

**Participatory Development in Fragile and Conflict-affected Contexts:
An Impact Evaluation of the *Tuungane* 1 Program in the
Democratic Republic of the Congo**



Final Report

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Ann Laudati (UC Berkeley)

Eric Mvukiyehe (World Bank Research Group)

Peter van der Windt (New York University Abu Dhabi)

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1 Executive summary

Community Driven Development (CDD) is a bottom-up model of development that aims to put the people in the driver's seat. To date, a number of CDD programs have been conducted and evaluated, but the evidence as to its effects remains inconclusive. This report presents findings from a long-term impact evaluation of the *Tuungane 1 program*, a major CDD program in Eastern Congo, funded by the UK government and implemented by the International Rescue Committee (IRC) and CARE International between 2007 and 2011.

The *Tuungane 1* program was carried out in 1,250 randomly selected Village Development Committee (VDC) areas, which were grouped into 280 Community Development Committee (CDCs) areas with a targeted beneficiary population of approximately 1,780,000 people in the eastern DRC provinces of Haut Katanga, South Kivu and Tanganyika and Maniema. *Tuungane 1* had two components: 1) an intervention at the VDC level that involved \$3,000 grants, and subsequently, 2) an intervention at the CDC level that involved \$50,000 to \$70,000 sub-grants to undertake infrastructure projects such as the construction of schools and hospitals. A core element of *Tuungane 1* was a focus on women's empowerment and on championing the rights and roles of women in collective decision-making.

This study investigates the long-run effects of the *Tuungane 1* program. The evaluation strategy relies on the random assignment of communities to the *Tuungane 1* program through public lotteries, which allows us to make causal inferences. Furthermore, by default *Tuungane 1* was implemented with "gender parity": the requirement that half of all VDC and CDC committee positions are reserved for women. However, in a randomly selected subset of communities this gender parity was lifted. The random assignment of treatment communities to the gender parity condition allows us to also explore the causal impact of having women in leadership positions.

The evaluation focuses on three sets of key outcomes of interest to the program: 1) the quality of service provision in the health and education sectors; 2) health, education and economic welfare outcomes; and 3) women's empowerment. The data collection, carried out from April to November 2015, included both a quantitative and a qualitative component. A quantitative survey was conducted in a targeted 781 villages in the Congolese provinces of Haut Katanga, South Kivu and Tanganyika. We visited the village chief and a random subset of village members. Furthermore, we also collected data directly from education and health facilities. Specifically, we visited the primary school and health facility related to each of the 781 villages. In each facility, our enumerators judged the building and presence of supplies, collected data from a user of the facility, and interviewed the facility's director. In addition, qualitative data was collected from 73 villages across the same provinces, in which specific attention was paid to hearing a diverse array of perspectives and voices. These data help us to answer "why" questions related to this study's quantitative findings. Our analysis produces the following set of findings:

Five years after the conclusion of *Tuungane 1*, we find that the program had a positive impact on the quality of primary schools and health facilities, and on the presence of material and supplies in these facilities. In other words, villagers living in areas that received *Tuungane 1* have education and health facilities nearby that are built and stocked better than in areas the program did not focus on. For most of the other outcomes, however, we fail to find evidence of impact. We find no evidence that the program had an effect on other dimensions of service provision: capacity, staff quality, quality of administration, community participation, service cost or utilization. While there is some evidence that in *Tuungane 1* areas fewer heads of household fell ill the year preceding data collection, we fail to find evidence for improvement across a large set of other health outcome indicators. We find no evidence for improvements in education outcomes. Furthermore, we do not find positive economic effects and even see some (generally scattered) evidence suggesting adverse economic effects. Finally, when it comes to the role of women, the evidence does not suggest that *Tuungane 1* led to improvements in women's empowerment. Likewise, our data does not imply that the imposition of gender parity requirements is an effective way to strengthen the position of women in this context.

Combining the quantitative data with the rich qualitative data collected, we sought some explanation for the lack of improvement in the outcomes listed above. Related to quality of service provision, we find that the incentives for teachers and healthcare professionals did not change. Teachers and nurses still received very little compensation for their work. In some cases, power dynamics within villages also played a role as service providers were

sometimes appointed (or reassigned) based on their alignment with influential village members. Furthermore, in a number of instances, service providers, particularly in reference to the higher-level positions such as facility directors, lived relatively far from the relevant infrastructure, which resulted in numerous instances of poor attendance. Related to access to service provisions, we find that the cost to schooling and medicine did not change. Many individuals mentioned that prohibitive prices remained a central obstacle for making use educational or health services. Given the limited impact on service provision, the lack of significant downstream health and educational outcomes is unsurprising. Similarly, it is perhaps also unsurprising that little is found in terms of impacts on gender empowerment. This view was corroborated in the qualitative data collection, which emphasized that important decisions relating to village governance were still taken by men. However, many women do voice that they feel more empowered and we can thus not rule out a scenario in which the gender parity requirement sparks change further down the line.

Taken together, our findings point to two conclusions:

- **The *Tuongane 1* program performed well on outcomes related to activities that were directly under its control — namely improvements in the quality of infrastructure and to some extent on the presence of material and supplies — but appears to have had few downstream socio-economic effects.** This suggests that improvements in socio-economic infrastructure, in and of themselves, may not be sufficient to produce the desired impact. The finding also begs the question: which additional activities should have complemented the infrastructure provision to produce such impact? Answers to this question are beyond the scope of this study, partly because any such additional activities would have to be evaluated.
- **Gender parity in development programming may not be enough to lead to greater female empowerment and gender equality.** Our null finding related to the gender parity requirements of the *Tuongane 1* program on female empowerment and gender equality suggest that gender quotas, which increase the number of women in leadership positions, may not be sufficient to alter entrenched gender roles and norms.

In sum, while recognizing the need for continued research, we consider that the findings reported here, in relation to the current state of our knowledge, provide a sufficient challenge to the assumptions and arguments underlying the CDD approach as the current model of development aid. These findings also warrant further impact evaluation research in order to generate more nuanced and actionable empirical findings to guide further CDD policy and program design.

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Most of all we thank the many thousands of Congolese respondents who gave their time voluntarily in the hope that by providing information they can contribute to the design of better development work in Eastern Congo. We hope that this will be the case.

At times this report builds upon the report related to the previous impact evaluation undertaken of the *Tuungane* program: Humphreys, Sanchez de la Sierra and Van der Windt (2012).

The photo on the cover-page was made by Grace Bagula at the Amkeni primary school in Buhumba in Minova, Congo's South Kivu province.

3 Background

3.1 Introduction and preview of findings

Over the past three decades, Eastern Congo has been host to an explosive mix of weak governance, widespread poverty, land disputes and the exploitation of ethnic divisions for political and economic gain by foreign and Congolese armed groups, creating an instability that has frequently led to violence. The region was home to the First and Second Congolese Wars (1996-1997 and 1998-2003). The latter, with the direct involvement of eight African nations and 25 armed groups, has been the deadliest war in modern African history (e.g. IRC, 2007). Despite the formal end to the war in July 2003, the region continues to be an epicenter of conflict. The Democratic Republic of Congo (DRC) ranks at the bottom of the UNDP's 2015 Human Development Report (176th out of 188). Throughout most of the country, basic infrastructure such as schools and health facilities is lacking, either due to destruction or a lack of investment. Moreover, years of civil war has led to large population movements that in turn is likely to put pressure social structures within Eastern Congo. The isolation of many parts of the east has provided a haven for armed groups and impeded the economic and social development that are crucial for long-term stability.

