business licenses can be done in two ways:

1. Make payments at any Kenema branch of Rokel Commercial Bank or Afrimoney service provider.
2. Visit the KCC Office at 7 Maada Bio Street to make your payment at the onsite bank and mobile money service provider, which include Rokel Commercial Bank, and Afrimoney.

Bank / Mobile Money Provider Name	Account Number / Code
Rokel Commercial Bank [SL] Ltd	02-045400122-01
Afrimoney	*161*522#

B Example of Court Summons

Ngombu Old Town

KENEMA CITY COUNCIL

COURT SUMMONS

December 3rd, 2024

To [redacted]

Adress of property: [redacted]

Property identification number: KCC0003117

You are hereby summoned to appear before the Nongowa Customary Court under the authority of Paramount Chief Sadiq Mattoe Kapuwa IV for a hearing on the non-payment of property rates as mandated by the Kenema City Council. This court hearing is conducted by the Kenema City Council and the Nongowa Chiefdom Council under the authority granted by the *Local Government Act, 2004, as amended part VIII, Section 76* and aligns with the terms outlined in the 2024 Enforcement Notice issued in November 2024, subsequent to the Rate Demand Notice issued in March 2024 (RDN).

Date and time of hearing: January 14, 2025, 10:00

Location of hearing: Local Court N°1, 21 Hangha Road, Kenema

Failure to comply with this summons will result in the immediate escalation of enforcement actions as authorized by law, without further notice. These actions may include, but are not limited to, the locking or securing of the property, seizure and public auction of movable assets, or the imposition of additional penalties and fees, as prescribed by the Kenema City Council under the authority of the *Local Government Act, 2004, as amended part VIII, Section 76*. Additional information is provided on the back of this document.

To avoid appearing before the Nongowa Customary Court and further legal escalation, you must pay your 2024 property tax in full by January 12th, 2025. Failure to do so will require your mandatory court appearance on the specified date and location.

Details of Amounts Due:

Property Rate:	**NLe 201**
Penalties*:	**NLe 11**
2024 Balance Payable:	**NLe 212**

***Terms of Enforcement Action:** A penalty of 5% percent has been assessed to your account due to its default and non-payment as of June 30, 2024.

Thomas Baio	Joseph G.T. Gando	Chief Bockarie Brima	Edmond Bockarie
Mayor of Kenema City	Chief Administrator	Nongowa Court Chairman	Nongowa Chiefdom Clerk

KENEMA
CITY
COUNCIL

Enforcement Actions

Pursuant to *The Local Government Act 2022*, Part VIII, Section 76, local councils possess statutory authority to levy and collect property rates. Where a property owner fails to comply with payment demands, the Act authorizes a series of enforcement actions to secure the unpaid rate and uphold council revenue obligations.

Seizure and Public Auction of Movable Property

In accordance with Section 85 of the Act, if a property owner has neglected or refused to remit the assessed property rate, the District Council Chairman may issue a formal warrant directing a council bailiff to enforce the levy on the owner's movable property. **This warrant shall authorize the seizure of assets, which may include vehicles, equipment, or other personal items of value.** Said assets shall subsequently be subjected to public auction, with the proceeds applied to cover the unpaid rate and any ancillary costs incurred during enforcement. Any excess funds realized from the auction will be returned to the owner in accordance with statutory requirements.

Enforcement Against Building Occupants

Where the sale of an owner's movable property proves inadequate to satisfy the outstanding tax debt, **Section 86 permits the issuance of an additional warrant for the levy upon movable property belonging to occupants of the premises.** This warrant authorizes the council to seize items held by the occupants, who, by statutory entitlement, may deduct the amount paid from subsequent rental payments due to the property owner. This provision ensures enforcement is effected efficiently, while occupants are not unfairly burdened with unrecoverable expenses.

Court-Ordered Sale of Real Property

Where the unpaid property rate remains unresolved six months following initial default, and all preliminary enforcement actions have proven unsuccessful, the council may escalate the matter to a judicial proceeding. **Under Section 87, the local council is authorized to seek a court order directing the sale of the building itself, thereby fulfilling the unpaid property rate.** This measure, reserved as a final enforcement action, allows for the satisfaction of council claims in instances of prolonged non-compliance, ensuring compliance with municipal revenue laws.

Priority of Claim

Under Section 84, **any unpaid property rates constitute a primary and legally binding charge on the subject property.** This lien holds priority status over all other claims or encumbrances, except for those directly asserted by the government. This priority ensures that property tax debts remain enforceable and attached to the property, securing municipal revenues until full payment of the owed rate.

Payment details

Important: Payments at the court on hearing date are accepted only through Afrimoney agents. It is your responsibility to request and secure a receipt.

Settle your liability in full by January 12th, 2025, to avoid appearing in court. To facilitate your payment of property rates, please bring the Rate Demand Notice. Payments can be made through the following channels:

1. **At any Kenema branch of Rokel Commercial Bank** or **Afrimoney service provider**.
2. **At the KCC Office, located at 7 Maada Bio Street**, where payments are accepted through the onsite Rokel Commercial Bank branch or Afrimoney mobile money service provider.

