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Social Accountability and Service Delivery

Experimental Evidence from Uganda

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Abstract

Corruption and mismanagement of public resources can affect the quality of government services and undermine growth. Can citizens in poor communities be empowered to demand better-quality public investments? This paper looks at whether providing social accountability training and information on project performance can lead to improvements in local development projects. It finds that offering communities a combination of training and information on project quality leads to significant improvements in household welfare. However, providing either social accountability training or project quality information by itself has no welfare effect. These results are concentrated in areas that are reported by local officials as more corrupt or mismanaged. The impacts appear to come from community members increasing their monitoring of local projects, making more complaints to local and central officials, and cooperating more. The paper also finds modest improvements in people's trust in the central government. The study is unique in its size and integration in a national program. The results suggest that government-led, large-scale social accountability programs can strengthen communities' ability to improve service delivery.

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Social Accountability and Service Delivery: Experimental Evidence from Uganda[1]

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1 Introduction

Corruption and mismanagement of public resources can undermine development by generating costs for society. Those costs can range from an increase in bureaucratic hurdles in order to extract payments from citizens, to the creation of an unappealing economic environment for foreign investments, or a reduction of human capital stemming from low-quality delivery of health or education services (Bertrand et al., 2007; Woo, 2010; Reinikka and Svensson, 2004; Bjorkman and Svensson, 2009). Corruption and mismanagement can also increase inequality by affecting more severely those with less voice but greater need for public services (Olken, 2006; Hunt, 2007).

Recent research has suggested that empowering local populations and promoting transparency on the performance of local leaders and service providers can improve public governance by increasing the demand for accountability. A recent systematic review by Molina et al. (2016) finds that local monitoring can improve health services, though the evidence is limited due to a small number of studies. There is particularly little empirical evidence on the effectiveness of promoting social accountability in the context of large-scale national programs (Devarajan et al., 2011).

Community and government officials may misuse or divert funds from local populations. When combined with collective action problems and lack of information and skills to address these issues, corruption could lead to significant problems in service delivery. Can citizens in poor communities be empowered to demand better-quality public services and programming from local officials and bureaucrats? To answer this, we worked with the Inspectorate of Government of Uganda to conduct an experiment with a large sample of communities to test whether providing monitoring skills and encouraging the reporting of cases of mismanagement, as well as disseminating information on the absolute and relative performance of community projects, pushes citizens to demand and obtain more from local development projects.

Communities from across the broad north of Uganda were selected by the central government to receive a community-driven development program called the Second Northern Uganda Social Action Fund (NUSAF2). From a list of 940 communities that received a NUSAF2 project, we randomly selected 634 to receive an intensive, six-day training on how to monitor community projects, including how to identify and make complaints about corruption

and mismanagement to implementing partners and local, sub-national, or national leaders. The trainings were managed by the Inspectorate of Government (IG), an independent arm of the government responsible for fighting corruption, and implemented in partnership with local civil society organizations (CSOs). The sample size for this intervention is between five and 20 times larger than sample sizes in similar research, covering more than 45 districts and 485 sub-counties throughout the northern half of the country of Uganda, with more than 10,000 direct beneficiaries. The design thus allows for a minimum detectible effect size of less than 10% for most outcomes.

As NUSAF2 comprised a wide range of project types, including building teachers' houses, providing livestock to households, putting up fencing, and establishing enterprise development, we developed a normalized index of project quality obtained through physical assessments of the projects (similar to audits). These data were collected about six months after the mean completion of the local NUSAF2 projects and were used to measure the immediate impacts of the training. We then used the information collected from this assessment to create a scorecard that ranks the performance of the community projects relative to other community projects within a district. We randomly selected 283 communities to be given this information during a community meeting, which included a facilitated discussion about why communities did or did not perform well relative to others.

This produced a 2x2 design where communities received training, a scorecard, both training and a scorecard, or no intervention. This design allows us to test directly whether training communities on social accountability or simply providing information on relative project quality can lead to improved service delivery, or if a combination of the two is needed.

We conducted individual surveys with community members six months after the initial assessment and scorecards were delivered to measure household welfare impacts. The sample includes over 6,900 individuals. Almost two-thirds of the projects provided livestock to households, making these projects more easily comparable to one another and more likely to have welfare implications for individual households. For these reasons, we focus our welfare analysis on these projects, though we also present results from the full sample.

We find that the social accountability training led to a small increase in the overall quality of projects by 0.135 standard deviation. From a follow-up household survey conducted six months later, we find that neither the training nor the project quality scorecard alone had any

impact on household welfare. However, the combination of the two led to very large household welfare increases: households in communities that received both training and information scorecards have approximately 0.6 more head of cattle per household, or 27% more than the control group. This is equivalent to approximately $114 per household ($1,140 per community) worth of animals. These findings indicate that for rural Ugandans, who often have limited interactions with the government, providing training alone or information about the quality of a project alone is not sufficient to increase the quality of service delivery. Rather, the combination of training on how to identify issues and report problems with information on the performance of projects leads to large welfare improvements.

We explore mechanisms for the observed impacts and find that the training and information increased community monitoring of the projects and cooperation among community members. People report spending more time visiting and monitoring projects and making complaints to various levels of government. Individuals also report an increased ability of communities to solve collective action problems and a modest increase in trust in the central government.

During a survey conducted before the experiment, we asked local leaders to identify areas near them that they thought had more corruption or mismanagement issues. We conduct heterogeneity analysis using these responses. We find that program impacts are concentrated in areas that local officials report as being more likely to be corrupt or mismanaged. We do not find spillovers across communities on our outcomes of interest, but we do find increased rates of monitoring of other projects or government services within treatment communities, suggesting the impacts observed here could expand to other public investments in treated communities.

Uganda, like many developing countries, faces significant challenges with service delivery. For example, though lowering child mortality and increasing rates of primary school enrollment are major goals of the government, both measures of service delivery are poor (Bold and Svensson, 2013). Low-quality services can obviously be related to a lack of funding for programs, but even when money is available, service provision can also be a problem. Hard data on the sources of these issues are rare, though corruption and mismanagement by officials or service providers, as well as citizens' behaviors are often blamed.

An active body of research seeks to identify the most cost-effective approaches to reduce corruption and improve management of development projects. Research on the impact of

community-based monitoring can be broadly divided into two types of interventions. The first involves providing trainings for communities to learn to identify issues on local development projects and how to act on them. The second involves providing information to communities on the quality or process of local development projects.

The evidence for the first type of intervention is extremely limited. In the only study we are aware of that provides trainings to communities, Bjorkman and Svensson (2009) experimentally tested a program that combines information on the quality of providers and two half-day trainings to communities to improve the provision of health care in Uganda. They find communities receiving this combined intervention monitored providers more, and these providers increased their effort levels. This led to reductions in child mortality and increased child weight. Nyquist, De Walque, and Svensson (2017) find that these results were sustained four years after the program. They also introduced another treatment arm with training only, but their findings suggest that this was not enough to lead to sustained changes in the communities. They did not, however, have an information-only treatment. Note that both studies have a relatively small sample size, with 50 communities per treatment arm, which means there could be low statistical power for some tests.

Evidence for providing information to communities is a bit more developed, though the results obtained thus far are mixed. In a well-known experiment, Olken (2007) tested the effect of dramatically increasing top-down audit rates and encouraging citizen monitoring of road projects in Indonesia. The community monitoring was done through accountability meetings, where local leaders explained how funds were used. Communities received no other trainings or support to monitor that spending. Olken found significant decreases in leakages from the audits, but no effects from the community monitoring. Andrabi, Das, and Khwaja (2017) randomly provided report cards on school performance to communities in Pakistan. They found the report cards led to increases in test scores and enrollment, and decreases in school fees. Banerjee et al. (2010) conducted a randomized evaluation of a program that tested whether community-created scorecards could lead to increased community participation in child education in India. They found this program had little impact. In another study, however, Banerjee et al. (2018) mailed information on a rice distribution program in Indonesia to inform households about the program, and find beneficiaries received significantly more rice. Finally, Barr et al. (2012) tested community-created scorecards on school performance in Uganda. Their findings indicate that the

use of the scorecards increased student test scores and decreased teacher absenteeism. These varied results suggest that providing information can lead to improved service delivery, but information alone may not be enough, and the mechanisms and distributional effects are not well known.

Our contributions to this literature are as follows. First, we provide evidence that social accountability training and information on project performance can empower communities to improve the public investments they receive. Our design allows us to conclude that project quality information or accountability training alone is not sufficient to improve services in a low-capacity environment; instead, both interventions need to be used together.

Second, these interventions were part of a large-scale, government-run program managed by the Inspectorate of Government and implemented in cooperation with local civil society organizations. As such, the scope, delivery mechanism, and scale of the program make it particularly relevant for learning about policy effectiveness. Recent evidence on the differences in approach and impact of interventions by governments, NGOs, and small tightly designed experiments has led to concerns about external validity (Bold et al., 2015). Results show that large-scale, government-led versions of social accountability programs can be effective.

Third, we provide evidence of the mechanisms behind these effects. While we cannot rule out all potential mechanisms, we present evidence that increased empowerment obtained through the combination of training and information led to greater monitoring by the community and increased complaints to all levels of government. Our findings also suggest significant spillovers from the intervention onto other government services in these communities.

Fourth, we estimate the distributional impacts of corruption and mismanagement by using a novel data collection strategy. We asked local officials to identify areas that were more likely to have problems with corruption and mismanagement before the start of the program. We find that increases in household welfare are concentrated in areas identified as being more likely to be corrupt, suggesting the program is more effective where government services are performing worse. While research has shown there can be important distributional implications of corruption and mismanagement, this has not been well tested in the context of social accountability interventions.

These findings also suggest that local officials are aware of where there are corruption and service delivery problems, to a better extent than the central government. Our results thus

add to recent research on the information asymmetries of principals and agents, including work on organization decentralization (Dal Bo et al, 2018; Aghion and Tirole, 1997; Bloom et al., 2012; Mookerjee, 2006), manager decision making for deployment of monitoring systems (de Rochambeau, 2017) and who to target for programming (Hussam et al., 2017).

The results of this experiment suggest that low-income citizens can successfully demand better services, when empowered with both proper skills and information. Large-scale, government-led versions of social accountability programs can increase the returns on investments in local development projects and improve citizen engagement with government. This can happen when social accountability training is combined with information about the performance of local development projects. The effects can be especially strong in areas where local service delivery is particularly poor. Recent calls by international organizations for greater accountability are leading some to argue for reducing investments in areas where corruption and mismanagement can be high. Our results suggest that programs can instead implement a community-based approach, thus "shrinking the [black] box [of corruption] by minimizing the impact that corruption can have on aid outcomes" (Kenny 2017).

The remainder of this paper proceeds as follows. In the next section, we describe the NUSAF2 program, training and scorecard interventions. In section 3 we present the experimental design. In section 4 we present the data. We examine the results in section 5. Section 6 then concludes with a discussion of the implications of this work and a cost-benefit analysis.

2 The NUSAF2 program and interventions

NUSAF2 was a large-scale community-driven development program implemented by the Office of the Prime Minister (OPM) in coordination with local, sub-county, and district authorities, with $135 million funding from the World Bank and the UK's Department for International Development (DFID) to the Government of Uganda. We present a simple representation of the various levels of government in Uganda in the context of NUSAF2 in Figure 1. As part of the program, communities were invited to formulate projects and submit proposals to project offices based in the sub-counties.[3] Once approved by the sub-county, the proposals were then passed to

[3] "Community" refers to either a village or a collection of villages that come together to propose a NUSAF2 project. They are thus not legal designations but are official designations under NUSAF2.

the district, which assessed the feasibility of the projects before passing them on to OPM for final approval and funding. The submitted projects fell under three categories: (i) public works, (ii) livelihood investment, and (iii) infrastructure rehabilitation.

Once projects were approved by OPM, funds were managed directly by the communities themselves through a variety of committees. The Community Project Management Committee and Community Procurement Committee were responsible for the delivery of the selected projects. Community Social Accountability Committees were created to oversee and monitor project progress and provide oversight within the community. Sub-county and district authorities were then expected to undertake monitoring and supervision in coordination with NUSAF2 project staff.

A highly decentralized project like NUSAF2 can create a range of transparency and accountability challenges.[4] Some concerns include that community and government officials may potentially misuse, or divert funds from community projects. Anecdotal evidence from a previous phase of the program suggests some cases of misappropriation of funds by officials. If transparency is limited, communities may lose control over how money is spent. Officials may insist on low-quality suppliers for community projects, potentially expecting kickbacks. Community elites may try to engage in similar behavior to attempt to manage funds with little oversight or to induce fellow community members to hire low-quality suppliers.

At the same time, it is often impossible to separate corruption from general mismanagement of resources. Communities and local governments may simply not have the capacity to make optimal decisions, and so funds may be used inefficiently or ineffectively. It is also possible that there may be issues with collective action, where communities may fail to implement a project well because it is too difficult to organize community members to complete the activities. This could be an especially large problem in the case of public works programs, which require local labor, or construction projects where monitoring of suppliers is difficult and time consuming. Finally, beneficiaries themselves may simply fail to take sufficient care of the public investments they receive.

To address these potential concerns, a Transparency, Accountability, and Anti-Corruption (TAAC) component was included in the design of the NUSAF2 project. We worked with the

[4] Evidence from Fisman and Gatti (2002) suggests that decentralization can actually *reduce* corruption. We do not take a position on whether decentralization in Uganda has increased or decreased corruption, only that a highly decentralized program can create a range of potential challenges.

Inspectorate of Government to embed a randomized control trial as part of the component. In the seventh and eighth rounds of NUSAF2 funding (out of a total of 12 rounds), communities were trained on the details of project implementation and how to identify and prevent cases of corruption and mismanagement. The training was implemented by seven different CSOs across the broad north of Uganda,[5] which sent representatives to communities to implement detailed training on social accountability and community monitoring of NUSAF2 projects. The program also organized follow-up visits by CSO representatives to provide ongoing training and advise the communities on how to monitor implementation of NUSAF2 projects.

When the CSO trainers first entered a community, they organized community assemblies. The assemblies discussed the principles of social accountability and community monitoring. As part of this mobilization phase, each community elected additional representatives to add to an existing social accountability committee. The existing committees were generally considered to be untrained and poorly prepared to monitor issues in the project. The social accountability training was thus designed to give them new capacity and revive their mandate. Members of the new committees made a public pledge to participate in the training program, undertake monitoring of the project on behalf of the community, and report back to the community.