In response to these challenges, the International Rescue Committee (IRC) and CARE International implemented the *Tuungane* program (or “Let’s Unite” in Swahili), a major Community-Driven Development (CDD) program that operated between 2007 and 2016 in Eastern Congo. Funded by the United Kingdom’s Department for International Development (DFID), the program went through three phases. The first phase of the program “*Tuungane 1*”, which is the focus of this study, was carried out between 2007 and 2011 in the eastern DRC provinces of Haut Katanga, Tanganyika, South Kivu, and Maniema.¹ The program worked in 1,250 randomly selected Village Development Committee (VDC) areas, which were grouped into 280 Community Development Committee (CDCs) areas with a targeted beneficiary population of approximately 1,780,000 people. The program consisted of two components: 1) an intervention at the VDC level that involved \$3,000 grants, and subsequently 2) an intervention at the CDC level that involved \$50,000 to \$70,000 sub-grants to undertake infrastructure projects such as the construction of schools and hospitals.

The implicit theory of change behind the *Tuungane 1* program was that training, coupled with exposure to and practice in accountable governance in the context of the VDC and CDC projects, can produce learning-by-doing and increase local accountability and social cohesion as well as improving the welfare of communities. A first impact evaluation of the program took place between 2010 and 2011 by Humphreys, Sanchez and Van der Windt (2012) — henceforth referred to as HSW (2012) — finding no evidence that *Tuungane 1* had an effect on the stated goals of improving economic and social outcomes.

This report describes results from a second evaluation five years after HSW (2012). The main motivation for this new evaluation is twofold. Firstly, the previous evaluation only focused on the first (VDC) component of *Tuungane 1* program. Although this phase covered the major governance interventions, it involved the relatively small \$3,000 projects, which accounts for only about 20% (\$3.7m out of \$18m) of the funding allocated to projects overall. We thus consider a study that encompasses the CDC component of the program, the larger, mostly economic rather than governance-focused activities, to be important. Secondly, data collection for HSW (2012) took place shortly after the completion of the VDC projects. For interventions such as the construction of school rooms, it may be the case that economic returns manifest themselves later on. In this study we focus on whether *Tuungane 1* had a positive impact on 1) the quality of service provision in the health and education sectors, 2) outcomes related to health, education and economic welfare, and 3) social outcomes, including female empowerment.

In the remainder of this section we describe the *Tuungane 1* program objectives and the objectives and focus of the present study. We also comment on the size of the *Tuungane 1* program in relation to other similar CDD programs and discuss the state of the evidence base on CDD programming. In Section 4 we describe our strategy

¹ The second phase, “*Tuungane 2*”, was a £60 million program carried out between 2011 and 2014. This second phase continued to apply the CDD approach, working with 1,025 VDCs in the same provinces as the first phase with the addition of North Kivu. Finally, the third phase, “*Tuungane 2+*” was a £7.5 million intervention carried out between January and December 2015 in a subset of treatment communities of *Tuungane*'s second phase.

to identify program impacts and how we collected quantitative and qualitative data. Section 5 discusses our findings on the key outcomes of interest, while Section 6 discusses the key results that stand out from our analysis, drawing on ancillary quantitative data and qualitative data. Section 7 concludes, with some reflections on further research as well as policy and program implications.

3.2 The *Tuungane 1* program: goals and components

As stated in the original project description document, the aim of *Tuungane 1* program was: *“to improve the stability and quality of life for communities in eastern DRC through structured, participatory, and inclusive collective action. By establishing and strengthening participatory local governance committees [the program aims ...] to improve the understanding and practice of democratic governance, improve citizens’ relationships with local government, and improve social cohesion and thereby communities’ ability to resolve conflict peacefully. The conduit to achieve these purposes will be village- and community-level projects that themselves will contribute to socio-economic rehabilitation as DRC moves into a post-conflict and development period.”* (IRC 2006).

In practice, the program consisted of two components: 1) an intervention at the VDC level that involved \$3,000 grants, and subsequently 2) an intervention at the CDC level that involved \$50,000 to \$70,000 sub-grants to undertake larger infrastructure projects such as the construction of schools and hospitals.

VDC component

Tuungane 1 worked with VDCs, which were the size of around 1,300 inhabitants.² Each VDC elected ten representatives to serve on a VDC committee (two co-presidents, two co-treasurers, two co-secretaries, two mobilizers and two inclusion officers). Once elected, VDC committees led the decision-making and monitoring of a community infrastructure project supported by a sub-grant of US\$3,000. In each VDC, committee members were tasked with sensitizing populations on “the importance of good leadership, and the meaningful inclusion of women and other vulnerable groups (IRC 2012)”. Following consultations with the population, the VDC members then selected how to allocate an envelope of \$3,000 across projects, and then the selection was put to the population for an up-down vote. VDCs also convened general assemblies (with an average of about four per VDC) to present expenditure reports to populations, with subsequent transfers conditioned on the population approving the planned expenditure. VDC committee members also received two sets of trainings: first, a three-day training on “their roles and responsibilities, leadership and good governance, gender and vulnerability and the “Do No Harm” principle,” and second, a one-day training on “financial management, in particular on the necessity of documentation and the roles and responsibilities of the VDC members to ensure adequate financial management of the sub-grant” (IRC 2012).

In total, 1,811 VDC projects were undertaken. **Table 1** gives a breakdown of VDC projects by sector and province. Across all four provinces, projects in the education sector were most popular. In the education sector, an estimated 420 school rooms were constructed, 1,348 renovated, and 11,795 school items (benches, tables, chairs) were purchased. Water and sanitation (Watsan) was the second most popular sector for projects, with a total of 325 projects carried out in this sector and 413 springs, 227 wells and pumps, 7 reservoirs and 150 latrines contributed. Also, 98 sanitation and drainage activities were undertaken and 11 kilometers of piping was installed. Related to the health sector, approximately 89 health facilities (health centers, health posts, or maternity clinics) were built, 72 rehabilitated, 101 health facilities were equipped (e.g. with medicines), and 4,901 mosquito nets were distributed. The transport sector saw a total of 149 projects. Projects in this sector were most often chosen by villages in South Kivu province. In total, 117 kilometers of road was constructed, 275 kilometers of road was rehabilitated and 115 bridges were constructed. The livelihoods sector was similarly popular, particularly in Katanga, with a total of 225 projects. 28 markets were constructed/ rehabilitated, 123 flour mills were installed, and

² VDCs were constructed by the IRC for the purposes of the program as follows. First, a set of approximately 5,500 “lowest level units” (LLUs) — natural settlements, sometimes villages, sometimes sub-villages, sometimes quarters — were gathered together by IRC/CARE staff into “VDCs” based on proximity and affinity. Sets of VDCs were then aggregated into 560 “CDCs”. CDCs were in turn aggregated into a set of “lottery bin areas” that contain between 2 and 30 CDCs, depending on logistical considerations. Approximately 50% of the CDCs in each lottery bin were selected for treatment using a public lottery. Thus, if a single CDC area is selected for treatment then all the VDC areas within that CDC area are selected as well.