Bank / Mobile Money Provider Name	Account Number / Code
Rokel Commercial Bank [SL] Ltd	02-045400122-01
Afrimoney	*161*522#

C Example of Evidence Provided in the Tax Courts

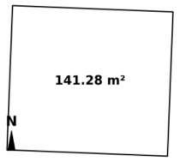
CASE NO. KCC0000092 IN THE MATTER OF KENEMA CITY COUNCIL v. [redacted]

STATEMENT OF CLAIM: Failure to comply with the lawful requirement of the Kenema City Council to discharge the obligation to pay property tax in the sum of 75 Nle, together with an accrued penalty for late payment in the amount of 4 Nle, pursuant to the provisions of the Local Government Act, 2004 (as amended), Part VIII, Section 76.

DETAILS OF HEARING: Local Court N°1, 21 Hangha Road, Kenema, January 16, 2025, 09:00

SUBJECT PREMISES :

Property details
KCC0000092
Off Heigbema Road (North East)
Heigbema
6CVCVRPQ+M5J
Registered owner
[redacted]





EVIDENCE AGAINST THE RESPONDENT:

2024 Rate Demand Notice Delivered
2024-04-11
In the care of
[redacted]
Owner

Recipient's signature



Delivered to this property



2024 Enforcement Notice Delivered
2024-11-12
In the care of
[redacted]
Who identified themselves as the owner of the property

Recipient's signature



Delivered to this property



RELIEF SOUGHT BY THE KENEMA CITY COUNCIL:

The Kenema City Council respectfully prays that the Court grants the following orders:

1. That the Respondent be ordered to remit the outstanding property tax of 75 Nle and the late payment penalty of 4 Nle forthwith.
2. Such further or other relief as the Court deems just and equitable in the circumstances.

JUDGMENT AND ORDER OF THE COURT:

Upon hearing the submissions and reviewing the evidence presented by the parties, the Court hereby renders the following decision:

Sentence:

Fine ordered (if any):

Nle

DATED THIS DAY:

Nongowa Court Chairman

D Script Followed for Religious Visits

Sensitization Script

The following script is a short version of the full guide for the religious representatives that will participate in the "Enforcement and Sensitization of Property Taxes in Kenema" project. It provides the key points and ideas that the religious representatives will be expected to touch upon while visiting property owners selected for the experiment.

[Beginning of the script]

[Enumerator and religious representatives arrive to the property assigned, ask for the person inside who is the financially responsible owner.]

- Hello, my name is _____ and this is my colleague _____.
- We are here representing the Kenema Chapter of the Interreligious Council, in collaboration with the Kenema City Council. We are here to discuss property taxation and the role of citizens in contributing to the welfare of the city through the payment of property taxes.
- We do not know whether you have paid your property taxes, and we are not here to make you pay against your will. Instead, we believe it is our duty to motivate people to pay their property taxes out of their own free will.

[Complying with the property tax contributes to bringing development collectively to the city]

- We believe paying property tax is vital for the development of Kenema, helping the city grow and thrive through collective collaboration.
- Without tax revenues, Kenema City Council cannot provide essential public services to its citizens.

[Citizens must comply with their taxes AND demand better services from the City Council]

- Paying taxes is a duty for everyone, but citizens also have the right and duty to demand transparency and proper use of tax resources. Both are crucial for the success of the city and must be adhered to.

[Tax enforcement is a fundamental aspect of every tax system]

- **Systematic and transparent** tax enforcement is necessary to ensure fairness, as some citizens evade their duty. Without enforcement, if someone doesn't pay, public services are worse. Therefore, everyone is harmed (both payers and non-payers).
- As both Christians and Muslims, it is our duty to comply with the laws of the land and contribute through taxation to improve our communities.

[Invite the property owner to comment on the conversation and provide concluding remarks]

- We will continue engaging with other citizens in the city.
- If you have not paid the property tax, we hope that this conversation can help motivate you to comply with the property taxes.
- If you have already complied, we hope that this helps convince you that your compliance with the tax is an important contribution to your fellow citizens and is well-regarded in the eyes of God.

[Before finishing the engagement, remind the property owner that they can pay in the following two ways]

Payments for property rates and business can be done in two ways:

1. Make payments at any Kenema branch of Rokel Commercial Bank or Afrimoney service provider.
2. Visit the KCC Office at 7 Maada Bio Street to make your payment at the onsite bank and mobile money service provider, which include Rokel Commercial Bank, and Afrimoney.