The training provided background on social accountability and the NUSAF2 program, taught participants community-monitoring skills, and provided tools to monitor NUSAF2 projects. The training also provided hands-on skills in writing reports, providing feedback to the community, generating a community action plan, and applying monitoring skills to projects other than NUSAF2 in the community. The training gave special focus to encouraging communities to reach out and make complaints to the local and central governments, including the IG if necessary. People could contact the IG either by approaching a local office in their district or by texting a new national corruption hotline. A detailed description of the program components is presented in the appendix, including some of the visual training materials used for illiterate populations (Figures A1 and A2).[6]

[5] Due to the size of the program, one civil society organization managed the implementation of the program but sub-contracted to seven individual CSOs that were present in the districts where the training was implemented.

[6] In addition to the main training treatment, an additional treatment was also attempted in a random sub-sample of communities. This additional treatment was supposed to increase incentives for individuals to monitor projects through non-monetary rewards. These took the form of pins provided to participants showing they served as community monitors. These individual incentives were low value. In addition, group rewards were considered for communities who completed the entire training, conducted the community monitoring and produced timely monthly reports. However, these group rewards were not implemented. We compare the treatment effects between the different treatments and do not observe a meaningful difference in coefficients and significance.

Approximately six months after the mean completion date of these projects, from December 2015 through January 2016, we conducted an assessment of the quality and quantity of the community projects. This was done through physical observations. We then used this information to construct a score for the projects in each community. In February 2016, individual community facilitators, trained by the research team but identifying themselves as representing the IG, went to communities to present these scores. The facilitators also provided communities a ranking of their performance, relative to other NUSAF2 communities in their district. The scorecard stated that their project was ranked X out of Y projects in the district based on their performance in the assessment. An example of a scorecard is presented in Figure 2.

To ensure comparability of scores, the scorecard was done only for livestock projects. (Due to operational issues, we also had to exclude the Karamoja region.)[7] Treatment communities were presented summary information on the health of animals, animal productivity, assistance from the district veterinary officer (who was supposed to assist communities with their animals but was not always present), and a constructed value for money score that was calculated by multiplying the number of animals received by the productivity score of all the animals, divided by the total money received for the sub-project.

During the dissemination of the scorecards, the communities were invited to discuss the results. This discussion was supported by the community facilitator and included opening remarks from community leaders and a speech introducing the goals of the meeting. The scorecard results were then announced, with each component of the score fully explained. The meeting ended with a discussion about how communities could use the results of the score to improve service delivery and accountability in the community. Some of the actions suggested by communities that were discussed during these meetings included: (1) voicing concerns to the sub-county and district leadership; (2) participating actively in the community projects; (3) voting for local politicians whom they believe can best help the community develop; (4) selecting the best possible sub-project leaders and monitoring them closely; and (5) working together as a community to resolve issues whenever they can.

For the analysis presented here, we thus do not differentiate between the different treatments and instead present results of the pooled treatment.

[7] The focus on livestock means that the information treatment was conducted only in projects that were a private good, as opposed to infrastructure projects that were a public good. We provide evidence below that the training treatment had similar impacts in livestock and other project types, but we do not have direct evidence on whether project quality information could have led to improvements in public good projects.

The facilitator brought to each community five copies of the scorecard in English and five copies in the local language, a number line to graphically show the ranking of the community project, and sodas and soap as gifts to participants. Once the facilitators left, they did not return to the community.

The interventions we study here were based on a well-defined curriculum that was directly relevant for projects being implemented in communities. The training intensity was relatively long compared to other studies cited above. The scorecard information was also tailored to the projects and meant to encourage specific action by communities and presented direct comparisons to other communities in their area.

3 Experimental design

Due to the large size of the NUSAF2 program, it was implemented in 12 rounds over five years. Working with the IG, we were given a list of all projects to be funded in the seventh and eighth rounds and randomized which communities would be given the social accountability and community monitoring training. The randomization was done in Stata. Due to the limited amount of administrative data from the government that had been digitized, we were only able to observe the location, budget, and rough classification of projects *ex ante* (whether public works, livelihood investments, or infrastructure rehabilitation projects). The communities' choice of project type was based on an endogenous process that we were not able to observe. We present some discussion in the next section about what predicts the type of project that is chosen. Note that every community in our sample received a NUSAF2 project. As the interventions we study here were randomly distributed across projects, and project types are well balanced for each treatment and control condition, the type of project chosen by a community does not bias our inference of impacts from the training and information treatments.

The timeline for this study is presented in Figure 3. An initial survey of local officials, discussed below, was conducted in early 2013. In November 2013, we received the list of NUSAF2 projects from the seventh and eighth funding rounds. We randomly assigned communities into social accountability training treatment or control in January 2014, with the NUSAF2 program and social accountability trainings beginning in June 2014. In December 2014, 80% of the funds were distributed, with the other 20% funded in the preceding six months.

Some projects were completed quickly, such as livestock projects, while road and building construction took up to one year to complete. All projects were completed by October 2015, with a mean completion of June 2015. We conducted the project quality assessment from December 2015 to early February 2016. From this assessment we constructed the project quality information scorecard and randomized communities to receive the scorecard intervention in February. We then distributed the scorecards from February to March 2016. Six months after the assessment, in June to July 2016, we completed the final household survey. The final household data collection was done on a rolling basis to coincide with the timing of the project assessment and ensure that communities were visited on a consistent timeline.

The design and number of projects by type and treatment status for the social accountability training intervention are presented in Table 1. A total of 940 projects were included in the sample. However, our main outcomes are not easily comparable across each of the project types. In the project types with the smallest number of communities, we were unable to create a reliable index of outcomes from the first project assessment, and so we focus on the most common project types: enterprise development, fencing, livestock, road and housing construction, and tree planting. This reduces our sample to 895 projects.[8] For household-level welfare outcomes, we include all project types.

In Table 2 we present the information scorecard design. As described previously, we developed and delivered the project quality information scorecard only to communities with livestock projects to improve comparability. Due to operational difficulties, we did not include the northeast part of the country, the Karamoja region, with 61 communities. A total of 574 communities are thus included in the sample. The end design is a 2x2 that includes both social accountability training treatment and control communities.

The NUSAF2 program and the social accountability training were implemented across the broad north of Uganda. We present a map of training treatment intensity in Figure 4. The figure shows the number of NUSAF2 communities that received training by parish across the

[8] Because we had limited information on project type before selecting communities for the social accountability training treatment, we were not able to pre-drop project types that were implemented in numbers too small to allow for reasonable comparison of project quality, as is commonly done in similar experiments. We instead drop them in our analysis here. As the number of such projects is small (less than 5% of the sample in total), and given that we target all the projects delivered by NUSAF2 in two funding tranches, this post-dropping should not affect our internal or external validity.

entire sample.[9] In some areas, there is a high concentration of projects, but for the most part they are distributed across the broad region. We also look at spillovers at the sub-county level to test if the number of treated projects within a local area affects outcomes for the control group.

Before data were analyzed, all the outcomes were pre-registered with the American Economic Association registration system, number AEARCTR-0001115. The main outcomes of interest are the quality of the NUSAF2 project[10] and household welfare as captured by assets. To explore potential mechanisms, we also look at whether accountability training and project quality information scorecards affected the procurement and contracting process for communities, the level of monitoring by community members, and the interaction with local officials and technical staff. Our secondary effects of interest are whether the program changed individuals' perceptions of the legitimacy of local and central government, and whether there were spillovers to other programs in communities.

We measure household welfare using an index of assets. We use both total household assets and the number of cattle owned by the household, as the latter is a direct outcome of the livestock projects and is the most common way households store wealth in the area studied. We explore these effects for all projects but do not expect animal ownership to change in the non-livestock projects. We therefore constrain some analysis to livestock projects only.

While we were able to confirm that all of the selected communities received training, and that training was of satisfactory quality overall, there were delays in some communities receiving the training. The expectation was that communities would receive training either before or within a few months of receiving the NUSAF2 project funds. However, there are three reasons why this did not always happen. First, training implementers had limited information from the NUSAF2 program office about the timing of fund disbursements. Second, funds went from the central government to the districts before going to communities, and there was little information from the districts about their fund disbursement schedule. These two issues meant that timing the training precisely was very difficult in practice. Finally, the local CSOs often had difficulties organizing their activities to implement the training on time, and so delivered training later than originally planned in some cases.

[9] Administrative units in Uganda, from largest to smallest, go from the central government to the district, then sub-county, parish, and village. We present the intensity of projects by parish as it is a medium level of administration and best displays the intensities across the area.

[10] We describe in the next section and in Tables A1 and A2 the construction of this indicator.

Soon after the trainings were completed, we conducted a short process evaluation in a randomly selected 96 projects to determine when funds were received relative to when the trainings were conducted. We found that 17 projects received their training after they started using their funds, with 11 receiving training within two weeks of using their funds. Four projects (4.2% of the randomly selected sample) began using their funds at least a month before they received training. We consider this late treatment to be non-compliance. Given the low rate of late trainings, we do not make corrections for non-compliance and so focus on the intention-to-treat (ITT) estimates.

4 Data and balance

4.1 Data

The data for the analysis presented here come from several sources. Before the program began, we were given limited administrative data on what projects were to be funded by NUSAF2. From this list, we obtained information on the location, budget, and general types of projects.

We conducted a survey of local officials between January and March 2013 in which we included all 45 districts and 485 sub-counties in areas where NUSAF2 operated at that time. Sub-county officials interviewed in the survey include elected and appointed officials, as well as local NUSAF2 officers. We were interested in obtaining information on levels of corruption or mismanagement. To measure this, we asked each respondent the following question: "In your personal opinion, within your district, which sub-county has the biggest problem with corruption?" We then counted the number of times a sub-county was mentioned. Of the sub-counties in the sample, 47% were never mentioned by an official and 20% were mentioned only once. We created an indicator if the sub-county was mentioned more than once.[11]

As mentioned above, outcome data were obtained from two separate surveys: first, a project quality assessment captures effects on community project outputs, and second, a survey of individual households conducted six months later that captures effects on the households.

[11] It is possible that communities select project types based on local prevalence of corruption. We in fact observe this. Communities that are in areas cited as corrupt choose livestock projects 58% of the time, while those in areas not cited as corrupt choose livestock 70% of the time.

The first source of follow-up data collected is a project assessment conducted between December 2015 and February 2016. The project quality assessment includes observations of community projects by a team of enumerators. For projects with a single output (e.g., a staff house or a borehole), enumerators directly observed characteristics of the output. For livelihood support projects where outputs were distributed to beneficiaries, a sample of beneficiaries was drawn and beneficiary-level outputs were observed. For example, for livestock projects, a sample of beneficiaries was selected, and enumerators visited the sampled beneficiaries to observe the animals provided by the project. The project assessment data allow for the measurement of a set of core outcomes for the impact evaluation, but also of intermediary outcomes (or main underlying mechanisms) that can lead to changes in final outcomes. For each domain, the project assessment allows us to capture a range of variables, which can later be aggregated into indices. The next sub-sections provide additional information on the main outcomes and intermediary outcomes to be tested and the indicators that were collected to measure them. The appendix provides tables with the full list of variables composing the indices (Tables A1 and A2).

The primary outcome is a measure of a project overall score, which is composed of indices that measure the quality of the project and the quantity of outputs delivered. The project overall score is the main outcome for the analysis. It is built as an interaction of a quality measure and a quantity measure. This allows us to account for situations in which a community received more output from a project but at lesser quality, and vice versa. The quality and quantity indices are also analyzed separately. As the quality and quantity indicators are created across different project types, the indices constructed are normalized within each project type to ensure comparability.

Project quality is measured within each project type through direct observation of a range of attributes of the project output. For livestock, the project quality score is an additive index of whether the animal received was of the appropriate age, whether it was a local or improved breed of animal, whether the animal was productive when visited by the survey team, and whether the animal displayed any signs of illness. For staff houses, the quality is measured in terms of how well the walls, roof, windows, doors, ceilings, and floors meet quality standards. For enterprise projects, quality is determined by whether individuals have access to materials, transportation, credit, labor, and markets. Road quality is measured by the material used in the construction. The

quality of tree planting projects is determined by whether the seeds or seedlings are certified by the government or other NGOs.

The quantity measure captures the outputs delivered as part of the community project. It is determined by the number of animals received, length and height of the building constructed, number of people engaged in the enterprise, length of the road constructed, and the number of trees planted. These measures are obtained from direct observations of the outputs by enumerators at the time of the project assessment. In cases where the output could not be observed, the quantity measure takes a value of zero. This happens for livestock projects, for example, when the livestock have died or are otherwise missing at the time of the follow-up project assessment. We provide the full list of quality and quantity indicators in the appendix. In addition, Figures A3 and A4 in the appendix illustrate how some project assessments were conducted in practice.

To complement the observed measures of project quality and quantity of outputs, we also constructed an index of project implementation. This score is composed of subjective questions asked of the community about whether they felt the project was useful, whether it was completed as expected, and whether the materials met expectations and were not deemed to be too expensive.

The final indicator considered is whether the project could be located for the project assessment. When the survey team was unable to find a project during data collection, a research assistant was sent to confirm whether the project existed. In total, 23 of the projects, or 2.6% of the sample, could not be found by the survey team during any of the attempts at data collection and so were considered missing projects. At the end of the data collection, the IG was notified of these missing projects. The IG office sent a team to verify their existence, which reported that they had identified each of the missing projects and confirmed they had been operating. It is unclear how these projects should be considered in our analysis. Significant efforts were made by the survey team to locate the projects and confirm their existence. In addition, the missing projects were livestock and enterprise projects, which can be hard to identify because most households had multiple animals and income-generating activities prior to the projects. It is possible that communities did not declare these projects to the survey team. It is also possible that, when the IG team arrived to confirm the existence of the projects, some communities presented similar types of output as coming from NUSAF2, even though these outputs may have

previously existed. For our analysis, we test whether the share of these missing projects varies between treatment and control. For our measures of quality, we code these projects as zeros. Most importantly, the results are also robust when treating these projects as survey attrition and dropping them from the analysis entirely.