1,328 goats, 415 chickens and 424 rabbits were purchased. Also, 18,266 agricultural tools were distributed. Finally, other projects included the construction of other infrastructure such as meeting rooms and bus stops, and the distribution of blankets. For a complete overview of the VDC projects, see IRC (2012).

Table 1: Tuungane 1 VDC projects by sector and province

	Education	Health	Watsan	Transport	Livelihoods	Other	Total
Haut Katanga (100%)	181 (40%)	48 (11%)	68 (15%)	11 (2%)	124 (28%)	18 (4%)	450 (100%)
Tanganyika (100%)	250 (57%)	50 (11%)	42 (10%)	14 (3%)	66 (15%)	19 (4%)	441 (100%)
South Kivu (100%)	167 (38%)	32 (7%)	78 (18%)	96 (22%)	34 (8%)	35 (8%)	442 (100%)
Maniema (100%)	215 (44%)	93 (19%)	137 (28%)	28 (6%)	1 (0%)	4 (1%)	478 (100%)

Notes: Data from IRC and CARE International. Based on total number of VDC projects.

CDC component

Subsequent to the VDC phase, *Tuungane 1* operated at the CDC level. Each CDC was comprised of, on average, 4.4 VDCs, and approximately 6,000 inhabitants. CDC committees were formed by selecting an average of two members from each of the constitutive VDC committees. This selection was done by the VDC representatives, rather than through direct elections. Except for the elections, CDCs underwent a similar sequence of activities to the VDCs. The CDC committee members were trained on project selection, financial management and monitoring. Each CDC received \$50,000 to \$70,000 (depending on population size) to implement an infrastructure project. These projects were chosen by the population that made up the CDC.

A total of 346 infrastructure projects were undertaken. **Table 2** gives a breakdown of CDC projects by sector and province. The large majority of projects took place in the education and health sectors. In the education sector, 458 classrooms were constructed, 12 classrooms were rehabilitated and 2,149 school furnishings were purchased. A total of 80 health projects were undertaken. 73 health facilities were constructed, and 149 health facilities were equipped with material and supplies. Watsan, transport, livelihoods and other sectors were significantly less popular as CDC projects.

Table 2. Tuungane 1 CDC projects by sector and province

	Education	Health	Watsan	Transport	Livelihoods	Other	Total
Haut Katanga (100%)	74 (63%)	33 (28%)	4 (3%)	2 (2%)	0 (0%)	5 (4%)	118 (100%)
Maniema (100%)	42 (75%)	8 (14%)	0 (0%)	0 (0%)	6 (11%)	0 (0%)	56 (100%)
South Kivu (100%)	44 (45%)	19 (19%)	13 (13%)	16 (16%)	1 (1%)	5 (5%)	98 (100%)
Tanganyika (100%)	51 (69%)	20 (27%)	0 (0%)	1 (1%)	2 (2%)	0 (0%)	74 (100%)

Notes: Data from IRC and CARE International.

Women empowerment and gender parity variation

A core element of *Tuungane 1* was a focus on women and their rights and roles in collective decision making. During informal focus group discussions prior to the elections, local election teams, of which half the members were women, discussed the roles of different VDC positions; the appropriate considerations for the VDC candidates (such as honesty, work ethic and ability/willingness to travel); but also the importance of female inclusion in elections and the gender balance of VDCs. Furthermore, a central component of the program was the institutional provision that VDCs would be gender balanced. Each of the 1,250 VDCs consisted of ten individuals: two presidents, two secretaries, two treasurers, two mobilizers, and two inclusion officers. By design each VDC had one man and one women for each position in order for women to take on meaningful leadership roles. In addition, upon creation of the VDC and before project choice, the committee was tasked with sensitizing populations on the importance of good leadership, and the meaningful inclusion of women in project choice. Finally, women's rights and opportunities were a central component of the trainings received by VDC members. The same activities were undertaken at the CDC phase. Importantly, by design, in a randomly selected subset of communities the gender parity condition of the CDC committee (and thus also all the VDC committees within that CDC) was lifted and the positions were opened to all candidates. This design allows us to explore the impact of placing women in leadership positions, which we do in this study.

Table 3 summarizes the number of VDCs and CDCs per province, respectively. For treatment areas, the table also indicates the number of units that received gender parity, or not. Control indicates those units that were randomly selected not to receive the program. In these areas nothing happened. No parity lottery took place in the Tanganyika province.

Table 3: *Tuungane* units per province

	Haut Katanga	South Kivu	Maniema	Tanganyika	Total
# VDCs	300 treatment - 196 parity - 104 not parity	326 treatment - 209 parity - 117 not parity	338 treatment - 226 parity - 112 not parity	286 treatment - 286 parity - 0 not parity	1,250 treatment - 917 parity - 333 not parity
	302 control	325 control	330 control	290 control	1,247 control
# CDCs	74 treatment - 48 parity - 26 not parity	75 treatment - 49 parity - 26 not parity	74 treatment - 50 parity - 24 not parity	57 treatment - 57 parity - 0 not parity	280 treatment - 204 parity - 76 not parity
	74 control	74 control	73 control	59 control	280 control

Finally, at this stage we would also like to highlight what *Tuungane 1* did not do, which is important for interpreting some of the findings in subsequent sections. The following activities were not undertaken by the program:

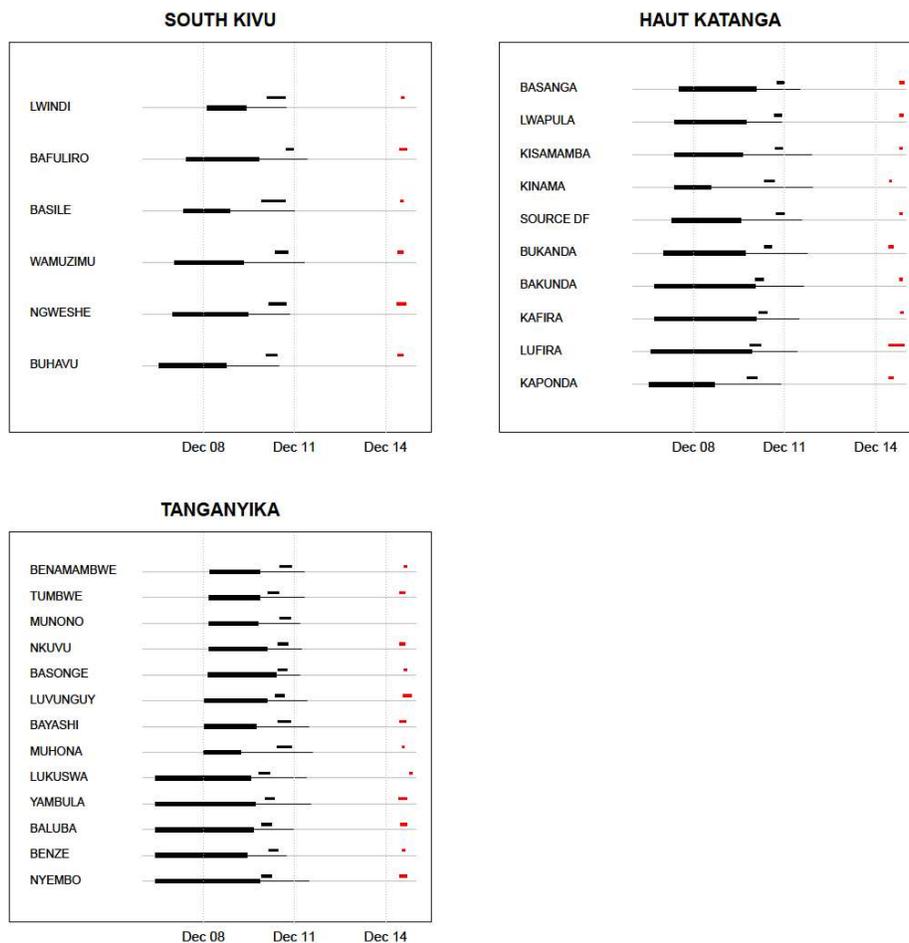
- Work with existing user committees;
- Train service providers or aim to hold them accountable to the community;
- Pay service providers or subsidize service fees;
- Pay for additional inputs to service provision (materials, etc.);
- Work with local leaders such as the village chief;
- Involve communities in monitoring of service provision;
- Work with technical line ministries to provide staff salaries, etc.