Bank / Mobile Money Provider Name	**Account Number / Code**
Rokel Commercial Bank [SL] Ltd	02-045400122-01
Afrimoney	*161*522#

[End Script]

E Experiment Balance Table

	C v. E	C v. R	C v. J	E v. R	E v. J	R v. J
Pre-experiment tax compliance (%)	1.14	0.65	-0.83	-0.49	-1.97	-1.48
Perceptions of peer behavior and State Capacity [1]						
Likelihood that [Average Citizen] will pay his taxes?	-0.02	-0.00	-0.03	0.02	-0.01	-0.03
Likelihood that [Average Citizen] will be penalized?	-0.00	-0.00	0.01	-0.00	0.01	0.01
Likelihood that [Wealthy Citizen] will pay his taxes?	-0.02	-0.06*	-0.04	-0.03	-0.02	0.02
Likelihood that [Wealthy Citizen] will be penalized?	-0.04	-0.05	-0.02	-0.00	0.02	0.02
Likelihood that YOU will be penalized?	-0.00	-0.03	-0.03	-0.03	-0.03	0.00
Unconditional Tax Morale						
I have a duty to always pay may property taxes	0.01	-0.03	0.00	-0.03	-0.00	0.03
When I dont pay my taxes, I harm other inhabitants of Kenema	-0.00	0.01	-0.01	0.02	-0.00	-0.02
KCC can only provide services if everybody complies	-0.04	-0.01	-0.00	0.04	0.04	0.01
KCC always has the right to penalize defaulters	-0.02	-0.02	-0.01	-0.00	0.01	0.01
I must both pay my taxes and demand services	-0.03	0.00	-0.01	0.03	0.01	-0.01
Conditional Tax Morale						
It would be justifiable not to pay if KCC failed to provide services	-0.00	0.01	-0.03	0.02	-0.03	-0.04
It would be justifiable not to pay if I was not well financially	0.01	0.02	-0.02	0.01	-0.03	-0.05

Continuation of Table 9

	C v. E	C v. R	C v. J	E v. R	E v. J	R v. J
Satisfaction with the Kenema City Council						
How satisfied are you with KCC?	-0.01	0.03	0.02	0.04	0.02	-0.02
How responsive do you think is KCC?	-0.00	0.07*	0.02	0.07*	0.03	-0.04
How corrupt do you think is KCC?	-0.01	0.02	0.00	0.03	0.01	-0.02
How wasteful do you think is KCC?	-0.02	0.02	0.00	0.04	0.02	-0.01
Satisfaction with public services						
Public hospitals	0.01	0.06	0.02	0.05	0.01	-0.03
Public schools	0.03	0.04	-0.02	0.01	-0.05	-0.06*
Security and policing	-0.03	-0.00	-0.05	0.02	-0.02	-0.04
Public roads	-0.00	-0.01	-0.02	-0.01	-0.02	-0.01
Provision of water	-0.02	-0.01	-0.01	0.01	0.01	-0.01
Provision of electricity	0.08*	0.05	0.03	-0.03	-0.05	-0.02
Provision of public lighting	-0.02	0.01	-0.03	0.03	-0.01	-0.04
Preventing of natural disasters	0.01	0.00	-0.03	-0.01	-0.03	-0.03
Controlling petrol prices	0.02	0.04	0.00	0.02	-0.02	-0.04
Public waste management	-0.00	0.00	-0.03	0.01	-0.03	-0.04
Provision of sewage waste system	-0.03	0.01	-0.05	0.04	-0.02	-0.06
Maintenance of public markets	-0.02	0.04	-0.05	0.05	-0.03	-0.09*
Demographics						
Age	-0.08	-0.26	0.16	-0.18	0.23	0.41
Male (%)	0.02	-0.00	0.02	-0.03	-0.01	0.02
Mende (Ethnic majority (%))	0.00	0.01	-0.00	0.01	-0.01	-0.02
Annual rental value of property (USD)	-7.65	0.01	-1.68	7.66	5.97	-1.69

* Statistically significant differences at the 95% confidence level.

[1] Unless indicated otherwise, all variables are measured by a 4-point likert scale.

C indicates the Control group.

E indicates the Enforcement group.

R indicates the group that received the Religious Visits.

J indicates the group that received the Joint treatment.

F List Experiment on the Competence of KCC

Figure 12: List Experiment on the Perceived Competence of KCC

The following question has two versions. Version 1 will be randomly assigned to half of the respondents of the survey while Version 2 will be randomly assigned to the other half of the respondents of the survey. Please **ONLY READ THE VERSION INDICATED BY SURVEYCTO**	
VERSION 1	**VERSION 2**
I am going to read to you four statements. After I read all four, please just tell me **HOW MANY** you agree with. Please do not tell me which ones you agree with, just **HOW MANY.** • Most people in Kenema are hard-working people. • Foreign countries should continue to provide Foreign Aid to Sierra Leone. • Sierra Leone is improving its agricultural industry. • The central government should do more to reduce addiction among the youth.	I am going to read to you five statements. After I read all five, please just tell me **HOW MANY** you agree with. Please do not tell me which ones you agree with, just **HOW MANY.** • Most people in Kenema are hard-working people. • Foreign countries should continue to provide Foreign Aid to Sierra Leone. • The Kenema City Council is competent to manage and address the needs of the city. • Sierra Leone is improving its agricultural industry. • The central government should do more to reduce addiction among the youth.