In addition to the primary outcomes, the project assessment also measures three sets of intermediary outcomes that capture the main underlying mechanisms that can explain changes in final outcomes. These include (i) the procurement and contracting process, (ii) community monitoring, and (iii) community interactions with local leaders. These three domains relate to some of the key areas covered by the social accountability training curriculum. Indicators on the procurement and contracting process include an index of challenges faced by communities in the procurement process, an index of satisfaction with suppliers of goods and materials, and whether the community hired a contractor. For communities that did hire a contractor, indicators also include an index of challenges faced by communities in the contracting process and an index of satisfaction with the contractor. The second main domain for intermediary outcomes includes indicators of community monitoring, such as an index of the intensity of project community monitoring, and an index of the intensity of social accountability committee (SAC) project monitoring. Finally, the third main domain for intermediary outcomes captures interactions between communities and local officials. This domain includes indicators of whether a payment was made to a district official or staff, and an index of satisfaction with the sub-county NUSAF2 official and district veterinarian officer.

The second source of follow-up data is an endline survey conducted with households in the sample communities in June and July 2016. The sample surveyed was a selection of individuals who directly benefited from the NUSAF2 project, as well as a sample of the broader community. Eight people per community were surveyed, including the chairpersons of each of the executive committees in the project, two members of the original community social accountability committee, two members from the expanded community accountability committee (called the CMG) in the social accountability training treatment group, and two regular members. In social accountability training control communities, the CMG does not exist and so this group was replaced with two regular members. The sample is thus composed of eight beneficiaries in social accountability training control communities and six in social accountability training

treatment communities. The remaining two individuals in the treated communities are people associated with the program but not necessarily directly affected by it.

The data from the household survey include assets, including animals and household durables; whether the individuals had made complaints to local leaders about their NUSAF2 project or other projects in the community; and the individuals' level of trust in local leaders. The descriptive statistics for the project assessment and household data collections are presented in Table 3. The description is separated by whether data were collected at the project or household level. While NUSAF2 targeted very low-income households, most had livestock in their home, with the mean household having 2.45 cattle at the endline.[12]

The sample size for the household survey was determined to provide the highest statistical power given a fixed budget. The intra-cluster correlation (ICC) for the main outcome of interest, number of cattle, is 0.045. For the scorecard sample, which includes 574 clusters, the minimum detectible effect (MDE) size is below 10%. For total assets, the ICC is 0.35 and so the MDE is approximately 15%.

4.2 Balance tests

Tables 4 and 5 present balance tests for the social accountability training and project quality scorecard samples, respectively. Due to the project timeline and funding, a full baseline with communities was not feasible. We do have four indicators that were available before the beginning of the NUSAF2 projects in the sample: the amount of money approved per community, the type of project, when the program grants were received, and the level of corruption and mismanagement in the areas where the communities exist. We also present tests for whether the randomly drawn respondent in the household survey was a man, whether that person could write or read, and the distance from the respondent's household to the sub-county headquarters. We include these last four measures because we believe they are not likely to have changed due to the program and so reflect the characteristics of the communities before the social accountability training treatment.

[12] As part of a separate experiment, the enumeration teams were randomly assigned to villages during the second data collection. This was done to test for enumerator effects on reported household characteristics and outcomes. There is no or very little enumerator bias introduced on the main outcomes of interest, especially number of animals. While the experiment is not able to directly test for Hawthorne effects, the lack of enumerator bias and the fact that the enumeration team was separate from the implementation team reduces the likelihood of such issues impacting the main results.

We do not find a statistically or economically significant difference between the social accountability training treatment and control groups for any of the project-level indicators. For the broader sample (Table 4), the amount of funding received by project averaged over 20 million USH (a little over USD 6,000).[13] The test for balance shows a difference of less than 1% from the control group and is not statistically significant. Similarly, there is no difference in the likelihood of the project being livestock, or in the date when the funding was received in the communities. There is a small difference in whether participants were men and whether they could write, but while these differences are significant, they are relatively small. The scorecard sample, presented in Table 5, is likewise well balanced, with no characteristic being significantly different between scorecard treatment and control communities. We conclude, therefore, that the characteristics of the communities and the people within the communities are generally well balanced due to randomization.

5 Results

To identify the impact of the programs on project- and household-level outcomes, we run the following intention to treat (ITT) OLS regression model:

$$Y_i = \beta_0 + \beta_1 T_i + \beta_2 S_i + \beta_3 T_i * S_i + \varphi R + \varepsilon_i \qquad (1)$$

where i refers to a project or household and Y_i is the outcome of interest. T_i is whether a community was randomly selected to the social accountability training treatment, S_i is the scorecard treatment, and $T_i * S_i$ refers to communities assigned to both social accountability trainings and scorecard distribution. R is a matrix of region dummies and ε_{it} is the error term. The coefficient β thus presents the impact of the social accountability training treatment only, γ the impact of the scorecard treatment only, and $\beta_1 + \beta_2 + \beta_3$ the impact of combining social accountability training and scorecard treatments. For household-level outcomes, we cluster the standard errors at the project level.

[13] This average included very large projects such as teachers' houses. The amount for livestock and enterprise projects averaged just less than half this amount.

We begin by discussing the impacts of the intervention on project quality as measured through the project assessment. This analysis is done on data collected before the scorecard intervention, and so we do not consider the $\beta_2 S_i$ and $\beta_3 T_i * S_i$ terms in Equation (1).[14] We then present the results of the household survey conducted six months later, including the scorecard effects. To explore the potential mechanisms, we discuss impacts on monitoring of projects and reporting to government officials as well as other community activities as reported by respondents. We end by looking at important heterogeneities in treatment and local spillovers.

Note that we do not use multiple hypothesis correction for outcomes. This is because we have only two main outcomes: project score (measured during the assessment) and household assets (measured at the household endline). Both of these are indices of family of outcomes. We present analysis on the individual family components and test for mechanisms without correction as we consider these to be exploratory analyses. Note that the endline survey was powered to identify a minimum detectible effect size of 8% on our main household outcome and mechanisms. Due to the endline survey being very well powered and the high level of significance of estimations, most of the results from that survey would pass conservative correction procedures.

5.1 Initial impacts on project performance

The impacts for the main outcomes from the project assessment survey are presented in Table 6. These include the overall score for each of the NUSAF2 projects in the sample (columns 1 and 2), which is created by multiplying the project quality score (columns 3 and 4) and quantity score (columns 5 and 6) together. We also look at whether the project could not be located (columns 7 and 8). Each of these indicators is from the first project assessment and is estimated at the community level. The indicators are standardized, as discussed previously.

Odd-numbered columns report results for all project types in the sample. We find a small positive and statistically significant impact on the overall score of the project of 0.135 standard deviation. This effect appears to be coming mostly from the quantity indicator (column 5) and is not driven by whether the project could not be located. The results suggest that the training led to

[14] However, we estimate equation (1) for some outcomes measured before the scorecard intervention to provide additional balance tests.

an increase in quantity of outputs delivered by projects by approximately 0.177 standard deviation. There are no statistically significant effects on the quality score. In appendix Table A9, we also look at these results when trimming the top and bottom 0.5% outcomes and find broadly similar results.[15]

Even-numbered columns report outcomes for interacting treatment with whether the NUSAF2 project was non-livestock. We look at this difference specifically as we are interested in whether the results are being driven by a specific project type. As most project types are a small portion of our total sample, we are only able to look at livestock projects, which are about two-thirds of the total sample. Livestock projects are also the project type most likely to directly lead to welfare impacts at the household level, which we discuss in the next sub-section. The coefficients for treatment effects remain about the same size. However, most likely due to decreases in power, the project overall score is not significant at the 10% level, though the quantity score is of the same significance as the non-interacted results. None of the interaction terms are significant. We conclude that there is likely very little difference between the impact of the program by project type, at least when comparing to livestock.

To help reduce power concerns and further explore impacts, we present in Table 7 the scores and score components for livestock-only projects. The livestock projects offer an opportunity to further improve our power as we have five observations per project as opposed to just one data point for the road, fencing, and house projects. The analysis conducted in Table 7 is thus at the animal level, rather than at the project level. All of the analysis includes clustered standard errors at the project level.

Similar to the results in Table 6, we find a small but statistically significant effect from the training on the quantity score in column 3. Treatment increased livestock quantity by 0.125 standard deviation, significant at the 10% level. The total score and quality score are not statistically significant. We further explore the components of the score in columns 4 to 8 and find no statistically significant impacts on the age of the animal when it was purchased by the community, the breed of the animal, whether the animal was deemed productive, or the health of

[15] A randomized inference test produces results similar to the OLS results, and so we only present the results of the OLS specification.

the animal.[16] We do find a decrease in whether the animal was reported to the project assessment team as dead, stolen, or sold.

To provide additional information on the balance of the scorecard randomization, we present in Table 8 the same analysis as Table 7 but include the scorecard treatment and interaction terms. This is a form of balance test, as the data from Table 8 are from before the scorecard treatment. We thus expect no statistically significant coefficients from the scorecard and interaction terms. We do not find anything significant except for a small positive effect on the interaction term for whether the animal was productive. The coefficient is small relative to the control and significant at the 10% level. Combining this and the results from Table 5, we conclude that the scorecard sample is well balanced.

5.2 Impacts on welfare

Six months after the initial project assessment, we conducted an additional household survey in the communities to measure household-level welfare outcomes. The household survey allows us to go beyond the measure of project quality obtained from the project assessment and estimate potential welfare impacts of the program at the household level.

In Table 9 we present the main outcome of interest for the household survey: the number of cattle and an index of total household asset ownership. Columns 1 and 2 present the asset outcomes for all project types, columns 3 and 4 present these outcomes only for livestock projects, and columns 5 and 6 present results for projects in the information scorecard sample. Note that we do not expect impacts on the number of household animals for any but the livestock projects. We prespecified a focus on this outcome as livestock projects represent 68% of the sample, and we believe these are the projects that are most likely to lead to direct changes at the household level. They are also the focus on the scorecard intervention. For this analysis, we restrict the sample to those who were direct beneficiaries of the program, i.e., those who were selected to receive animals from NUSAF2.[17]

[16] Note that the illness index is reweighted as 1 minus the mean number of illnesses, so the positive coefficient means fewer observed illnesses.

[17] The endline survey was conducted on eight beneficiaries per community in the control group. In the treatment group, we included six beneficiaries, as well as two non-beneficiaries who were selected to join the community management committee as part of the training intervention. We do not include non-beneficiaries in this analysis as we do not expect impacts from the treatment on household welfare.

We do not find statistically significant impacts on the number of animals from all of the projects in the sample, though the coefficient for cattle is large. However, we do find statistically significant and very large effects on the total number of assets in the household. For livestock-only projects, we find statistically significant effects for both cattle and total household assets. The effects on cattle are large at 0.31 additional animal per household, an increase of 15% relative to the control group.[18] As there were 10 households per community that received cattle as part of livestock projects, this represents an increase of approximately 3 cattle per community, on average.

Looking at the impacts for the scorecard sample in columns 5 and 6, we test the full model presented in Equation (1), which includes a dummy for social accountability training treatment, scorecard treatment, and the interaction of the two treatments. None of the coefficients in column 5 is statistically significant. However, a joint test of the social accountability training plus scorecard plus interaction terms is significant at the 2% level for cattle. We cannot reject equality of the social accountability training and scorecard treatments. We find similar results for the total assets indicator.

The results from the household survey analysis show that the interaction of the two treatments drives impacts, not training or the scorecard alone. Households that received both the social accountability training and project quality information scorecard interventions obtain an increase in their number of animals of 0.61, or approximately 27% relative to the control group.[19] This is a highly statistically significant effect of large economic magnitude.

5.3 Potential mechanisms: Impacts on community monitoring and reporting

During the project assessment survey, we measured the actions taken by communities to monitor their projects. Table 10, column 1 presents the results for an index of how much the broader community monitored the program, while column 2 presents the monitoring activities of the local accountability group that is present in all communities. The broader community does not

[18] While NUSAF2 delivered only one animal to households, a goal of the project was to lead to new animal births, thus theoretically multiplying the number of animals beneficiaries have over time. Thus, the comparison of treatment effects should not be made to the one animal delivered, but to the number of animals in the control group.

[19] We also test for whether impacts are concentrated in communities that had the lowest scores (not shown) and do not find a relationship between the absolute score and the number of animals in households. The impact of the training and scorecard information appears to exist across the distribution of scores.

report statistically significant changes in monitoring. However, for the social accountability committee group, we find very large and significant increases in the monitoring activities they conduct.

In columns 3 to 7 we explore the impacts on reporting of issues in the community to officials at different levels of government. This measure comes from the household survey conducted six months after the project assessment. The results show significant increases in the number of reports at all levels of government. Reports to the lowest level of government, LC1 and sub-county officials, increase by approximately 10%. Reports to officials at a slightly higher level of local government, the district, increases by 14%. Most strikingly, reporting to the central government through the IG increases by 59%. In appendix Table A3 we find similar results when looking at the full list of project types and only the social accountability training treatment.

We also look at reported issues during the procurement and contracting process and the quality of interactions with bureaucrats in Tables A4 and A5 in the appendix. We do not find statistically significant impacts on whether communities reported issues with procurement or contracting, their satisfaction with suppliers, whether they hired a contractor, or their satisfaction with the contractor. We also do not find impacts on whether they made a payment to a district representative, their satisfaction with the local NUSAF2 coordinator, or their satisfaction with the local veterinarian officer.

In Table 11 we explore several additional outcomes and potential mechanisms. In columns 1 and 2 we test whether treatment affected individuals' perceptions of the performance of the project leaders. In columns 3 and 4 we ask about general satisfaction with the quality of the project and management committee, respectively. We do not find meaningful changes in any of these measures. In columns 5 and 6 we look at two measures of the ability of communities to deliver public goods and find there does appear to be a significant, though small, effect on whether people believe members of the community can come together to solve issues in the community. In appendix Table A6 we look at the full sample and only social accountability training treatment status. Here we find statistically significant decreases in whether people report choosing the same project leadership, increases in public goods provision, and an increase in the perception of being able to make their community a better place to live. However, all of these effects are very small relative to control group means. These results suggest that the social

accountability training and project information scorecard may have affected the ability of communities to cooperate, but the effects are relatively small.