How large was *Tuungane 1*?

The *Tuungane 1* program is one of the largest CDD programs of its kind.³ The budget was £29,685,253 (\$46,309,000). The program ran for approximately four years in 1,250 war-affected villages with a beneficiary population of approximately 1,780,000 people. The program was implemented in about four years on average (see Figure 1 for an illustration of the timing of implementation across areas).

Although these aggregate numbers are very large by the standards of development projects in the DRC, the per capita investments are small. By IRC estimates, about 0.7% of the population (12,510 of 1,780,000 people) were directly involved in VDC member trainings, only a fifth of whom took part in CDC trainings. VDC projects came to \$3,707,624 over two years, which corresponds to approximately \$1 per person per year ($\$3,707,624 / (2 \times 1,780,000)$). A further \$14,354,403 was spent on larger CDC level projects. This larger investment corresponds to approximately \$4 per person per year over two years ($\$14,354,403 / (2 \times 1,780,000)$). The timing of these two phases across sites is illustrated in **Figure 1**. To put these numbers in perspective, the BRA-KDP program in Aceh had investments targeted at around \$20 per capita per year and the Millennium Village initiative targets aid at \$120 per capita per year. Interventions in Western countries, such as the US stimulus plan involve per capita investments that are orders of magnitude larger.⁴

Figure 1: *Tuungane 1* implementation and data collection



³ Information in this subsection comes largely from HSW (2012).

⁴ See Casey (2018) for a more complete comparison of CDD studies.

Notes: The thick black line shows the period of implementation of the VDC stage of *Tuungane*. The continuing thinner black line shows the CDC stage. Lines are marked by the start and end dates of the median VDC/CDC in a kingdom. The upper black lines show the “median duration” of the data collection for HSW (2012), from the median start date in a kingdom to the median end date. The upper red lines show the full duration of the data collection for this study, from the first day to the last day in that kingdom.

In the education sector, where the largest proportion of funds were invested, an estimated 420 school rooms were constructed and 1,348 were renovated as part of the VDC projects. A further 458 school rooms were constructed and 12 were renovated as part of the CDC phase. With an average of about 50 students per class, these investments could improve the educational environments of perhaps 111,900 students per year. While this is an extraordinary accomplishment, the investment provides direct benefits to a maximum of 6% of the population. In the health sector, approximately 161 health facilities were built or rehabilitated as part of the VDC phase, and 73 as part of the CDC phase. If they service entire villages, these could reach around 15% of the targeted population. Also, with 5,000 mosquito nets distributed, there are direct gains to around 1% of the population, assuming 3 people per net.

For all of the *Tuungane 1* projects, there could be potential downstream effects in terms of health, education, and economic outcomes. Nevertheless, it is important to emphasize that the direct interventions were small in terms of per capita investment.

3.3 Study’s empirical basis and objectives

Evidence from other CDD programs and evaluations

A central tenet of CDD programs such as *Tuungane 1* is participatory development, which is a popular model through which to deliver international aid because of the presumed economic and social impacts it can produce. The World Bank alone spent \$85 billion in the last decade on this broad class of interventions (Mansuri and Rao, 2013). Recently, a number of studies have examined the social and economic effects of CDD programs, but the picture they paint is mixed and inconclusive.⁵ In their study of a CDD program in Liberia, Fearon et al (2009) find little evidence of economic impacts, though they do find evidence of an effect on the ability of communities to solve some types of collective action problem. Casey et al (2013) examine a CDD program in Sierra Leone and find evidence of economic effects, but no evidence of social effects. In Afghanistan, Beath et al (2013) find some evidence that imported institutions can be effective, but only when external groups require that they be employed. Avdeenko and Gilligan (2015) show that a CDD program in Sudan had no impact on social capital (measured as pro-social behavior in a lab experiment and the density of social networks), but that it did impact perceptions of the inclusiveness of community governance and reported civic participation.

Most relevant for this evaluation is HSW (2012).⁶ The study explores the impact of the *Tuungane*’s VDC component. The data collection for HSW (2012) took place between 2010 and 2011. The study found no evidence that *Tuungane* had an effect on the stated goals of improving economic and social outcomes.

Study objectives

As noted, this evaluation builds on a previous study by HSW (2012), a randomized control trial (RCT) that set out to investigate a set of specific primary hypotheses formulated jointly by the research team and IRC in 2007, and can be found in the *Tuungane* Impact Evaluation Framework.⁷ In HSW (2012), the main focus was on social and economic outcomes. While there was no formal theory of change developed for *Tuungane 1*, the activities were built on the assumption that communities would “learn by doing” through the process of choosing and implementing an infrastructure project. This decision-making process was expected to improve local *governance* and *social*

⁵ See King and Samii (2014) for an overview.

⁶ The academic version of this study is Humphreys, Sanchez de la Sierra and Van der Windt (2016).

⁷ From the start in 2007, *Tuungane* included a set of specific primary and secondary hypotheses. These hypotheses can be found at http://www.columbia.edu/~mh2245/DRC/DRC_DESIGN.pdf.

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cohesion, and was considered just as important as the material gains or outputs that resulted from the decisions. Social cohesion was expected to be promoted through community participation in decision-making and engagement with local institutions that represented the community members' interest. The infrastructure projects were also expected to have positive knock-off effects on *economic welfare* (shorter-term effects for roads, markets and electrification, and long-term for education and health).

Therefore, for this follow-up evaluation, the research team and IRC revisited the assumptions and hypotheses that underpinned *Tuungane 1* and decided to put more focus of the evaluation on infrastructure and service provision, rather than on social outcomes, and on long-run impacts of the program. Specifically, the evaluation proposed in this document moves beyond HSW (2012) in two important ways.