Table 10: Regression analysis on list experiment on perceived KCC competence

	Dependent variable:
	Items selected
Inclusion of Sensitive Item	0.513***
	(0.029)
Constant	2.632***
	(0.021)
Observations	5,994
Note:	*p<0.1; **p<0.05; ***p<0.01

G Timeline of the Experimental Intervention

	November				December				January			
	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
Religious Visits												
Enforcement Notices												
Court Summons												
Court Hearings												

Figure 13: Caption

H Evolution of survey attitudes

H.1 Evolution of respondents choosing medium values

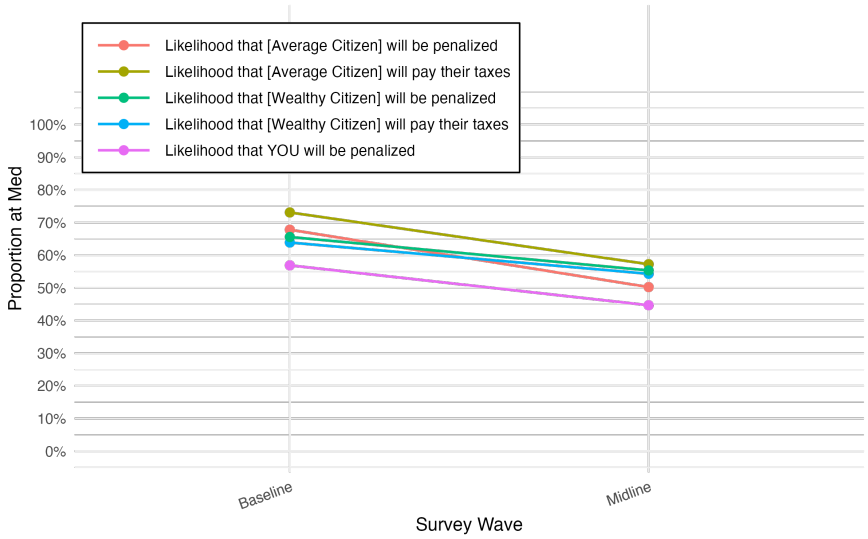


Figure 14: Shifts in Perceptions of Fiscal Capacity. Proportion with neutral responses

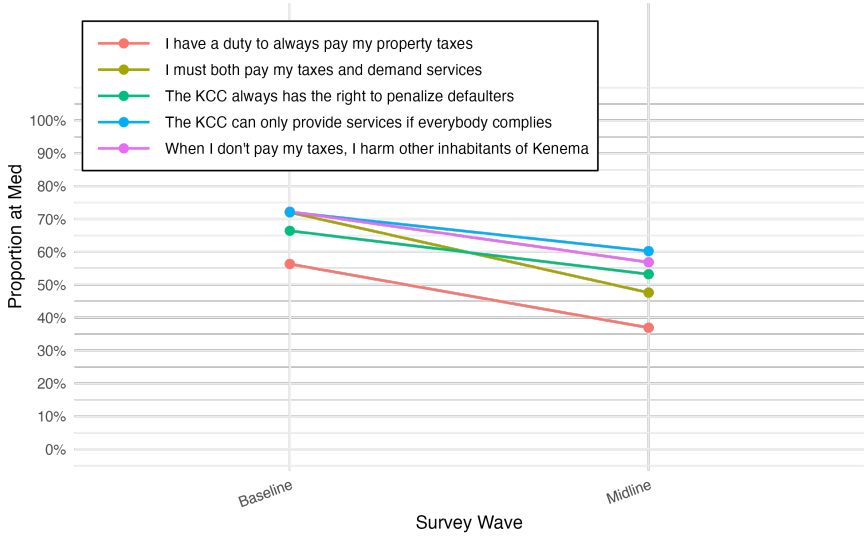


Figure 15: Shifts in Reported Tax Morale. Proportion with neutral responses

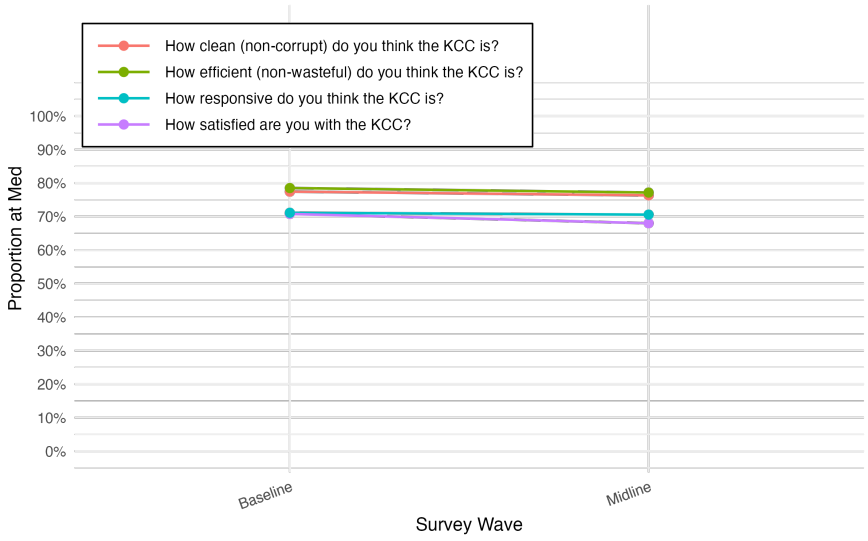


Figure 16: Shifts in Reported Satisfaction with KCC. Proportion with neutral responses