There are of course several other mechanisms that could have led to the outcomes we observe. In particular, the trainings could have changed information asymmetries by supporting communities in understanding better what was to be delivered to their communities and how that was to be done. The trainings could have also led to changes in bargaining power by communities. For instance, a local newspaper reported on the arrest of a NUSAF2 official by the IG, instigated at the request of a treatment community. The trainings may have also had a social impact by increasing pressure on participants to take better care of their animals. Overall, we see large and significant effects on monitoring of projects and complaints to officials, though our data do not allow us to rule out other mechanisms.

5.4 Impacts on trust in community leaders and government

We also analyze whether the program changed the way people view local and government officials. In Table 12 we present the results from asking respondents whether they thought their leaders acted in the interests of local communities.[20] In columns 1 to 6 we look at the village leaders for the NUSAF2 program, the elected sub-county official, sub-county bureaucrats, the elected district official, the district bureaucrats, and the central government, respectively.

We do not find significant changes in how people perceive project leaders or the sub-county and district elected and appointed officials. We do find a small but statistically significant increase in trust in the central government. This effect is only a 2.5% increase over the control group. We find a similar result in appendix Table A7 on the full sample, looking only at social accountability training treatment effects. We believe this effect reflects the increased visibility of the IG, the agency from the central government that managed the training delivered to these communities.

[20] The analysis presented in Tables A7 and A8 is for the entire sample. We also look at just livestock projects and find the same results.

5.4 Heterogeneities by local levels of corruption

To determine which communities in our sample had the largest issues with corruption and mismanagement, we conducted a survey of all local officials in the areas that would be part of the study before the start of the experiment. As described above, we asked officials to name the most corrupt or mismanaged sub-county in their district.[21] We then count the number of times a sub-county is listed and create an indicator of whether a given sub-county is in the top most cited sub-counties. If a sub-country is mentioned more than once we consider it to have high reported corruption. This is the case in 33% of the sample sub-counties.

In Table 13 we present the results of dividing the sample by this indicator and testing for the impacts on the number of cattle owned by individuals. The impact of the treatments is concentrated entirely in communities in the sub-counties noted by local officials as most corrupt or mismanaged. The social accountability training treatment indicator is marginally not statistically significant, while the interaction between social accountability training and project information scorecard is significant at the less than 1% level and very large. Households in areas that are reported more corrupt or mismanaged that received both treatments have, on average, an additional 0.77 to 1.19 animals. This is an increase of between 35% and 59% over the control group. This result suggests there are substantial distributional effects from the interventions, and so there could be large benefits from targeting such a program to areas that have the biggest issues with corruption or mismanagement. We also test for differential mechanism effects (not shown), which we presented in Tables 10 to 12, and find no difference in these outcomes between areas of high or low reported corruption. We conclude that people made similar levels of complaints in these areas, but they were most effective in the areas reported as more corrupt.

While we do not observe a large difference in control means across the high and low reported corruption groups in Table 13, we cannot rule out that this measure could also be correlated with other community characteristics, including performance of local government and overall poverty levels. We compare the results of the reporting of officials and the scores in the scorecards and find a significant relationship between the two. Communities in sub-counties that are most more likely to be corrupt have a lower absolute score of 2.39 points, out of an average

[21] A district is composed of approximately five sub-counties.

of 70.85, significant at the less than 1% level. The results suggest that local officials likely have very useful information on the level of corruption and mismanagement in their areas.

5.5 Spillovers

The randomization process for the selection of treatment communities was not stratified. However, it led to natural variation in the number of treated communities within sub-counties. We utilize this variation to look at the spillovers of treatment to control communities. To do this, we focus on the treatment group that received both the training and information treatments, and calculate the total number of treated communities by sub-county, divided by the total number of projects in our sample. This indicator is our intensity of treatment. Spillover effects could be positive if local officials feel pressure from communities and so improve all of their operations. They could also be negative if officials shift corruption or mismanagement from treatment to control communities.

We present the results in Table 14. The size and significance of the coefficient for treatment is identical to that found in Table 9, column 5. The coefficient for the intensity of treatment in a sub-county is large, but not significant. It appears that there are no observable spillovers from the program on control communities.

However, within communities there could be spillovers from treatment on other projects not related to the NUSAF2 projects. In Table 15 we recreate the analysis on reporting of issues conducted in Table 10, columns 3 to 7, but for other community projects that are not related to NUSAF2. Like the results for NUSAF2-related projects, we find statistically significant and large effects on whether people report issues to local leaders or central officials. Reports from individuals about making complaints to officials at all levels about non-NUSAF2 projects (column 5) go from 22% in the control group to 32% in in the scorecard treatment – an increase of 34% – significant at the 3% level. This effect is only in scorecard treatment communities. However, when looking at the full sample of communities in appendix Table A8, we find significant effects from the unconditional social accountability training treatment on all levels of reporting, although the effect sizes relative to a control group are generally small.

We also look at heterogeneities by the region where the community is located and distance from individual beneficiaries' homes to the main sub-county office, as well as

beneficiary sex and education level for the full sample using the unconditional social accountability training treatment. The results of these tests are presented in appendix Table A10. Overall, we do not find significant variation in outcomes on the individual characteristics, though there does appear to be some variation in outcomes across regions. However, this variation is no longer significant when we interact the region and treatment with the measure of local corruption. It appears that the quality of the sub-county leadership matters more than the specific region a community is in.

6 Discussion

The impacts from the social accountability training and scorecard information treatments on household welfare in communities that received livestock projects are quite large. We estimate that there are over five additional cattle in communities that received both treatments. Cattle are valued at approximately 800,000 USH, or about $230 each. The program thus led to approximately $114 worth of additional animals per household, or $1,140 per community. However, the cost of the program was significant, given the geographic spread and relative intensity of the training. We estimate that the total cost of the program, measured by the amount paid to the CSOs that ran the trainings, was between $900 and $1,200 per community, depending on how costs are accounted.[22]

There are two points to keep in mind with this cost/benefit calculation. The first is that we find small but potentially important impacts on attitudes toward the central government, and potentially large impacts on other, non-NUSAF2-related programs being implemented in communities. We are not able to monetize these additional impacts, but we expect they are not trivial. The second point is about the potential distributional effects, which we observed through heterogeneity by the local levels of corruption. The impacts we observe are concentrated in communities that were considered by local leaders as more corrupt or mismanaged: the effects are up to four times larger than the estimated average treatment effects. For communities that are particularly likely to be affected by corruption or mismanagement, the combination of social accountability training and information has especially large effects.

[22] These costs reflect the time spent developing the material; training of the CSO representatives; transport, materials, and drinks for participants during the trainings; and scorecard dissemination.

Overall, we present evidence that increasing engagement in poor communities can produce higher returns from public investments. The social accountability training combined with a project quality information scorecard intervention resulted in individuals owning a significant number of additional animals. These effects appear to come from increased monitoring by communities, as well as an increase in the reporting of issues to officials from the local to the central government. We also find that the program led to some modest improvements in people's trust in the central government.

The results suggest a positive role and significant potential for programs that seek to promote citizen engagement and increase local populations' participation in the development process. This approach is becoming popular, with similar interventions being conducted in government programs in Liberia and Sierra Leone, as well as being expanded considerably in Uganda. We show that this approach is feasible, impactful, and, under some conditions, of good value. But it is clear that communities in this context need more than training on how to identify and report issues alone, or simple information about their project's performance. Rather, it is necessary to combine these interventions, especially in areas where citizen's interactions with government are difficult or not the norm.

References

Aghion, P. and J. Tirole. 1997. Formal and real authority in organizations. Journal of Political Economy, 105(1):1–29.

Baird, S., B. Ozler, C. Mcintosh. 2011. The regressive demands of demand-driven development, The World Bank.

Banerjee, A., Green, D., Green, J. & Pande, R. 2010. Can voters be primed to choose better legislators? Experimental evidence from rural India.

Banerjee, A., R. Hanna, J. Kyle, B. Olken and S. Sumarto (2018). Tangible information and citizen empowerment: identification cards and food subsidy programs in Indonesia. Journal of Political Economy 126(2).

Barr, A. And D. Serra (2009). The effects of externalities and framing on bribery in a petty corruption experiment. Experimental Economics 12(4): 488-503.

Barr, A. And A. Zeitlin. 2011. Conflict of interest as a barrier to local accountability. CSAE working paper, Oxford University.

Bertrand, M., Djankov, S., Hanna, R. & Mullainathan, S. 2007. Obtaining a driver's license in India: An experimental approach to studying corruption. Quarterly Journal of Economics, 122, 1639-1676.

Bhargava, V. E. 2006. Global Issues for Global Citizens: An Introduction to Key Development Challenges, Washington, D.C.: World Bank.

Bjorkman, M. & Svensson, J. 2009. Power to the People: Evidence from a Randomized Field Experiment on Community-Based Monitoring in Uganda. Quarterly Journal of Economics, 124, 735-769.

Bjorkman, M. & Svensson, J., 2010. When is community-based monitoring effective? Evidence from a randomized experiment in primary health in Uganda. Journal of the European Economic Association 8(2-3): 571-581.

Bloom, N., Sadun, R., and Van Reenen, J. 2012. The organization of firms across countries. The Quarterly Journal of Economics, 127(4):1663–1705.

Dal Bo, E., F. Finan, N. Li and L. Schechter, 2018. Government Decentralization Under Changing State Capacity: Experimental Evidence from Paraguay. Working paper.

de Rochambeau, G. 2017. Monitoring and intrinsic motivation: Evidence from Liberia's trucking firms. Working paper.

Deininger, K. And P. Mpuga, 2004. Does greater accountability improve the quality of delivery of public services? Evidence from Uganda. World Bank Policy Research Working Paper. 3277.

Devarajan, S., S. Khemani, And M. Walton. (2011). Civil society, public action and accountability in Africa, The World Bank.

Djankov, S., La Porta, R., Lopez-De-Silanes, F. & Shleifer, A. 2010. Disclosure by Politicians. American Economic Journal: Applied Economics, 2, 179-209.

Ferraz, C. & Finan, F. 2008. Exposing Corrupt Politicians: The Effects of Brazil's Publicly Released Audits on Electoral Outcomes. The Quarterly Journal of Economics, 123, 703-745.

Fisman, R And Gatti, R. 2002. Decentralization and corruption: evidence across countries, Journal of Public Economics.

Fiszbein, A, D. Ringold And H. Rogers (2009). Making Services Work; Indicators, Assessments, and Benchmarking of the Quality and Governance of Public Service Delivery in the Human Development Sectors. Mimoe, The World Bank, Washington DC.

Hunt, J. 2007. How Corruption Hits People When They Are Down. Journal of Development Economics, 84, 574-589.

Hussam, R., Rigol, N., and Roth, B. 2017. Targeting high ability entrepreneurs using community information: Mechanism design in the field. Working paper.

Koziol, M. And C. Tolmie (2010). Using Public Expenditure Tracking Surveys to Monitor Projects and Small-Scale Programs. Washington DC, World Bank.

Litschig, S. And Y. Zamboni (2011). Audit risk and rent extraction: Evidence from a randomized evaluation in Brazil, Department of Economics and Business, Universitat Pompeu Fabra.

Molina, E., & Carella, L. & Pacheco, A & Cruces, G & Gasoarini, L. Community monitoring interventions to curb corruption and increase access and quality of service delivery in low- and middle-income countries: a systematic review. Campbell Collaboration, 2016.

Mookherjee, D. 2006. Decentralization, hierarchies, and incentives: A mechanism design perspective. Journal of Economic Literature, 44(2):367–390.

Nyquist, M. & De Waque, D. & Svensson, J. Experimental evidence on the long-run impact of community-based monitoring, American Economic Journal: Applied Economics 2017, 9(1): 33-69.

Olken, B. & Pande, R. 2012. Corruption in Developing Countries. Annual Review of Economics, 4.

Olken, B. A. 2006. Corruption and the costs of redistribution: Micro evidence from Indonesia. Journal of Public Economics, 90, 853-870.

Reinikka, R. & Svensson, J. 2004. Local Capture: Evidence from a Central Government Transfer Program in Uganda. The Quarterly Journal of Economics, 119, 679-705.

Reinikka, R. & Svensson, J. 2006. "Using Micro-Surveys to Measure and Explain Corruption." World Development 34(2): 359-370.

Reinikka, R. & Svensson, J. 2011. "The power of information in public services: Evidence from education in Uganda." Journal of Public Economics 95(7-8): 956-966.

Rose-Ackerman, S. 2004. Governance and Corruption. In: LOMBORG, B. (ed.) Global crises, global solutions. Cambridge; New York and Melbourne: Cambridge University Press.

Rubio, G. M. 2011. Measuring governance and service delivery in safety net programs, World Bank Social Protection Working Paper Series, Washing ton DC.

Serra, D., 2009. "Combining Top-down and Bottom-up Accountability: Evidence from a Bribery Experiment", Centre for the Study of African Economies, University of Oxford.

Van Stolk, C. And E. Tesliuc, 2010. Toolking on Tackling Error, Fraud and Corruption in Social Protection Programs. World Bank Social Protection Working Paper Series, Washing ton DC.

Woo, J.-Y. 2010. The Impact of Corruption on a Country's FDI Attractiveness: A Panel Data Analysis, 1984-2004. Journal of International and Area Studies, 17, 71-91.

World Bank, 2009. Implementation Completion And Results Report, for Northern Uganda Social Action Fund.

World Bank, 2015, Uganda Systematic Country Diagnostic, Boosting Inclusive Growth and Accelerating Poverty Reduction. World Bank, Washington DC.