1. **Impact of the CDC component.** HSW (2012) focused solely on *Tuungane 1*'s VDC component. The evaluation was implemented after the VDC project, but before the end of the CDC projects.⁸ **Figure 1** gives an overview of the timing of the program and data collection. The thick black line shows the period of implementation of the VDC stage of *Tuungane*. The continuing thinner black line shows the CDC stage. Lines are marked by the start and end dates of the median VDC/CDC in a kingdom.⁹ The upper black lines show the "median duration" of the data collection for HSW (2012), from the median start date in a kingdom to the median end date. HSW (2012) is thus unable to capture the effects of the CDC projects. The CDC component, however, accounts financially for the largest share of the *Tuungane 1* envelope and involves significant infrastructure projects. Building, rehabilitating, and equipping hospitals and schools can improve service provision in both sectors and have important health and education outcomes down the line. The construction or upgrading of local infrastructure can revitalize the local economy. In addition, the combination of the VDC and CDC components may also have social effects that were not apparent with the evaluation of the VDC component alone.¹⁰
2. **Long run impact.** We know little about the long-term impacts of CDD programs. Previous studies, including the evaluation of *Tuungane* by HSW (2012), were conducted shortly after the end of programs.¹¹ It is possible that very different estimates might have been obtained if data were gathered several years later. For example, health outcomes may improve quickly upon the introduction of a clinic, and economic outcomes may immediately improve as people fill newly available jobs associated with newly built facilities.¹² On the other hand, improvements in education and economic outcomes may only become evident in the long run, years after implementation. It takes time for people to shift norms towards sending their children to school or going to clinics for medical issues. Jobs that may grow out of access to education may also only be formed years after the intervention.¹³ At this stage, we know very little about when the outcomes of CDD programs take effect, if at all. In fact, it is possible that the mixed results in many CDD impact evaluations can be explained by differences in design, and estimated effects may

⁸ The reason is that the majority of activities to improve good governance - the main focus of HSW (2012) - operated at the VDC level, in contrast to largely economic activities at the CDC level. Moreover, the evaluation had to take place shortly after the VDC projects because of the start of *Tuungane*'s second phase.

⁹ Kingdom refers to "chefferie" in Congo (or "secteur" in some areas). They are an administrative unit above the "groupement" and below the "territoire".

¹⁰ For example, the CDC component was designed for a larger set of VDCs to work together on the infrastructure project, which may serve to better activate social outcomes than the VDC component alone.

¹¹ For example, Fearon et al (2009): the CDD project ended in February 2008 and data was collected in May 2008. Casey et al (2013): the CDD project ended in 2009 and data was collected in that same year. HSW (2012) in fact took place while the CDC component was still in implementation (*Error! Reference source not found.*). Etc. Do note that Casey et al (2018) is the long run follow-up survey of Casey et al (2013).

¹² Note that positions in newly created facilities may be assigned by provincial and district officials so these might not go to members of the community.

¹³ A long-term quantitative evaluation will pick up the effects only if these short-term effects are sustained. Sustainability is a key concern of implementing organizations, and we will address temporal dynamics of sustainability as part of the qualitative work that serves a key part of this evaluation.

depend on the timing of measurement.¹⁴ This evaluation is set to take place around four years after the VDC and the CDC components were implemented, as illustrated by the upper, red lines in **Figure 1**. Thus, the associated infrastructure processes were not only completed but had time to take root in the communities in which they are located.

3.4 Hypotheses and outcomes of interest

Our study seeks to provide an assessment of the impact of the *Tuungane 1* program. In this section we discuss the research questions¹⁵, a set of primary and secondary hypotheses and the operationalization of the key outcomes of interest. The primary evaluation questions are:

1. What long-term effects, if any, has the *Tuungane 1* program had on the quality of service provision in the health and education sectors, on outcomes related to health, education and economic welfare and on women's empowerment?
2. What are the mechanisms or pathways through which any such effect of the *Tuungane 1* program may have occurred?

We address these questions — and therefore ascertain the program impact of *Tuungane 1* — on three outcome families: 1) the quality of service provision in the health and education sectors (**Table 7- Table 22**); 2) outcomes related to health, education and economic welfare (**Table 23- Table 25**); and 3) women's empowerment (**Table 28 and Table 29**). Together with the implementing partner, we have translated these research questions into specific hypotheses. We list the primary hypotheses in **Table 4** below and the secondary hypotheses in **Table 37** in the appendix.¹⁶ We also list the indicators that we will collect to measure them. The final column gives the indicator's question number in the survey. Question numbers are provided in parentheses.

Table 4: *Tuungane 1* primary hypotheses

#	Primary hypothesis	Measure (measure in 2015 survey)
H1	T1 led to improvement in service provision	• Seven dimensions of service quality: Table 5
H2	T1 had a positive impact on health outcomes	• Last 12 months, somebody in household ill enough to require medical care? (Q88) • Last 12 months, how many children <5 died of due to illness in your household? And what type? (Q89, Q90) • Last 12 months, death or severe disease from household member (Q60)
H3	T1 had a positive impact on education outcomes	• School attendance (Q115-Q119, Q127) • Knowledge-based test conducted with children (EX4-EX10)
H4	T1 had a positive impact on welfare	• Quality of the roof (Q39) • Quality of the wall (Q40) • A range of items that the family may own (Q37) • Consumption of different product types (Q54 A-J) • Total household income over last 7 days (Q74)
H5	T1 had a positive impact on women's empowerment	• Survey questions on attitudes towards women and opinions about rape in communities (Q237, Q241, Q301- Q305)

¹⁴ Van der Windt and Humphreys (2016), for example, find that the impact of a CDD program on local level conflict depends heavily on when the measurements are taken.

¹⁵ These questions were proposed and formulated by the implementing partner in 2014 and 2015.

¹⁶ From the start in 2007, T1 included a set of specific primary and secondary hypotheses. These hypotheses can be found at http://www.columbia.edu/~mh2245/DRC/DRC_DESIGN.pdf

	<ul style="list-style-type: none"> • Existence women's associations in the community? Membership. It's role in the community. (EC109, EC105-EC120, Q183D, Q184D, EC194) • Differences in school attendance for boys vs girls (Q115-Q119)
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We measure quality of service provision along eight dimensions: 1) presence of service provider, 2) building condition, 3) capacity, 4) presence material and supplies, 5) staff quality, 6) administration, 7) community participation, 8) service cost and utilization. The measures are based on the infrastructure survey (direct observations by the enumerator, and interviews with those responsible for the facility and service users) and the household survey (opinion of the individuals). **Table 5** lists the seven dimensions and the primary measures that we will use to quantify them:

Table 5: Eight dimensions of service quality

#	Dimension	Education	Health
1	Presence of service provider	Distance to facility (walk time); Was an infrastructure survey able to be completed for the area?	Distance to facility (walk time); Was an infrastructure survey able to be completed for the area?
2	Building condition	Quality of building (EE32, EE34, EE35, EE37, Q130); Presence electricity (EE38, Q134); Running water (EE33); Toilets (EE36, Q135)	Quality of building (ES19-32, ES41, ES42, Q101, Q106); Presence electricity (ES34, Q105); Clean floors and walls (ES35, ES36); Running water (ES33, Q104)
3	Capacity	Total number of teachers (EE54); Number of classrooms (EE31); Number of desks (EE25); What grades are taught in the school (EE53); Size of the classroom in m2 (EE26, Q133); Number of students enrolled/present (EE20, EE55, EE56); School capacity (Q101b); Ratio students/teacher (EE54, EE20, EE55, EE56)	Capacity (Q101b); Waiting time (ES45, ES47, Q114), Number of doctors and nurses (ES37, ES66, ES67); Number of beds (ES18); What services can this facility provide (ES64), Delivery room (ES24)
4	Presence material and supplies	Presence large chalkboard (EE24); Proportion of students with text book (EE22, EE23); Teacher has textbook, agenda, national program (EE27-29, EE60); Availability of learning material (Q130C)	Availability and quality of equipment (Q101C); Presence of trash, incinerator, trash hole, placenta hole, lab, pharmacy (ES27-30, 21,23); Presence medicines (ES38-ES40)
5	Staff quality	Teacher presence (EE19, Q128, Q129); Level of education (EE30, EE45, EE46); Teacher's availability (Q122, Q124); Teacher's quality (Q130D, Q131-132)	Proportion doctors and nurses (ES66, ES67); Level of education (ES56, ES57), Consultation with MD or nurse (Q97); Staff on time (Q98), Staff quality (Q101E)
6	Administration	Responsible is present (EE39); Staff registry (EE61); Student registry (EE29), National program (EE60); Quality of administration (Q130E); Verification accounting (number of students, price per student, total income (EE50), total expenditure (EE51)	Responsible is present (ES50); Patient registry (ES81); Staff registry (ES82); Inventory list (ES83); Cashbook (ES84); quality of administration (Q101F); Verification accounting (number of patients, price per patient, total income (ES62), total expenditure (ES63)
7	Community participation	Contribution by community (EE58, EE59); COPA: number of members, meetings, participation and role (EE67-69, EE73) Interaction with community (Q130F, ES72)	Contribution by community (ES70, ES71); CODESA: number of members known, number of meeting, participation and role (ES86-88, ES92); Interaction with community (ES91, Q101E)

8	Service cost and utilization	School is open (EE13); Number of students present (EE56); Number of students enrolled (EE55); Cost of education (EE47-EE49, Q121, Q130G, Q137-141); Number of children who never went to school (Q118)	Facility is open (ES14); Number of patients present (ES69); Number of patients last full month (ES68); Outpatient care (ES72); Cost of treatment (ES49, ES58-ES61, Q101, Q108-113); Number of health facility visits in last 12 months (Q92)
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Three clarification points are in order as they relate to these primary hypotheses. First, the central hypothesis for this evaluation is whether *Tuungane 1* has improved the quality of service provision. At the outset it should be emphasized that building infrastructure alone is not likely to be enough to achieve improvements in education, health and welfare. To have an impact the infrastructure should be supported by the community and in many cases also local governments. In other words, improvements in health, education and welfare are likely to take place only under certain conditions. For example, the construction of a school by *Tuungane 1* is only expected to have had an impact on education outcomes if there is a teacher that is paid and supported; families can and want to send their children to school; the necessary equipment is present; local government did not oppose the project, etc. As a result, the evaluation will not only aim to understand whether Hypotheses 2 to 5 hold, but will place particular emphasis on trying to understand under what conditions *Tuungane 1* infrastructure did lead to improvements of health, education and welfare.

Second, in addition to education, health and welfare, *Tuungane 1* also sought to make improvements in other outcomes such as social cohesion and good governance (e.g., accountability; women’s empowerment, etc.) We do not have an explicit theory of how these outcomes might be influenced by the economic component that is the focus of this evaluation (i.e., infrastructure grants provided to communities). Hence the evaluation also explored original hypotheses related to these outcomes, but only in a secondary analysis. Hence empirical results on social outcomes are provided in appendix.

Third, there are good reasons to expect that the effect of the *Tuungane 1* program will vary across communities with different characteristics: poor versus rich communities, communities with a conflict history versus those without, etc. To explore these heterogeneous treatment effects, we will use a mix of qualitative and quantitative data. The quantitative survey collected a rich set of demographic variables in order to assess whether the intervention has a larger effect among certain subpopulations while the qualitative data will be used to capture the wider diversity of experiences (both positive and negative impacts) of the project on different stakeholders while also providing the context to understand why those differences exist. Following similar reasoning, there are reasons to expect that the effect of the treatment will vary across different types of project. We expect improvements in education (health) outcomes to be particularly strong for those communities that built a school (hospital). Also, for welfare outcomes we expect differences: an electrification project may create new opportunities for income, roads may open up the village to markets, water projects may increase time for women’s productive activities, etc. We return to such effects later in this study.

4 Evaluation strategy

This report builds on both quantitative and qualitative data. The combination of the two allows us not just to conclude whether impact was achieved, but also explore how impact is achieved. After introducing the randomization of the program and the units under study, we will discuss the data collection strategy for each in turn.

4.1 Randomization to get at the causal impact of *Tuungane 1*

In this study we are interested in the impact of *Tuungane 1*. In other words, we would like to answer the question “what would have happened in this program area if there had not been a program?” To answer this question we need to be able to make a valid comparison between areas that received the program (treatment) and areas that did not (controls). *Tuungane 1* has been implemented following a randomized controlled trial design (sometimes

called a field experiment, randomized intervention or RCT), which makes it possible to draw this comparison. The random assignment of groups to treatment and control means that the only systematic difference between treated groups and control groups is treatment status itself. Looking at control outcomes then tells you how things would have looked like in treatment areas had they not been treated.

In 2006, communities were randomly assigned to the *Tuungane* 1 program. The assignment took place through a series of public lotteries.¹⁷ As described above, natural units were grouped into VDCs, which were grouped into CDCs. Then collections of neighboring CDCs were grouped into “lottery bins”. Within each bin, representatives from the potential project communities came together for the lottery, were told briefly about the project, and were able to witness the actual selection of communities (generally done by drawing names out of a hat). If a CDC was selected for *Tuungane*, then all VDCs (and LLUs) that make up the CDC would receive the program.

Table 31 in the appendix comes from HSW (2018), and shows that there is indeed balance between *Tuungane* 1 treatment and control communities.

4.2 The units under study

The unit of analysis in this study is neither the VDC nor the CDC. It is not possible to examine effects at the level of VDC or CDC areas for the practical reason that these units have no meaning in control areas. More substantively, outside of the context of the *Tuungane* program these artificially created units have no meaning in treatment areas either, so looking for effects at this level has unclear external validity. Instead we will collect our data and measure effects primarily within Lowest Level Units (LLUs) – the smallest natural unit with a clearly defined chief, which can be the village, sub-village or neighborhood. The principle behind seeking effects at this level, or at levels other than the VDC and CDC, is that the program works not simply through the creation of particular institutions for particular groups (say a committee), but for outcomes related to individuals living within these natural units.

An important source for information about service provision is the infrastructure survey. Because of the above, we are interested in the service provision as experienced by the inhabitants of these LLUs. We thus visited the primary school and health facility within a five-kilometer radius for each village, thus not necessarily the *Tuungane*-built facilities. Specifically, upon arrival in the village, the survey teams were tasked to visit the village chief to explain the data collection exercise and obtain approval. During this meeting, surveyors also asked the village chiefs about the name and location of the primary school and the health infrastructure that are used by the community. After obtaining this information, both facilities were visited for the infrastructure surveys. We instructed our surveyors not to visit the school or health facility if the facility was located more than five kilometers (about one hours walking distance) away.¹⁸ We thus do not measure the difference in quality provided between a *Tuungane* facility and a control facility. We compare the quality of nearby service provision for villagers in *Tuungane* area and *Tuungane* control areas. In other words, we are thus not interested in whether a *Tuungane* facility is better than a not-*Tuungane* facility. This study is interested in whether service provision has improved for people that live in *Tuungane* areas, compared that those that do not.