H.2 Evolution of respondents choosing minimum values

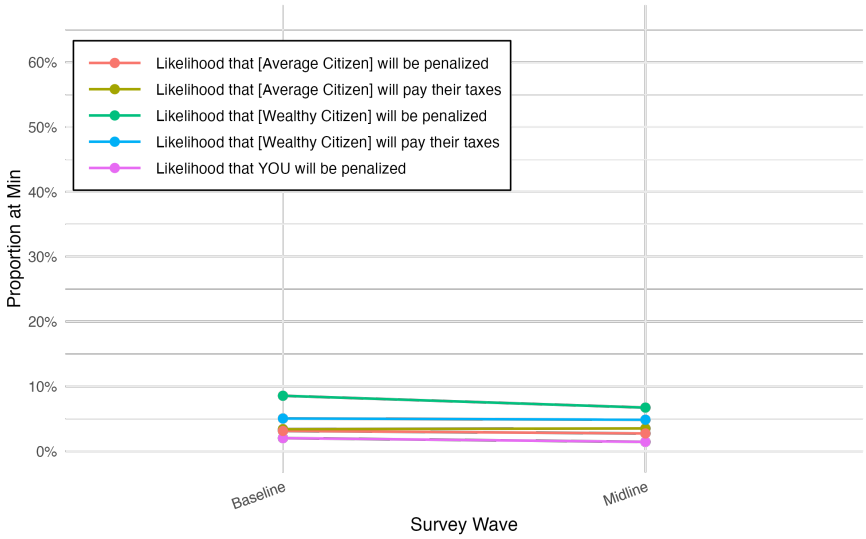


Figure 17: Shifts in Perceptions of Fiscal Capacity. Proportion answering in the negative