Figure 1. Levels of government involved in NUSAF2

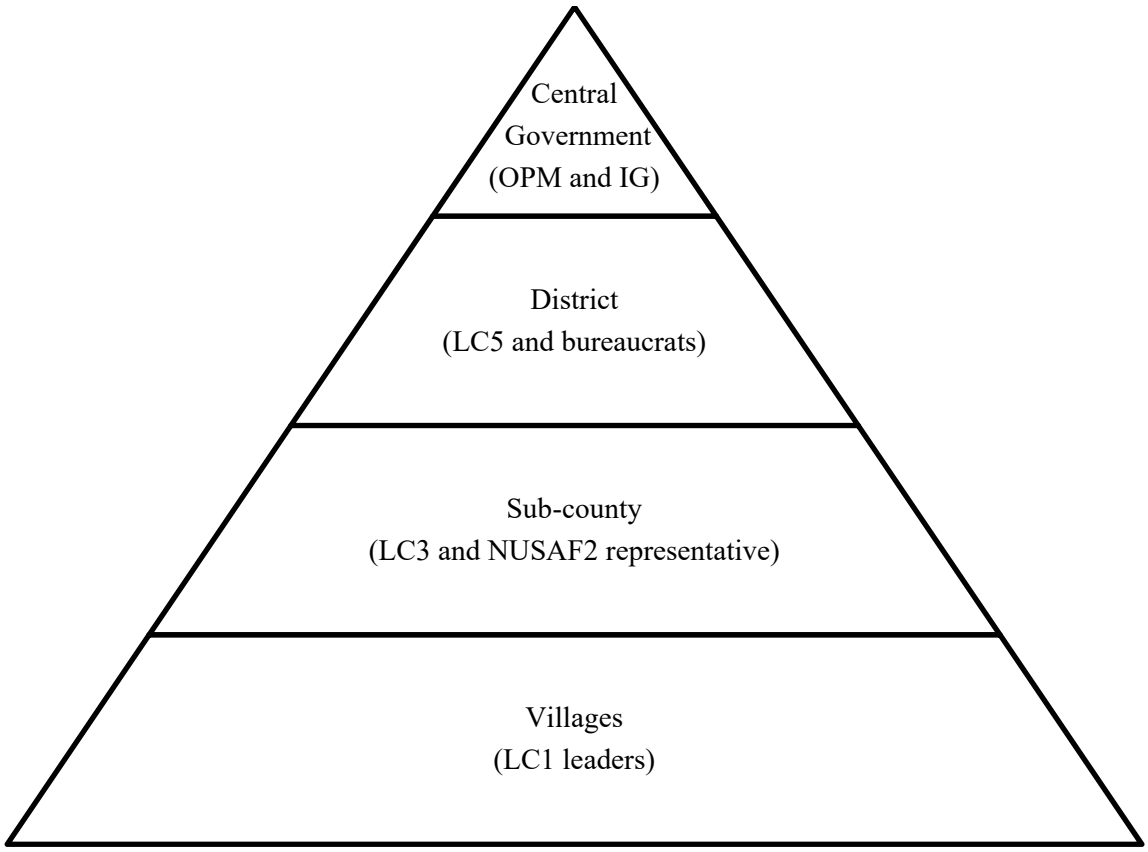


Figure 2. Example of community scorecard

Community Scorecard
NUSAF2 Livestock Sub-Project

Sub-Project Name:

We have compared your sub-project with 33 other sub-projects in your district.

Your Rank

1. Health When Animals Arrived:	**21 out of 33**
2. Health and Animal Productivity:	**22 out of 33**
3. Assistance from your DVO:	**7 out of 33**
4. Value for Money:	**20 out of 33**

Overall Score: **69 out of 100**

Overall Position in the District: **12 of 33**

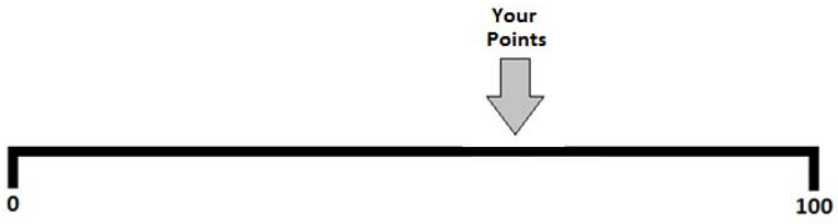


Figure 3. Study Timeline

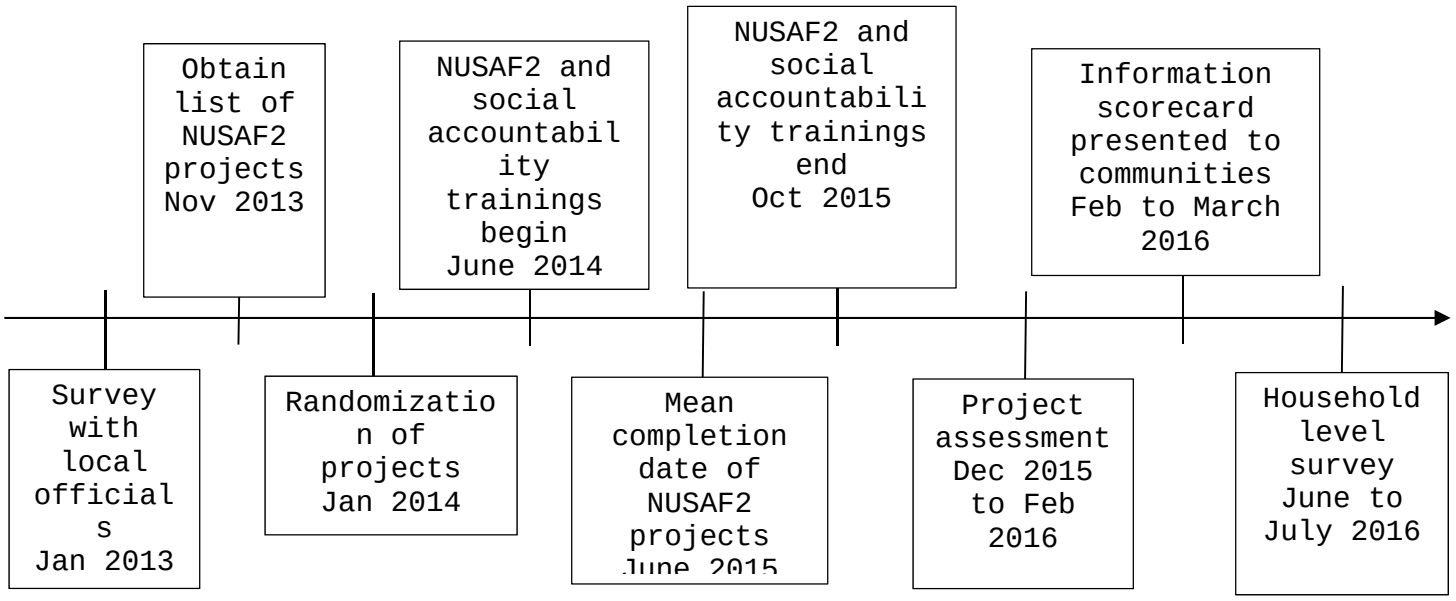


Figure 4. Map of study area

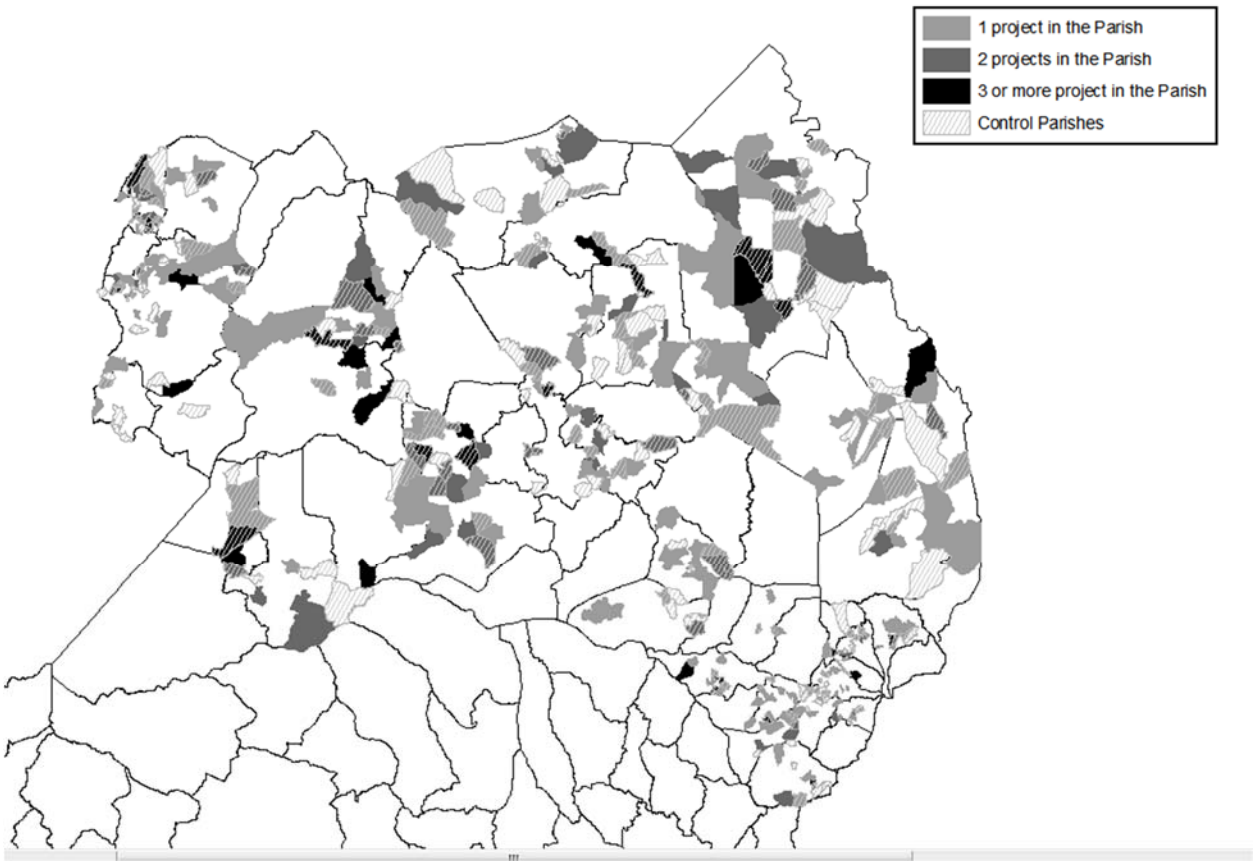


Table 1. Social accountability training design

Project type	Control	Treatment	Total
Enterprise	23	58	81
Fencing	9	18	27
Livestock	212	423	635
Road	9	22	31
Staff House	11	36	47
Tree Planting	27	47	74
Borehole	8	10	18
Classroom	2	5	7
Dormitory	2	7	9
OPD	3	8	11
Total	306	634	940

Notes: This table reports the total number of communities in the social accountability training program. Due to low numbers of project types, communities below the middle line are not included in the initial analysis (Tables 3 and 4).

Table 2. Scorecard information design

	Scorecard control	Scorecard treatment	Total
Training control	99	95	194
Training treatment	192	188	380
Total	291	283	574

Notes: This table reports the total number of communities in the scorecard information program, by social accountability training status. As described in the text, to ensure comparability of the projects, the scorecard was designed for the livestock projects only and was implemented everywhere except for the Karamoja region.

Table 3. Descriptive Statistics

	(1) Mean	(2) SD	(3) Min	(4) Max	(5) Obs
Project level:					
Project Funds (in 1,000 ugx)	22750.6	32741.9	7612	162670	895
Livestock project (0/1)	0.709	0.454	0	1	895
Project start date (Period when grants were received)	38.188	3.935	1	48	812
Project overall score (std)	0.032	0.949	-2.9	3.28	872
Project quality score (std)	0.043	1.021	-2.86	3.23	871
Project quantity score (std)	0.016	0.928	-5.71	12.1	863
Project is missing (0/1)	0.027	0.162	0	1	895
Project Implementation Quality Index	2.38	0.905	0	4	705
Satisfaction with supplier Index	5.629	1.366	0	8	660
Hired a Contractor to Implement Project	0.388	0.487	0	1	800
Index of challenges in Contracting Process	3.332	1.868	0	9	301
Satisfaction with contractor Index	5.375	1.77	0	8	459
Index for Intensity of Project Community Monitoring	2.957	1.139	0	4	821
Index for Intensity of Social Accountability Committee Project Monitoring	0.831	0.954	0	4	863
Satisfaction with NDO Index	5.912	1.407	0	8	839
Satisfaction with District Vet Index	10.638	1.463	6	15	572
Animal level:					
Animal dead (0/1)	0.13	0.336	0	1	6891
Animal sold (0/1)	0.051	0.22	0	1	6891
Animal stolen (0/1)	0.017	0.131	0	1	6891
Animal dead/sold/stolen (0/1)	0.198	0.399	0	1	6891
Beneficiary level:					
Number of Cattle (Total)	2.452	10.5	0	800	6961
Number of Goats (Total)	4.206	7.018	0	230	6966
Number of Livestock in Tropical Livestock Unit	1.816	5.523	0	406.5	6952
Reporting NUSAF-related issues (total)	1.052	1.310	0	4	6966
Reporting NUSAF-related issues to LC1	0.405	0.491	0	1	6964
Reporting NUSAF-related issues to Subcounty	0.305	0.460	0	1	6961
Reporting NUSAF-related issues to District	0.203	0.402	0	1	6963
Reporting NUSAF-related issues to IG	0.141	0.348	0	1	6957
Trust Project Leaders (1-4)	3.582	0.712	1	4	6952
Trust LC3 Chairperson (1-4)	3.181	0.93	1	4	6937
Trust Subcounty Bureaucrats (1-4)	3.295	0.809	1	4	6921
Trust LC5 Chairperson (1-4)	2.997	1.011	1	4	6892
Trust District Bureaucrats (1-4)	3.297	0.859	1	4	6933
Trust Government (1-4)	3.635	0.66	1	4	6932

Table 4. Social accountability training balance tests

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Project Funds	Livestock project	Project start date	High reported corruption	Male	Can write	Can read	Distance to s/c headquarter
Training	152,054	0.002	-0.030	0.018	0.050***	0.051***	0.036**	0.760
	[458,459]	[0.026]	[0.314]	[0.035]	[0.015]	[0.016]	[0.016]	[9.737]
Control means	20,700,000	0.729	38.38	0.33	0.425	0.563	0.563	81.642
N	895	895	812	846	5,915	5,913	5,914	5,840
R-squared	0.977	0.624	0.346	1.000	0.088	0.183	0.156	0.072

Notes: This table reports a balance test for project and individual-level characteristics. Columns 1 to 4 are measured at the project level during the project assessment. Columns 5 to 8 are from the endline household survey and represent participant characteristics that were not expected to change due to the treatment. Standard errors are reported in brackets below the coefficients. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 5. Scorecard information balance tests