4.3 Quantitative data collection

The data collection included both a quantitative and a qualitative component. A quantitative survey was conducted in a targeted 781 villages in the Congolese provinces of Haut Katanga, South Kivu and Tanganyika. We visited the village chief and a random subset of village members. Furthermore, to best capture the quality of service provision we supplemented information from these sources with data collected directly from education and health facilities.

¹⁷ For a discussion on the normative and statistical advantages and limitations of public lotteries, see HSW (2012).

¹⁸ The five-kilometer radius was chosen for three reasons. The first is logistical. In order not to excessively delay the data collection exercise. Second, we had good reason to believe that taking a five kilometer radius would capture many of the *Tuungane* projects. Data from 2012 indicates that 99.54% of all VDC projects can be found within an hour walking distance from the respondent. And 2015 data from the village chief in *Tuungane* villages indicates that for 99.32% of them have the nearest *Tuungane* project within a one-hour walking distance. The third reason to collect data from a restrictive radius around our respondents was to alleviate concerns related to spillovers. Multiple villages might make use of the same primary school or health facility.

Specifically, we visited the primary school and health facility related to each of the 781 villages. In each facility, our enumerators judged the building and presence of supplies, collected data from a user of the facility, and interviewed the facility's director.

4.3.1 Sample

Our data collection strategy uses multi-level sampling. First, we randomly selected villages (LLUs). Within villages, we then selected households, from which one individual was randomly chosen for our household survey.

This study aimed to revisit the same villages and respondents that were also visited by HSW (2012). HSW (2012) aimed to collect data in two LLUs in each CDC, and thus aimed to visit a total of $2 * 560 = 1,120$ LLUs.¹⁹ In contrast to HSW (2012), this study does not collect data in the province Maniema.²⁰ As a result, in total this study aimed to visit 781 LLUs in three provinces for this evaluation: Haut Katanga (286 LLUs), South Kivu (287 LLUs), and Tanganyika (208 LLUs).

Per village we aimed to interview five randomly selected individuals, and the village chief. In 2010, in 560 villages (so-called "RAPID villages"), ten households were randomly selected for the final survey. In the other 560 villages (so-called "survey-only villages"), five households were visited. For the 2015 data collection, we had the following strategy within the village to select households. If the 2010-interviewed individual had moved within the village we would find the same individual. However, if the individual had moved to another village, a new individual was randomly selected (for survey-only villages), or chosen randomly from one of the five remaining 2010-interviewed individuals (for RAPID villages).²¹

Finally, within households we randomly selected the (adult) respondent in such a way as to ensure that each gender was represented equally within the sample. Please see the protocols and instruments document that accompanies this study for more information.

4.3.2 Data sources

The study's quantitative component draws on four data sources.

Chief survey

In each village, information was collected from the village chief (or his second in command if the village chief was absent). This survey collected data specific to village level characteristics, such as ethnic composition, and village level infrastructure.

Household survey

We conducted a household survey with five randomly selected individuals in each village. Via these surveys, information was collected about household and individual-level characteristics. We obtained information about health, education, welfare and other outcome indicators. We also collected data on villagers' opinions about service delivery from their nearby primary school and health facility.

Infrastructure surveys

To best capture the quality of service provision, surveyors visited the primary school and health facility (health post or health center) used by each community (provided this was located within a one hour walking distance - about five kilometers). First, an audit of the infrastructure was conducted to measure the quality of the building and the presence of materials and equipment. Second, surveyors also conducted interviews with users of the facility:

¹⁹ In fact, in 2010, not all 1,120 villages were visited. See HSW (2012) for the complete evaluation design.

²⁰ There are a number of reasons why we did not collect data in Maniema. Chief among them is that in 2010, due to the expulsion of enumerators from the province, HSW (2012) were able to collect data only in 63 LLUs.

²¹ A major benefit of this strategy is that we are able to collect panel data at the individual level. However, because we largely explore new outcomes in this study we do not build on that in this report.

visiting an ongoing primary school class and interviewing a patient in each health facility. Third, the director responsible for the infrastructure was interviewed.

Exam with children

In each household with children of school-going age (between 6 and 11 years old), we randomly selected one child and conducted a brief exam to understand their level in: 1) mathematics, 2) French and 3) science. This data allows us to compare educational outcomes in *Tuungane 1* treatment and control communities.

4.3.3 Preparation and data collection

Data was collected between June 2nd and December 15th of 2015, which is illustrated by the upper, red lines in **Figure 1**. The data collection was a significant undertaking. We provide a short account of the logistics below.

Training and pilots

The survey instruments were carefully designed, building on input from both international and local experts. In addition, before the training, each survey was carefully piloted. Infrastructure surveys were piloted at two schools and two hospitals. Household and chief surveys were piloted in two villages. Training for South Kivu area took place between March 27th, 2015 and April 9th, 2015. For the Katanga area (Haut Katanga and Tanganyika), the training took place between April 27, 2015 and May 11, 2015. The training consisted of a number of components, including: survey content, human subjects training, behavior in the field, field conditions, sampling methodology, and the use of technology (tablets, GPS, etc.). A mix of classroom lectures and simulations was used. Two extensive pilots took place in villages to test surveyors' skills before deployment.

Figure 2: Piloting Instruments



Photo credit for both: Jean Paul Zibika. Primary school (left) and health center (right) in Cinjoma village.

Research teams

In total, 21 teams of four enumerators were deployed to collect data.²² We also hired two field coordinators – one for Katanga area (Haut Katanga and Tanganyika) and one for South Kivu province – who were responsible for the daily tracking of the teams' location, the verification of data quality and for troubleshooting technical issues in the field. In addition, two teams of “backcheckers” were trained in each survey area. These teams revisited around 10% of the villages visited by the original teams and conducted a subset of the survey to verify data quality, and learn about the respondents' experiences with our surveyors.

Conditions

²² More than half of them also collected data for HSW (2012).
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In general, accessibility is a big challenge for data collection projects in the DRC due to lack of roads and transportation means. In many cases, teams had to walk for more than a day to reach villages. Each team member had a tablet for data collection, with backup tablets kept by the provincial team leader, and a power bank and solar chargers for power. The conditions in the field were tough. Many enumerators fell sick to malaria, diarrhea, and typhoid. Several teams were involved in motorbike accidents causing tablet damage.

Security

Eastern Congo is also marked by high levels of insecurity, especially in the South Kivu province. We had strict security protocols in place. Teams were not allowed to visit a village before receiving security clearance from the IRC's security team. The latter had contact with the major actors such as the United Nations peacekeeping forces, the DRC government and others. Despite the precautions undertaken we did encounter some security issues. One team was ambushed and had to pay money to be freed, and three enumerators were jailed by the FARDC army on suspicion of being associated with armed groups. In total, seven villages were not visited due to elevated security risks (see below for a discussion on attrition).

4.4 Qualitative data collection

By design, the data collection for the qualitative component was undertaken independently from the data collection of the quantitative component.