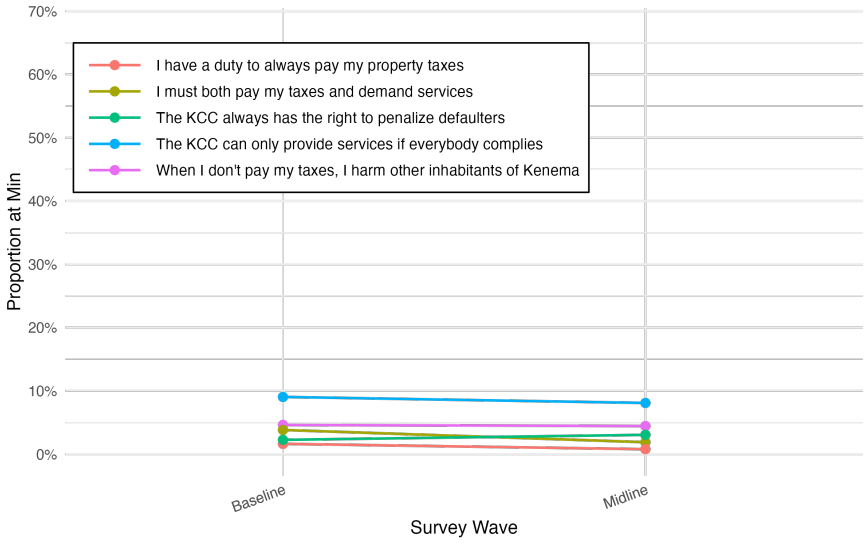


Figure 18: Shifts in Reported Tax Morale. Proportion answering in the negative

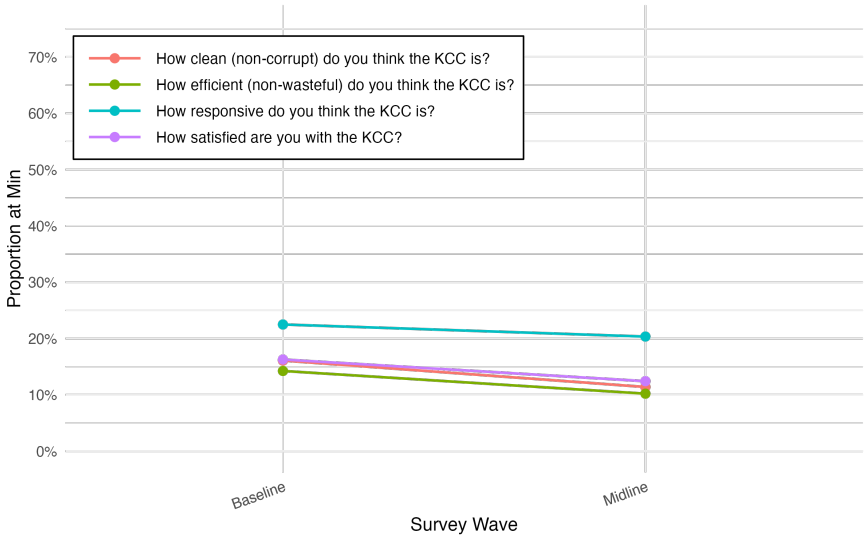
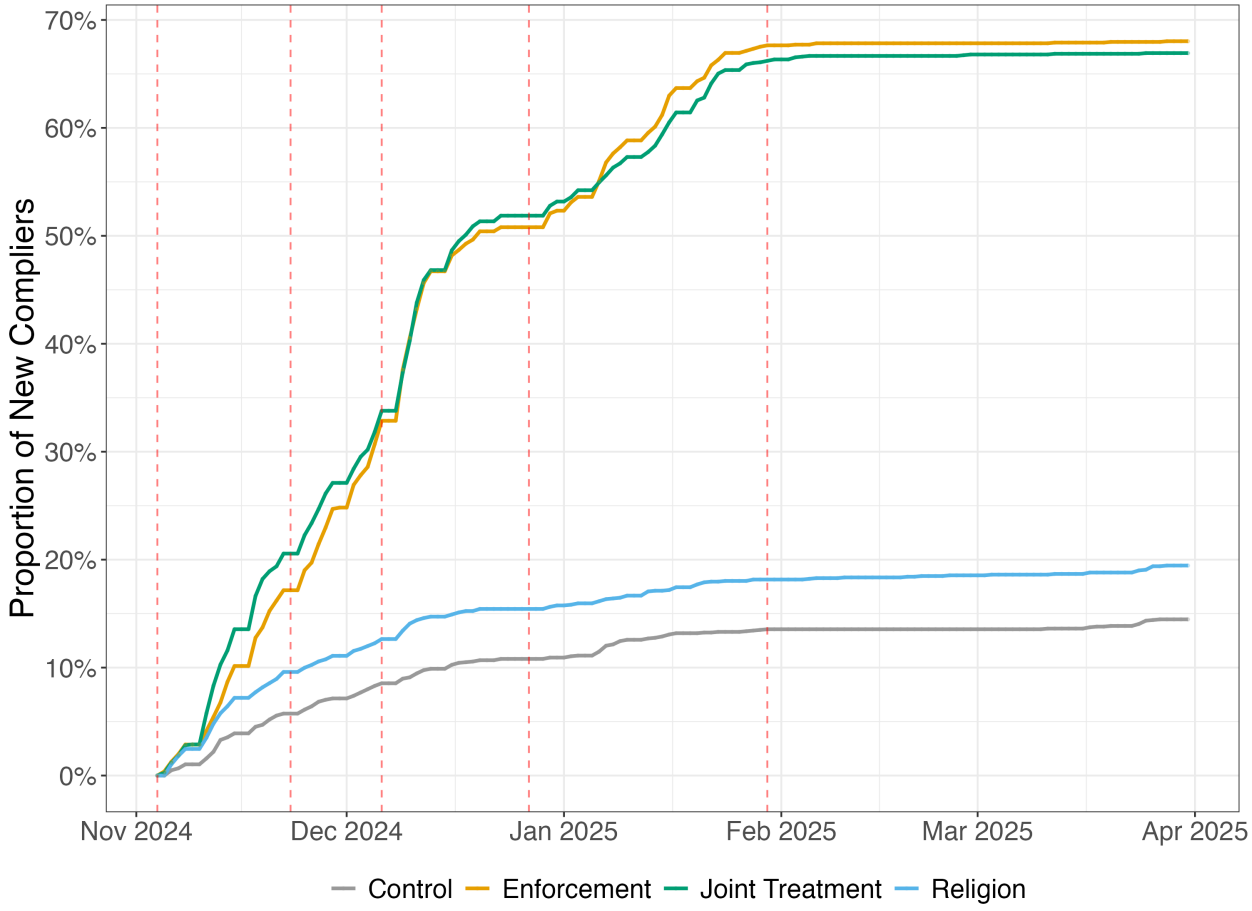


Figure 19: Shifts in Reported Satisfaction with KCC. Proportion answering in the negative

I Evolution of compliance



J Survey Effects

This study takes place in the context of an ongoing property tax reform that potentially changed citizens' priors about state capacity before the enforcement intervention took place. Because of this, one potential concern that may be raise is that the treatment effect of enforcement that we report may be the result of an interaction between the enforcement and the underlying reform occurring at the same time. If that is the case, for example, then we might expect that the effect of a simple informational nudge in this setting might be similar to the results that we show and that enforcement action itself may not be the driver of the results presented.