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Project Funds	Project start date	High reported corruption	Male	Can write	Can read	Distance to s/c headquarter
Training	60,239	0.380	0.017	0.021	0.041	0.027	32.033
	[59,693]	[0.484]	[0.058]	[0.025]	[0.027]	[0.028]	[25.551]
Scorecard	78,426	0.277	0.043	-0.030	0.004	-0.002	21.557
	[71,073]	[0.574]	[0.067]	[0.028]	[0.028]	[0.029]	[15.474]
Training x scorecard	-8,340	-0.060	-0.026	0.025	0.013	-0.005	-42.160
	[86,583]	[0.701]	[0.083]	[0.036]	[0.036]	[0.037]	[28.271]
Training + Scorecard + interaction=0	0.028	0.213	0.560	0.478	0.023	0.437	0.415
Training = Scorecard	0.770	0.838	0.661	0.051	0.156	0.282	0.396
Control means	11,700,000	38.16	0.271	0.441	0.615	0.622	87.804
N	574	542	528	3,853	3,851	3,853	3,797
R-squared	0.764	0.316	0.001	0.075	0.075	0.065	0.059

Notes: This table reports a balance test for project and individual-level characteristics. Columns 1 to 4 are measured at the project level during the project audit. Columns 5 to 8 are from the endline household survey and represent participant characteristics that were not expected to change due to the treatment. Standard errors are reported in brackets below the coefficients. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 6. Project Score

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Project overall score		Quality score		Quantity score		Project not located	
Training	0.135*	0.127	0.094	0.097	0.177**	0.164*	-0.003	-0.008
	[0.071]	[0.085]	[0.074]	[0.084]	[0.074]	[0.089]	[0.012]	[0.011]
Training*non-livestock		-0.031		0.015		-0.053		-0.017
		[0.156]		[0.188]		[0.167]		[0.038]
Control means	-0.034	-0.034	0.012	0.012	-0.066	-0.066	0.027	0.027
N	859	859	867	867	863	863	895	895
R-squared	0.384	0.384	0.389	0.389	0.359	0.359	0.280	0.280

Notes: This table reports the OLS regression results for the treatment effect on project-level outcomes. Odd columns are the total treatment effect, while even columns include an interaction with whether the project was livestock. The dependent variable in columns 1 and 2 is an aggregate index of columns 3 to 6. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level.
*** p< 0.01, ** p< 0.05, *p< 0.1.

Table 7. Components of livestock overall score at the beneficiary level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Livestock Score	Livestock Quality Score	Livestock Quantity Score	Animal Bought at The Correct Age (0/1)	Animal Is an Improved/Crossed/Hybrid Breed (0/1)	Animal Is Productive (0/1)	Animal Health by Mean Number of Illnesses	Fraction of Animals Not Observed (Dead/Stolen/Sold)
Training	0.067	0.035	0.125*	-0.014	0.020	-0.032	0.032	-0.045**
	[0.080]	[0.077]	[0.073]	[0.040]	[0.013]	[0.042]	[0.025]	[0.018]
Control means	0.055	0.06	-0.029	0.354	0.161	0.448	0.892	0.184
N	5,061	5,127	5,471	5,524	5,515	5,127	5,127	5,524
R-squared	0.403	0.453	0.353	0.346	0.821	0.356	0.293	0.391

Notes: This table reports the OLS regression results for the treatment effect on household-level outcomes for livestock projects only at the first endline survey. The dependent variable in column 1 is an aggregate index of columns 2 and 3. Column 2 is composed of columns 4 to 8. Column 3 is an indicator of the number of animals a participant received. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 8. Livestock score with scorecard information treatment for additional balance test

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Livestock Score	Livestock Quality Score	Livestock Quantity Score	Bought at The Correct Age (0/1)	Animal Is Improved Breed (0/1)	Animal Is Productive (0/1)	Animal Health	Fraction of Animals Dead, Stolen or Sold
Training	0.004	-0.065	0.117	-0.006	0.024	0.117**	-0.009	-0.018
	[0.120]	[0.119]	[0.096]	[0.060]	[0.024]	[0.059]	[0.029]	[0.024]
Scorecard	0.054	-0.124	0.172	0.024	-0.025	-0.095	-0.061	0.023
	[0.141]	[0.137]	[0.122]	[0.072]	[0.021]	[0.072]	[0.042]	[0.029]
Training x scorecard	0.072	0.141	0.006	-0.027	0.001	0.161*	0.067	-0.022
	[0.175]	[0.168]	[0.168]	[0.087]	[0.028]	[0.089]	[0.046]	[0.034]
Control Mean	0.052	0.101	-0.061	0.323	0.188	0.442	0.917	0.155
N	3,486	3,517	3,753	3,775	3,769	3,517	3,517	3,775
R-squared	0.402	0.459	0.357	0.337	0.826	0.351	0.246	0.380

Notes: This table reports the OLS regression results for the treatment effect on household-level outcomes for livestock projects only at the first endline survey. In this table, we have included the scorecard interaction. As the scorecard treatment was not conducted until after this data collection, this analysis is presented as a balance test for the scorecard treatment. Note that the scorecard was conducted on a subsample of the livestock projects. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 9. Endline household animals and assets

	All projects		Livestock projects			
	(1)	(2)	(3)	(4)	(5)	(6)
	Cattle	All assets	Cattle	All assets	Cattle	All assets
Training	0.753	0.275***	0.310**	0.152*	0.128	0.089
	[0.515]	[0.080]	[0.157]	[0.081]	[0.208]	[0.120]
Scorecard					0.097	0.025
					[0.223]	[0.135]
Training x scorecard					0.382	0.155
					[0.349]	[0.172]
Total interaction effect					0.607**	0.306**
Training + Scorecard + interaction=0					0.017	0.030
Training + interaction=0					0.058	0.039
Scorecard + interaction=0					0.055	0.093
Training = Scorecard					0.877	0.576
Control means	2.262	-0.181	2.14	-0.219	2.237	-0.060
N	5,909	5,831	4,214	4,149	3,851	3,791
R-squared	0.044	0.249	0.091	0.209	0.085	0.134

Notes: This table reports the OLS regression results for the treatment effect on household-level animal and total asset outcomes at the final endline survey. Columns 1 and 2 are for the full sample. Columns 3 and 4 are for all the livestock projects in the sample. Columns 5 and 6 is only communities in the scorecard sample. All analysis includes only direct program beneficiaries and the top 0.5% of responses have been trimmed. Standard errors are reported in brackets below the coefficients. Regressions include sub-county controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 10. Community monitoring

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Index for Intensity of Project Community Monitoring	Index for Intensity of Social Accountability Committee Project Monitoring	Reporting NUSAF-related issues to LC1	Reporting NUSAF-related issues to Subcounty	Reporting NUSAF-related issues to District	Reporting NUSAF-related issues to IG	Reporting NUSAF-related issues (total)
Training	-0.047	0.404***	0.058	0.069	0.075*	0.139***	0.340**
	[0.139]	[0.112]	[0.051]	[0.048]	[0.043]	[0.044]	[0.162]
Scorecard			0.095*	0.063	0.102**	0.155***	0.415**
			[0.055]	[0.056]	[0.049]	[0.050]	[0.180]
Training x scorecard			-0.038	-0.023	-0.041	-0.063	-0.163
			[0.071]	[0.067]	[0.059]	[0.063]	[0.224]
Training + Scorecard + interaction=0			0.018	0.023	0.002	0.000	0.000
Training = Scorecard			0.443	0.910	0.511	0.712	0.616
Control means	3.174	0.959	0.681	0.540	0.341	0.256	1.816
N	559	574	3,850	3,848	3,850	3,849	3,852
R-squared	0.380	0.454	0.168	0.172	0.168	0.185	0.210

Notes: This table reports the OLS regression results for the treatment effect on project- and individual-level outcomes for the training and scorecard information samples. The sample comprises all individuals, including those that are not direct beneficiaries. Columns 1 and 2 are at the project level and were collected during the first assessment survey. Columns 3 to 7 were collected at the individual level at the final household survey. Column 7 is an aggregate measure of columns 3 to 6. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 11. Community monitoring

	(1)	(2)	(3)	(4)	(5)	(6)
	How would you rate the performance of the CPC overall?	How would you rate the performance of the CPMC overall?	How would you rate the performance of the CPMC overall?	How likely would you be to choose the same subproject management committee again?	It is easy to get many members of the community to come together to solve issues in the community	It can be hard to get members of the community to come together to solve issues in the community
Training	0.013	-0.005	0.036	-0.015	0.094*	-0.037
	[0.037]	[0.036]	[0.047]	[0.065]	[0.057]	[0.059]
Scorecard	-0.066	-0.047	-0.094	-0.022	-0.028	0.023
	[0.043]	[0.041]	[0.063]	[0.077]	[0.072]	[0.074]
Training x scorecard	0.048	0.020	0.008	-0.047	0.016	-0.095
	[0.055]	[0.053]	[0.074]	[0.094]	[0.088]	[0.091]
Training + Scorecard + interaction=0	0.892	0.381	0.294	0.210	0.152	0.068
Training = Scorecard	0.035	0.259	0.013	0.901	0.048	0.352
Control means	3.441	3.488	3.512	3.469	3.046	2.402
N	3,613	3,710	3,852	3,845	3,851	3,848
R-squared	0.148	0.144	0.176	0.094	0.119	0.117

Notes: This table reports the OLS regression results for the treatment effect on individual-level outcomes at the final endline survey using the training and scorecard information samples. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 12. Trust in leaders, local officials, and government

	(1)	(2)	(3)	(4)	(5)	(6)
	Project Leaders	LC3 Chairperson	Sub-county Bureaucrats	LC5 Chairperson	District Bureaucrats	Central Government
Training	0.008	0.062	0.080	0.033	0.040	0.105***
	[0.044]	[0.059]	[0.049]	[0.063]	[0.058]	[0.037]
Scorecard	-0.009	0.023	0.013	0.030	-0.033	0.094**
	[0.053]	[0.067]	[0.057]	[0.074]	[0.066]	[0.043]
Training x scorecard	-0.054	-0.095	-0.127*	-0.061	-0.095	-0.129**
	[0.064]	[0.083]	[0.070]	[0.093]	[0.085]	[0.052]
Training + Scorecard + interaction=0	0.215	0.866	0.470	0.964	0.107	0.059
Training = Scorecard	0.687	0.519	0.177	0.964	0.210	0.765
Control means	3.693	3.225	3.382	3.044	3.377	3.647
N	3,845	3,836	3,822	3,808	3,837	3,831
R-squared	0.119	0.141	0.097	0.083	0.102	0.113

Notes: This table reports the OLS regression results for the treatment effect on individual-level outcomes at the final endline survey. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 13. Heterogeneity by level of reported corruption

	(1)	(2)	(3)	(4)
	High reported corruption		Low reported corruption	
Training		0.792		-0.126
		[0.525]		[0.225]
Scorecard		0.370		0.064
		[0.507]		[0.265]
Training x scorecard	1.186***	0.488	0.309	0.331
	[0.407]	[0.644]	[0.296]	[0.462]
Training + Scorecard + interaction=0		0.006		0.354
Training = Scorecard		0.267		0.465
Control means	2.303	2.436	2.233	2.22
N	1,011	1,011	2,550	2,550
R-squared	0.137	0.141	0.063	0.064

Notes: This table reports the OLS regression results for the treatment effect on household-level animal outcomes at the endline survey. The sample only includes the social accountability training and scorecard information samples. The sample is split by the whether the sub-county is perceived to have issues of corruption, as reported to the research team during a survey of local officials. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 14. Spillovers across communities

Training x scorecard	0.525**
	[0.226]
Intensity of treatment	23.241
	[51.952]
Control means	2.207
N	3,851
R-squared	0.085

Notes: This table reports the OLS regression results for the treatment effect on household-level cattle outcome at the endline survey. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table 15. Spillovers of reporting issues to officials within communities

	(1)	(2)	(3)	(4)	(5)
	Reporting other (non-NUSAF) issues to LC1	Reporting other (non-NUSAF) to Sub-county	Reporting other (non-NUSAF) issues to District	Reporting other (non-NUSAF) issues to IG	Reporting other (non-NUSAF) issues (total)
Training	0.002	0.007	0.023**	0.018**	0.018
	(0.025)	(0.019)	(0.010)	(0.009)	(0.029)
Scorecard	0.046	0.018	0.042***	0.036***	0.080**
	(0.032)	(0.025)	(0.013)	(0.013)	(0.036)
Training x scorecard	-0.024	0.013	-0.040**	-0.039**	-0.059
	(0.037)	(0.030)	(0.016)	(0.015)	(0.043)
Training + Scorecard + interaction=0	0.327	0.064	0.011	0.089	0.169
Training = Scorecard	0.099	0.587	0.121	0.105	0.048
Control means	0.214	0.132	0.045	0.023	0.234
N	3,810	3,810	3,809	3,809	3,853
R-squared	0.130	0.093	0.065	0.057	0.121

Notes: This table reports the OLS regression results for the treatment effect on household-level outcomes at the final endline survey. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Appendix

A. Curriculum components

The Social Accountability and Community Monitoring training curriculum was developed to be delivered to low-skilled populations, with intensive piloting and heavy focus on visual-based learning. The 7 main modules of the curriculum were as follows.

Module 1: Community Mobilization and Introduction to Social Accountability

This module includes 2 to 3 hours of interaction with mobilized members of the community within which a selected NUSAF2 sub project is implemented. In the meeting, the community trainer leads the discussion on key concepts of accountability and community engagement, the roles and responsibilities of the Social Accountability Committee (SAC) and conducts the election of 4 willing members of the community to strengthen the existing SAC and form the Community Monitoring Group (CMG).

Part of the discussion includes an overview of NUSAF2 and identifying existing government programs, targeted beneficiaries and why it is important for the wider community members to monitor these projects even if they are not direct beneficiaries.

Discussions on key concepts of accountability include: a) common types of corruption at the central, local government and community levels such as bribery, embezzlement, nepotism, absenteeism and solicitation of favors; and b) social accountability and the constitutional right of every Ugandan to participate in conducting accountability and combating corruption. This session is concluded with brainstorming on key actions the community can take as individuals or groups to conduct social accountability, combat corruption and thus improve project outcomes.

The module ends with the election and introduction of the CMG. Preceding the election, community members are taken through the roles of the monitoring group and characteristics of people who would be suitable for this role. Both the SAC chairman and coordinator of the newly formed CMG are given an opportunity to give short speeches on how they will execute their duties to meet the expectations of the community. The CMG members are then invited for a 3 days of training at a selected venue and date.

Module 2: Social Accountability and NUSAF2

The second module is delivered on the first day of the 3 days' comprehensive training. It reviews in detail all the basic concepts discussed at the enrollment meeting as well as provides a deeper understanding of the different stages of implementation of the NUSAF2 sub project and the guidelines, for instance, at the procurement stage, what are the procurement rules and procedures. In this module, the trainer leads the community in identifying key implementation areas that are more prone to mismanagement and explores ways in which the community can engage in monitoring to ensure achievement of the project outcomes.

The module ends with the announcement of the individual and group incentives for completing the comprehensive training and all the stages of community monitoring respectively.

Module 3: Community Monitoring Skills

This module aims at providing basic skills in community monitoring of NUSAF2 projects. The CMGs are taken through steps in monitoring, identifying sources of information and gathering monitoring data and management of monitoring data. The module includes practical sessions that

help CMGs to generate critical questions for monitoring the procurement, timelines, technical support, financial management and quality of inputs for the NUSAF2 project of their own community.

Module 4: Post-monitoring Activities
This module provides basic understanding on how to review, store and manage monitoring data and outcomes. It includes using monitoring data to generate simple monthly reports for submission to relevant authorities. Practical sessions include conducting a mock monitoring session and writing a simple report.

The module ends with a session on how to provide feedback on findings from monitoring to the community members as well as explore possible actions to respond to the findings.

Module 5: How to Generate a Community Action Plan
This is a practical step-by-step session on how to develop an action plan relevant to the sub project of any given community. CMGs are taken through a participatory discussion that results in key action plans that will be implemented and reviewed with the community trainer during the first follow-up support visit.

The session includes actual planning and setting timelines for all monitoring activities and allocation of tasks among the CMGs.

Module 6: Follow-up Support Visit
This module provides step-by-step guidance on how the CMGs can review the action plan generated in module 5 and provide technical support and/or a full refresher training to the CMGs depending on identified technical gaps.

The module ends with guidance on how to revise and create new action plans at the end of every follow-up support visit.

Module 7: Applying Lessons Learned to Other Government Services
The aim of this module is to help CMGs apply the monitoring skills they gained from monitoring NUSAF2 to other government programs in their communities. The module uses an example of teacher absenteeism from the education sector to help CMGs learn and apply their skills to other sectors.

The module ends with a practical session on creating a monitoring check list using teacher absenteeism as an example, from the original NUSAF2 checklist.

B. Scorecard construction

For the community scorecard, we construct 4 scores for the following dimensions:

- Health when animals arrived
- Animal Productivity
- Assistance from the District Veterinary Officer (DVO)
- Value for money.

We detail how these scores are assigned and present kernal density graphs for each score's distribution. All data come from the community assessment conducted from December 2015 to February 2016.

Health when animals arrived

To construct the health when animals arrived score, we give up to 50 points for the health of animals when they arrived as stated by respondents, and another 50 points for the number of animals that died within 3 months of being received by the respondent.

The 50 points for health as it is stated is constructed by looking at the total number of illnesses identified by respondents within a project (they are asked which illnesses they think each of their animals had when they arrived), divided by the number of animals surveyed. This gives us the average number of illnesses each animal had when they arrived. This is then linearly scaled, setting the max average in the data set to 0, and the minimum average (the fewest illnesses) to 50 points.

For deaths within three months, we take the total number of animals that did not die within three months of old age/illness divided by the number of animals they started with. We then multiple this by 50, so that a sub-project gets 50 if no animals died, and 0 if all their animals died of illness/old age.

The final score is then constructed by adding together the respondent health out of 50 and the animals that died out of 50, to make a score out of 100.

Animal Productivity

This score is produced by assigning 50 marks for the percentage of animals which are productive (either producing milk or offspring, or ploughing) and another 50 marks for the health of the animals measured by the average number of poor health indicators across a variety of indicators. The score is then finally scaled by the number of animals we were able to survey divided by the total number of animals we tried to survey.

For animal productivity we simple define an animal as productive if either it produces milk, has produced calves or is currently able to pull a plough. For example, projects that bought animals that are still too young to be productive get a low score. The score from 50 is the total number of productive animals, divided by the total number of animals we surveyed, and then multiplied by 50.

For the current health of animals, we define a health score for each animal based on the following health indicators: signs of illness, abnormal discharges, skin conditions, parasites, temperament and body score. For each of these indicators each animal gets either a 1 to represent some abnormality or a zero for “healthy”. We then total across all these indicators to give the animal an overall health score (which is an integer between 0 and 6). We then take the mean across the of the animal health scores in the project. Finally we scale linearly again setting the sub-project with highest number of illnesses to zero and the project with the lowest average number of illnesses to 50.

To make the final score, we add together the productivity score and the health score. We scaled this score by multiplying by the number of animals we were able to survey divided by the number of animals we tried to survey. For example, if in one sub-project we were trying to find 5 cows, we only found 3 but they were perfectly productive and healthy (so would have got a score of 100), then their score will be scaled down to 60 to account for the animals that were not around.

Assistance from the District Veterinary Officer

Assistance from the DVO is constructed using the indicators for the six roles that DVO were supposed to complete for each sub-project. These were: 1) follow-up after inspection, 2) animal treatment/prophylaxis, 3) animal ear tagging, 4) training sub-project committees, 5) animal selection, and 6) animal inspection.

The first three roles were asked to survey respondents and we assign a score equal to the fraction of respondents that said the DVO provided that service (e.g. 0.6 if 3 of 5 respondents said the DVO ear tagged their animals). The last three roles were asked during the procurement tool to the project committee. For these roles each DVO gets a score of either 0 or 1.

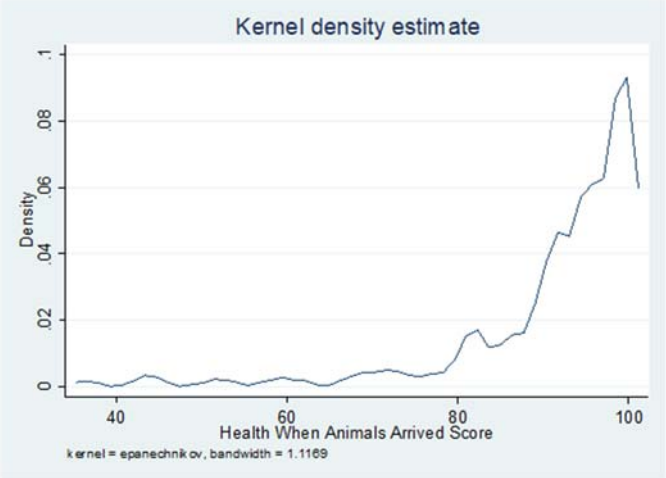
We then sum across these 6 roles, to give a score between 0 and 6. Finally we multiply by 100/6 to give a score from 100.

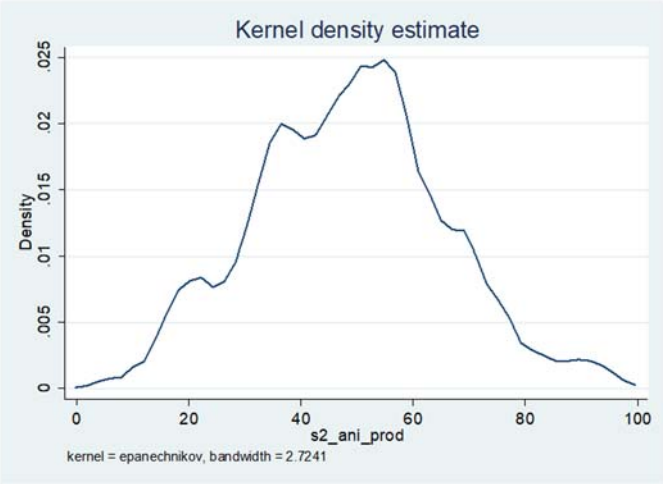
Value for Money

Value for money is constructed using the indicator:

$$\text{VoM} = \frac{Number\ of\ animals\ received \times Producitivity\ score\ of\ all\ animals}{Total\ money\ received\ for\ the\ project}$$

To be able to compare across animal types (cows, goats and sheep), we then adjust this score by standardizing within animal type (subtracting mean and dividing by sd). Finally, we linearly scale the whole variable, setting the highest deviation above the mean to 100 and the largest deviation below the mean to 0.

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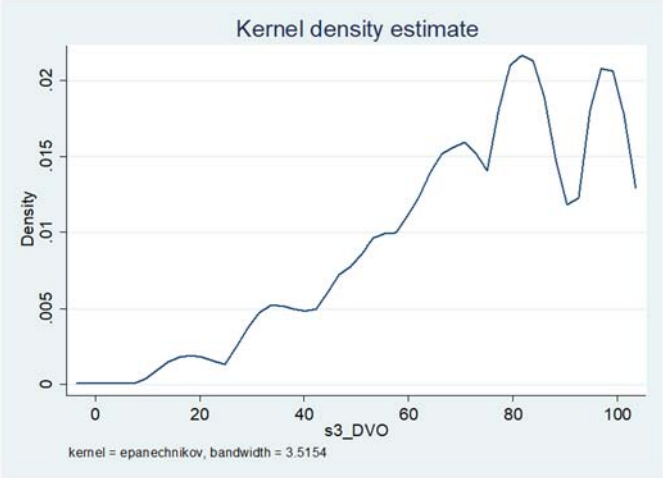
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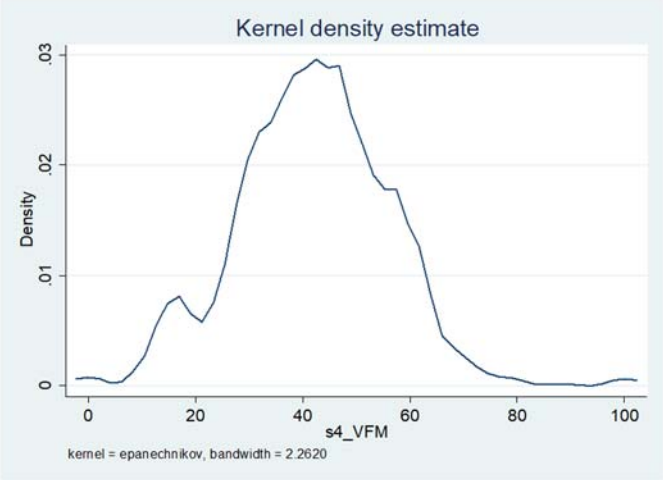
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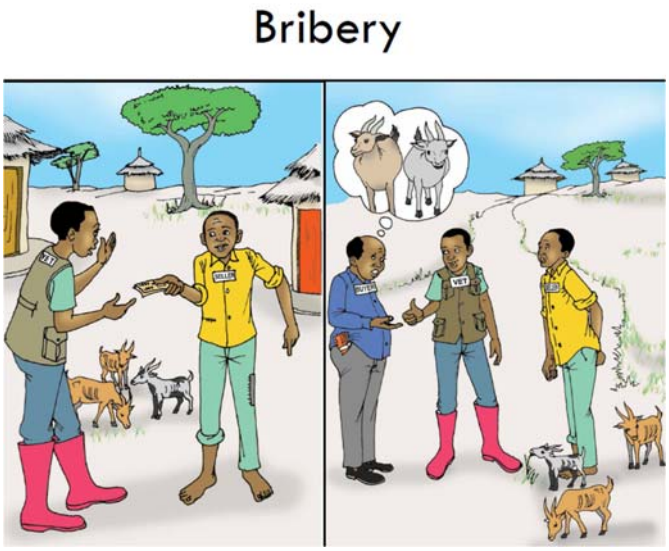
Figure A1. Sample of graphics from training



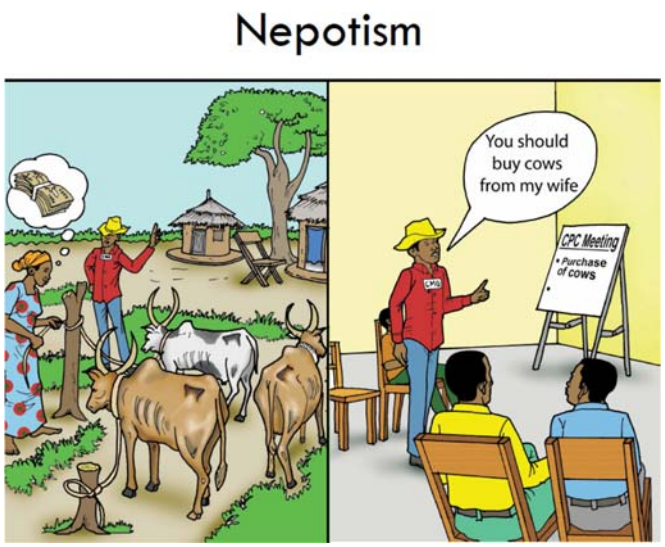
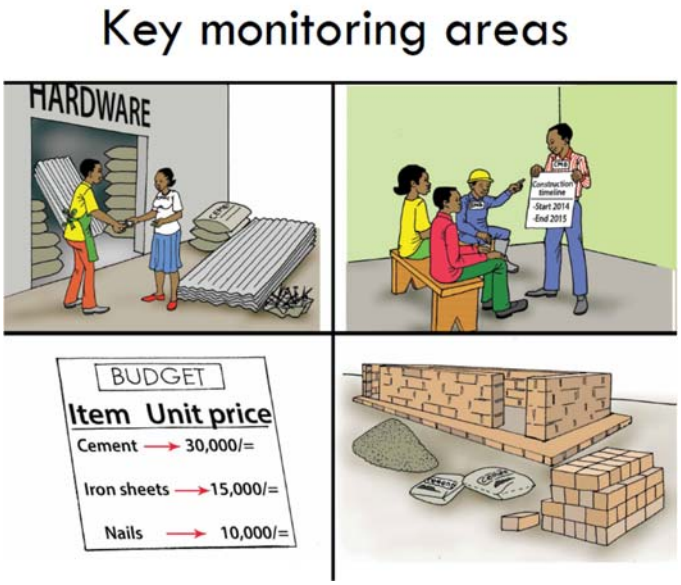