One potential way to evaluate this possibility is to look at the impact of an intervention that is very similar in nature to an informational nudge reminding citizens about the tax reform and about their need to comply with the property tax, namely being exposed to the baseline survey in our study. The surveys were presented as a study implemented with the knowledge of the Kenema City Council in the context of the ongoing property tax reform. Similarly, the survey included several questions that reminded individuals that they had to pay the property tax and about the potential for penalties associated with tax evasion. Finally, while we did not explicitly mentioned that the survey targeted tax defaulters, survey respondents knew that they had not paid the tax, potentially raising the perceived stakes of a visit about taxation targeted directly to their property. Observing a substantially weaker effect of receiving a survey compared to the enforcement treatment does not rule out the possibility that our main ITT estimates are augmented by the ongoing reform. It does rule out the possibility that the effect of enforcement compared to other nudges in different settings is *solely* driven by the ongoing reform in Kenema.

Since we selected the individuals that would participate in both the study and in the survey randomly, we are able to estimate the effect of answering our baseline survey on tax compliance. As mentioned before, we first randomly drew 12,000 properties for potential inclusion into the survey. Out of these, 6,000 were randomly assigned to be initially targeted and another 6,000 were randomly selected to be replacements in case the initial target could not be found, did not consent to the survey, or if their survey did not pass our quality tests. This means that whether an individual was surveyed is a function of being randomly assigned to be first targeted or to be a replacement.

Table 11 presents the estimated effects of being surveyed on whether an individual complied with the property tax between the start of the survey in September 17th, 2024 and the beginning of the enforcement intervention in November 4th, 2024. Column one presents the coefficient estimates obtained from regressing tax compliance on whether an individual is among the initial 6,000 targeted to be surveyed. This coefficient is an ITT estimate on being selected to be surveyed. Column 2 regresses tax compliance on whether the individual was successfully surveyed. This coefficient is valid if we assume that being successfully surveyed

is as good as random, given that the characteristics of a replacement property owner are not related to the characteristics of the initial targeted property. Finally, one concern is that this assumption does not hold since individuals could refuse consent to be surveyed and thus self-select out of the survey treatment. We account for this by presenting column 3, in which we use the initial survey random assignment as an instrument for whether an individual is successfully surveyed and presents the results from an IV-regression.

Table 11: Baseline survey effects on tax compliance

	Dependent variable:		
	Δ_t Compliance		
	September 17th, 2024 - November 4th, 2024		
	OLS	OLS	IV
	(1)	(2)	(3)
Assigned to survey	0.015***		
	(0.005)		
Successful survey		0.023***	0.033***
		(0.005)	(0.012)
Constant	0.084***	0.079***	0.074***
	(0.004)	(0.004)	(0.007)
Observations	11,854	11,854	11,854
Note:			*p<0.1; **p<0.05; ***p<0.01

Taking our IV estimate as our most trust-worthy estimate of the effect of being surveyed, we see an increase in compliance of 3.3 percentage points relative to baseline across the two months since the beginning of the baseline survey and the start of the enforcement intervention. This has two implications. First, the impact of the survey is similar in magnitude to previous nudging interventions in other settings, suggesting that the background reform is not augmenting the survey effects. Second, while the survey effects can be considered substantial, they are an order of magnitude lower than the main effect of the enforcement intervention at a comparable timeline, reassuring us that the enforcement effect is indeed different from the effect of a nudge in our setting.

K Who remains a defaulter?

Table 12 presents the difference-in-means for the property owners that complied with the tax by April 1st, 2025 versus those that still had not done so by this date, across several demographic and attitudinal variables. The rows are arranged by their p-values. Focusing on substantive and statistically significant differences, we report that those that comply with the property tax at the end of the experiment are 5.4 percentage points more likely to confirm that they received a formal tax notice from the local government detailing their compliance before the implementation of our study, compared to those that did not comply. Similarly, those that comply are 4.4 percentage points more likely to be a woman compared to those that do not comply. Finally, they are 3.6 percentage points less likely to report making recent contributions to development projects in their community.

Table 12: Baseline differences between compliant and non-compliant taxpayers (April 1, 2025)

Variable	Mean (Compl.)	Mean (Non-compl.)	Difference in Means	p-value
Tax-to-rental value ratio	0.027	0.029	-0.003	0.000
Owner age (years)	51.614	49.786	1.828	0.000
Reported receipt of 2024 tax notice (%)	0.812	0.759	0.054	0.000
Male respondent (%)	0.616	0.660	-0.044	0.000
Reported community contribution (%)	0.583	0.619	-0.036	0.004
Illiquidity index	0.255	0.269	-0.013	0.008
Rental value (USD)	245.5	233.6	11.9	0.014
Mende ethnic group (%)	0.724	0.745	-0.021	0.062
Pays zakat (%)	0.515	0.492	0.023	0.068
KCC legitimacy index	2.447	2.415	0.032	0.068
Peer compliance perception index	3.110	3.082	0.028	0.076
Annual tax liability (USD)	5.3	5.2	0.1	0.169
Mean trust index	2.678	2.660	0.018	0.176
Unconditional tax morale index	3.047	3.033	0.014	0.270
Perceived enforcement capacity index	3.128	3.118	0.010	0.510
Perceived road corruption index	0.879	0.895	-0.016	0.541
Reported days without food in the last week	1.989	2.008	-0.019	0.707
Enforcement corruption index	0.149	0.146	0.003	0.778
Conditional tax morale index	2.416	2.413	0.003	0.873

L Progressivity of the Tax Schedule

Even after the re-assessment of the property tax rates, the Kenema tax schedule remains relatively regressive. As shown in Figure 20, the ratio of the tax rate that properties must pay to the estimated annual rental value of the property decreases starkly as the rental value of the property increases.