Figure A2. Sample of graphics from training



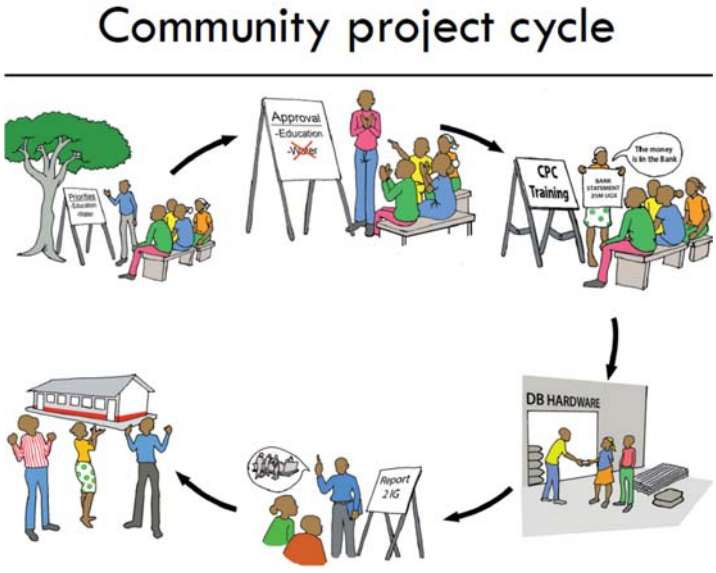


Figure A3. Assessment of a community road project

Photo credit: Mariajose Silva Vargas

Figure A4. Assessment of a livestock project

Photo credit: Mariajose Silva Vargas

Table A1. Project score construction

Subproject Type	Quantity Score		Quality Score		
	Unit	Score	Quality Indicators	Construction	Score
Livestock	Animals	Total number of animals received	1. Correct age of the animal when it was received	Binary indicator for correct age of animal, i.e. 2 year to 4 years for male cows and 2.5 - 4.5 years for female cows	Average of Quality Indicators
			2. Improved breed of the animal	Binary indicator which takes 1 if the animal received is improved breed	
			3. Productivity of the animal	Binary indicator which takes 1 if the animal did at least one of the followings: oxen ploughing, given birth (female), bull breeding, pregnant (female cows and goats/sheep), giving milk and female cow ploughing	
			4. Animal health	Binary illness indicator which takes 1 if the animal has at least one illness. Note: 50% of the animals observed did not have any illness	
Staff House	M^2	Size of the staff house built	1. Walls	Binary indicator which takes 1 if the part is completed to a satisifactory standard	Average of Quality Indicators
			2. Roof		
			3. Ceiling		
			4. Floor		
			5. Painting		
			6. Doors	Binary indicator which takes 1 if there is at least one is built and functioning	
			7. Windows		
			8. Electricity	Binary indicator for having power supply that is complete	
			9. Water Tank	Binary indicator for having water tank built	
Enterprise	People	The number of people currently invloved in the enterprise	1. Equipment	Binary indicator for having secure access to each category for business	Average of Quality Indicators
			2. Materials		
			3. Transportation		
			4. Credit		
			5. Skilled labour		
			6. Markets		
			6. Markets		
			7. Success	Binary indicator which takes 1 if the enterprise owner feels the business is successful	
Fencing	M	Length of the fence	1. Fence	Binary indicator for completion of each category	Average of Quality Indicators
			2. Main gate		
			3. Small gate		
			4. Guard house		
Roads	M^2	Road surface area	1. Material of the road	Binary indicator for gravel road (entirely or mixed as opposed to earth/dirt)	Average of Quality Indicators
			2. Road surface	Binary indicator for satsifactory road surface	
			3. Wingwalls	Binary indicator for at least one satisfactory wingwall but none defective	
			4. Drainage lines	Binary indicator for satsifactory status of each category	
			5. Scour checks		
			6. Mitre drains		
			7. Culverts		
Tree Planting	Acres	Total amount of land in acres	1. Seed certification	Binary indicator which takes 1 if the batch of seeds/seedlings came with a certification number	Average of Quality Indicators
			2. Herbicide	Binary indicator for having sprayed with herbicides during pre-planting	
			3. Training	Average of 7 binary indicators for having received advice on (1) species selection, (2) weeding, (3) planting preparation, (4) disease detection and treatment, (5) fire prevention, (6) pruning/thinningm and (7) record keeping	

Table A2. Other index construction

Category	Index	Range	Description	Variables
Implementation	**Project Implementation Quality Index**	0 - 4	Additive index with sum of 4 discrete variables, each of which describes how the project implementation was perceived by beneficiaries	1. Project usefulness (0-1)
				2. Project completed (0/1)
				3. Satisfaction with material (0/1)
				4. Satisfaction with cost of material (0/1)
Procurement	**Challenges in Procurement Process Index**	0 - 4	Additive index with sum of 4 binary variables, each of which indicates challenges/violations in procurement process	1. Funds withdrawn by members outside of CPMC (0/1)
				2. Project material acquired by members outside of CPC (0/1)
				3. Less than three steps taken to purchase materials (0/1)
				4. Procurement process was difficult (0/1)
	Satisfaction with supplier Index	0 - 8	Additive index with sum of 2 discrete variables	1. Relationship with the local suppliers (0-4)
				2. Level of satisfaction with the services provided by the supplier (0-4)
	Hired a Contractor to Implement Project	0 / 1	Binary indicator for hiring a contractor	1. Hired a Contractor to Implement Project (0/1)
	Index of challenges in Contracting Process	0 - 9	Additive index with sum of 9 binary variables, each of which indicates challenges/violations in procurement process conditional on hiring a contractor	1. No advertisement to select contractor (0/1)
				2. There were less than 3 bidders (0/1)
				3. Bids not registered (0/1)
				4. Less than 2 (out of 5 advised) contacting steps involved (0/1)
				5. No information gathered on contractor during vetting process (0/1)
				6. Oustide influence in the contractor selection process (0/1)
				7. Contractor not signed a formal contract (0/1)
				8. Beneficiary not consulted during implementation (0/1)
				9. Beneficiary contribution not taken into consideration (0/1)
	Satisfaction with contractor Index	0 - 8	Additive index with sum of 2 discrete variables	1. Relationship with the contractor/local lead artisan (0-4)
				2. Level of satisfaction with the services provided by the contractor (0-4)
Monitoring	**Index for Intensity of Project Community Monitoring**	0 - 4	Additive index with sum of 4 binary variables	1. Compiled an Accountability Report (0/1)
				2. Monitored project implementation (0/1)
				3. Monitored selection of materials/livestock (0/1)
				4. Monitoring report was written (0/1)
	Index for Intensity of Social Accountability Committee Project Monitoring	0 - 4	Additive index with sum of 4 binary variables, each of which indicates SAC involvement and quality	1. SAC witnessed delivery of procured goods (0/1)
				2. SAC wrote monitoring report (0/1)
				3. SAC monitored project implementation (0/1)
				4. SAC monitored selection of materials/livestock (0/1)
Interactions with Leaders	**Satisfaction with NUSAF Desk Officer (NDO) Index**	0 - 8	Additive index with sum of 2 discrete variables	1. Relationship with the NDO (0-4)
				2. Level of satisfaction with the services provided by the NDO (0-4)
	Satisfaction with Disctrict Vet Officer (DVO) Index	0 - 8	Additive index with sum of 2 discrete variables	1. Relationship with the DVO (0-4)
				2. Level of satisfaction with the services provided by the DVO (0-4)
Reporting	**Reporting NUSAF-Related Issues**	0 - 2	Additive index with sum of 2 binary variables	1. Beneficiary reported NUSAF-related issues (0/1)
				2. Someone else in the group reported NUSAF-related issues (0/1)
Trust	**Trust**	1 - 4	Single categorical variable	1. Level of trust in leaders (1-4)

Table A3. Community monitoring

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Index for Intensity of Project Community Monitoring	Index for Intensity of Social Accountability Committee Project Monitoring	Reporting NUSAF-related issues to LC1	Reporting NUSAF-related issues to Sub-county	Reporting NUSAF-related issues to District	Reporting NUSAF-related issues to IG	Reporting NUSAF-related issues (total)
Training	0.148*	0.258***	0.042***	0.0283*	0.0252**	0.0766***	0.172***
	[0.081]	[0.000]	[0.008]	[0.065]	[0.048]	[0.000]	(0.000)
Control means	2.747	0.608	0.387	0.285	0.178	0.103	0.949
N	863	895	6,943	6,941	6,934	6,933	6,965
R-squared	0.498	0.421	0.114	0.116	0.107	0.135	0.147

Notes: This table reports the OLS regression results for the treatment effect on project-level and individual level outcomes. Regressions include region controls. All analysis is clustered at the project level. P-values are reported in brackets below the coefficients. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table A4. Procurement and contracting

	(1)	(2)	(3)	(4)	(5)
	Challenges in Procurement Process Index	Satisfaction with supplier Index	Hired a contractor (0/1)	Index of challenges in Contracting Process	Satisfaction with contractor Index
Training	-0.036	0.070	0.001	-0.133	0.311
	[0.621]	[0.632]	[0.974]	[0.642]	[0.201]
Control means	2.069	5.266	0.406	3.606	4.887
N	895	738	800	310	499
R-squared	0.289	0.323	0.615	0.547	0.395

Notes: This table reports the OLS regression results for the treatment effect on project-level outcomes at the first endline survey. Regressions include region controls. All analysis is clustered at the project level. P-values are reported in brackets below the coefficients. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table A5. Interactions with bureaucrats

	(1)	(2)	(3)	(4)
	Payment was made to district official	Payment was made to district officer (0/1)	Satisfaction with NDO Index	Satisfaction with District Vet Index
Training	-0.116	-0.028	0.018	0.086
	[0.219]	[0.705]	[0.912]	[0.473]
Control means	0.43	0.421	5.526	8.393
N	349	349	895	861
R-squared	0.452	0.534	0.302	0.898

Notes: This table reports the OLS regression results for the treatment effect on project-level outcomes at the project assessment. Regressions include region controls. All analysis is clustered at the project level. P-values are reported in brackets below the coefficients. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table A6. Community monitoring

	(1) Did anyone from the sub-county get involved in purchasing for your project?	(2) How would you rate the performance of the CPC overall?	(3) How would you rate the performance of the CPMC overall?	(4) How satisfied are you with the quality of the project?	(5) How likely would you be to choose the same leadership for a future project?	(6) It is easy to get many members of the community to come together to solve an issue in the community?	(7) It can be hard to get members of the community to come together to solve issues because everyone waits for someone else to do it?	(8) How much influence do you think you can have to make this village a better place to live?	(9) How much power do you think the community has to improve the quality of NUSAF2 sub-project implementation?
Training	0.011	0.007	-0.022	-0.021	-0.125***	0.075**	-0.069**	0.104***	0.041
	[0.418]	[0.758]	[0.329]	[0.527]	[0.001]	[0.026]	[0.049]	[0.006]	[0.226]
Control Mean	0.124	3.369	3.43	3.352	3.397	2.968	2.481	2.771	3.095
N	6,239	6,441	6,626	6,964	6,951	6,964	6,961	6,940	6,911
R-squared	0.113	0.127	0.124	0.176	0.105	0.127	0.118	0.137	0.114

Notes: This table reports the OLS regression results for the treatment effect on individual-level outcomes at the final endline survey using the full sample. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table A7. Trust in leaders, local officials, and government

	(1) Project Leaders	(2) LC3 Chairperson	(3) Sub-county Bureaucrats	(4) LC5 Chairperson	(5) District Bureaucrats	(6) Central Government
Training	-0.091***	-0.043	-0.020	-0.026	-0.029	0.036*
	[0.002]	[0.210]	[0.507]	[0.507]	[0.381]	[0.099]
Control Mean	3.654	3.201	3.312	3.024	3.323	3.616
N	6,952	6,937	6,921	6,892	6,933	6,932
R-squared	0.120	0.127	0.100	0.089	0.099	0.104

Notes: This table reports the OLS regression results for the treatment effect on individual-level outcomes at the final endline survey using the full sample. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table A8. Spillovers of reporting issues to officials

	(1)	(2)	(3)	(4)	(5)
	Reporting other (non-NUSAF) issues to LC1	Reporting other (non-NUSAF) to Sub-county	Reporting other (non-NUSAF) issues to District	Reporting other (non-NUSAF) issues to IG	Reporting other (non-NUSAF) issues (total)
Training	0.037**	0.0426***	0.0193***	0.00800	0.045***
	[0.014]	[0.000]	[0.007]	[0.141]	[0.009]
Control means	0.226	0.13	0.053	0.027	0.250
N	6,899	6,893	6,893	6,884	6,967
R-squared	0.121	0.087	0.064	0.058	0.116

Notes: This table reports the OLS regression results for the treatment effect on individual-level outcomes at the final endline survey using the full sample. Standard errors are reported in brackets below the coefficients. Regressions include region controls. All analysis is clustered at the project level. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table A9. Main outcomes, 1% trimming

	(1)	(2)	(3)
	Overall Score	Project quality	Project quantity
Training	0.135*	0.111	0.099*
	[0.055]	[0.129]	[0.082]
Control Mean	-0.034	0.011	-0.046
N	857	864	861
R-squared	0.4	0.395	0.35

Notes: This table reports the OLS regression results for treatment effects on project-level outcomes at the audit survey. The top 0.5% and bottom 0.5% responses for each outcome have been dropped. Regressions include region controls. P-values are reported in brackets below the coefficients. *** p< 0.01, ** p< 0.05, *p< 0.1.

Table A10. Additional heterogeneities at endline

	(1)	(2)
	Livestock only projects	All projects
Training	0.203	0.758
	[0.317]	[0.227]
Training x distance to s/c headquarters	0.001	-0.000
	[0.446]	[0.965]
N	4,146	5,834
R-squared	0.091	0.045
Training	0.348	-0.208
	[0.393]	[0.806]
Training x education	-0.003	0.140
	[0.962]	[0.428]
N	3,330	4,626
R-squared	0.093	0.051
Training	0.266	1.140
	[0.603]	[0.354]
Training x female	0.010	-0.288
	[0.970]	[0.567]
N	4,214	5,909
R-squared	0.099	0.047

Notes: This table reports the OLS regression results for the treatment effect on household number of cattle at the final endline survey. Regressions include region controls. All analysis is clustered at the project level. P-values are reported in brackets below the coefficients. *** p< 0.01, ** p< 0.05, *p< 0.1.