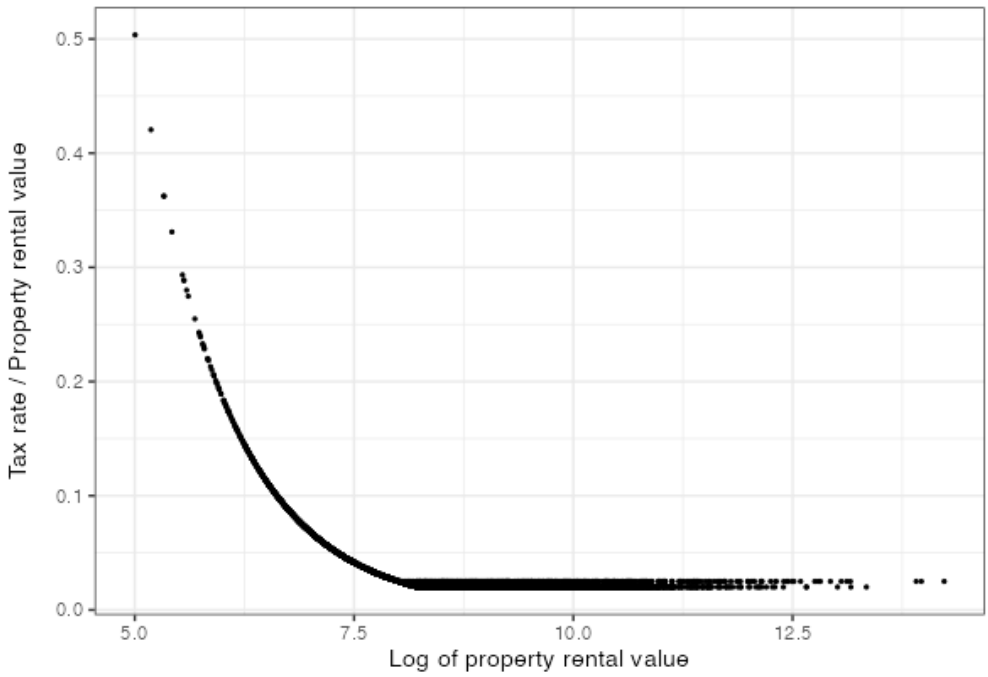


Figure 20: Progressivity of the tax schedule

M Compliance in the Next Tax Cycle

We do not observe evidence of persistence in the treatment effects towards the following tax cycle in 2025. In other words, while an individual assigned to enforcement or to the religious visits in 2024 is substantively more likely to pay in that same fiscal year, that individual is not more likely to comply with the tax in the 2025 fiscal year without further enforcement action. Table 13 presents the impact of the experimental interventions on whether the property owners has complied with all their tax liabilities by the 2025 fiscal year's tax deadline in 2025. Only the group that received both interventions is statistically more likely to comply with the tax than the control group. Even so, the increase is an order of magnitude lower than the initial effect of enforcement, at 3.5 percentage points, and no similar increase can be observed among those that received only enforcement.

Table 13: Tax compliance into the 2025 tax cycle

	Dependent variable:
	Compliance by June 30th, 2025
Enforcement	0.019
	(0.013)
Religious Visits	−0.012
	(0.013)
Joint Treatment	0.035**
	(0.013)
Constant	0.142***
	(0.009)
Observations	6,274
Note:	*p<0.05; **p<0.01; ***p<0.001

N Replication of the Religious Intervention

Table 14 presents the result of replicating religious intervention among a new sample of defaulters that were not previously engaged, the month after the specialized tax court hearings were finished. Out of 3,000 defaulting taxpayers that were not selected to be part of the main experiment, 1,500 were randomly assigned to receive a religious visit where the religious leader would motivate them to comply with the tax. The intervention was identical to the first wave of religious visits during the first experiment. Just as in the main experiment, the religious intervention causally increases compliance by 4.3 percentage points compared to the control group. These results mirror and increase our confidence in the estimated impact of the religious intervention in the main experiment.

Table 14: Effect of the religious intervention during a replication experiment

	Dependent variable:
	$\Delta_t Compliance$ (Feb 2025 - June 2025)
Religious Visits	0.043***
	(0.013)
Control	0.129***
	(0.009)
Observations	3,000
Note:	***p<0.01