4.4.1 Sample

Prior to data collection, between May and July 2015, the lead qualitative researchers conducted interviews with former and current *Tuongane* field staff in each of the provinces in order to help identify the villages that would be visited. We asked program staff to provide examples of both successful and unsuccessful projects based on their own criteria. Examples of successful projects included those reported to have widespread and active participation across the community (both in terms of general assembly meetings and building project contributions); those that had secured additional funding or spent existing funds efficiently, leaving money for add-ons such as additional classrooms; and/or those with the engagement of either a particularly involved chief or a woman leader in project implementation. Examples of unsuccessful projects included those that were drawn into intra-community conflicts; that resulted in unfinished, poorly constructed, or unused facilities; projects accused of embezzling money or building material; or with which communities showed a lack of engagement. These villages were compiled and then grouped according to sector, project phase, and territorial location. Villages were selected to represent a range of both successful and unsuccessful projects and diversity across sector, phase, and geographic location, with logistical issues of safety and security an additional consideration. A total of 73 villages were visited by the qualitative research team.²³ The full list of villages visited by the qualitative team is provided from Table 48 to Table 50 in the appendix.

4.4.2 Strategy and data sources

To gather information for the qualitative component of the evaluation, an ethnographic approach was adopted. Data collection consisted of focus group interviews, semi-structured interviews with key stakeholders: village heads, service providers, committee members, community leaders, former and current *Tuongane* staff members, and a range of community members. Particular emphasis was placed on gaining access to a diverse range of opinions and voices from within the community, taking account of gender, ethnic divisions, marginalized groups such as the pygmies, community power hierarchies, and engagement with the *Tuongane* project. For example, our research teams were instructed to conduct focus groups with women and men separately; to interview a female leader in each village and to speak with marginalized groups in the community and those opposed to the *Tuongane* project as well as the key stakeholders noted above.

Close to 400 individual interviews and more than 150 focus groups were conducted across the 73 villages visited. Note that these numbers are imprecise because they reflect the existing social and power dynamics in the region.

²³ By province: 27 in Haut-Katanga (i.e., 8 in Kasenga, 7 in Kipushi, 5 in Mitwaba and 7 in Kambove), 28 in South-Kivu (i.e., 6 in Mwenga, 8 in Walungu, 9 in Kalehe and 5 in Uvira), 14 in Tanganyika (i.e., 4 in Kabalo, 5 in Kongolo and 5 in Kalemie), and 4 in North Kivu (2 in Masisi and 2 in Rutshuru).

One-on-one interviews often morphed into conversations with multiple participants, and influential members of society, including village leaders, often held multiple stakeholder roles related to the *Tuungane* program. For example, despite requests for individual interviews with the chief, family members and close associates or advisors often accompanied these discussions. It was similarly not uncommon for focus groups which began with 6-8 participants to have doubled or tripled in size by the end of the meeting. For example, one focus group with women ended with a final participant count of 21 women.

It was also difficult to categorize specific individuals into specific roles. In multiple instances, the chief, a member of his/her family, or leaders in the village also held key positions within IRC projects. Women who were identified as leaders in the village, for example, often held multiple positions of relative power which included membership within an IRC and/or other NGO related village development committee, leadership of women's associations and church groups, and being the wife or a close relation of the chief/pastor etc. Furthermore, these realities vary from village to village. In one village for example, there are multiple chiefs each representing a 'street' in the village. In another, there exists a current conflict over authority between two different actors (one a 3-person collage formed of two men and one woman newly appointed by the groupement chief and the other the traditional chief upheld by the Mwami). Both cases thus resulted in multiple interviews being conducted with 'the chief'. In other instances, chiefs, school directors and other notables were simply unavailable and substitutes were sought.

The desire to capture diverse experiences and voices required research teams to stay in each village for an extended period (upwards of four days) and in several cases a return visit was necessary. The strategy of longer village stays and secondary visits also allowed purposeful collection of observational data with which to verify stated 'truths' as expressed by informants and to gather evidence of the wider social and political milieu within which *Tuungane* projects were implemented.

4.4.3 Preparation and data collection

Data collection for the qualitative component took place between May and October 2015. We provide a short account of the logistics below.

Research teams

The qualitative research team was made up of one of the authors and a second researcher. They headed and managed a team of 12 local Congolese research assistants divided across six two-person teams: two teams per province.²⁴ Teams were gender balanced, had previous research experience (many had worked for humanitarian organizations), and were fluent in several local dialects common in the region they would be working.²⁵ Teams were equipped with a camera, a laptop computer, writing implements and journals.

Training

The training was a considerable effort and took several months. As a first step, each team underwent two days of training in order to prepare them for the field.²⁶ Along with the researchers, each team traveled to different *Tuungane* villages to conduct two-day pilot investigations (these villages were selected by the researchers following consultation with *Tuungane* staff).²⁷ Between May 3rd and May 10th, along with the researchers, the Bukavu-based teams visited nine villages in Mwenga, Walungu and Kalehe territories in South-Kivu province.

²⁴ During a preliminary trip to the region between April 28 through May 18, interviews were conducted in Bukavu, Lubumbashi, and Kalemie to select individuals for the teams.

²⁵ Only one team was not gender balanced because of a replacement of an initial female assistant for which another female of qualified skills could not be found in the timeframe sought.

²⁶ The training consisted of providing foundational instruction in qualitative methods and research ethics, and utilized various instructional techniques including, lectures, case studies, mock practicals, and discussion, followed with field practice in a limited number of *Tuungane* villages.

²⁷ This served two purposes. First, the pilot provided an opportunity to trial the qualitative data collection instruments (notably the interview and focus questions) and second, to monitor and evaluate the effectiveness and abilities of the research team. As a result of the training, two assistants (one Bukavu-based assistant and one Lubumbashi-based assistant) were replaced due to poor performance in the field while an initial third team of two persons in Tanganyika was let go as they were found to be redundant.

Between, May 13th and May 18th, along with the researchers, the Lubumbashi-based teams visited nine villages in Kasenga, Kambove, and Kipushi in Haut-Katanga. And between July 15th and July 22nd, the Kalemie-based team visited five villages in Tanganyika. Following these initial pilot visits to the field, the researchers revised the data collection instruments. Follow-up trainings were then organized with each of the research teams in order to introduce the revised data collection instruments and to address performance issues as observed during the period of the pilot visits.

Data collection

From July 27th onwards, each of the research teams was provided with the final list of selected villages. They were also instructed to interview the *Tuungane 1* field staff currently working in each of the territories visited. Research teams continued to collect data until October 2015.

Conditions

Travel to field sites was done largely by motorcycle (the most effective means of transport to rural areas) and occasionally by public transport (buses) or private taxi (in the case of lengthier distances travelled and adequate road access). Teams were asked to continually upload their field notes to a password protected computer when possible. Because teams were required to stay for extended periods in each village, many fell ill.

Security

Similarly to the quantitative survey teams, security was an important factor influencing qualitative data collection. During June and July, for example, large parts of Uvira became inaccessible due to rebel activity and teams were forced to select alternative villages. More frequently however, the insecurity experienced took on the character of Congo's more pervasive "*se débrouiller*", manifesting as harassment and inconveniences illegally perpetrated for the benefit of an armed and/or powerful actor. Several team members remarked on their experiences having to pay road barriers or being stopped and questioned at length before being let go.

Figure 3: Teams on the Road



Photo credit: From left to right: Eustache Kuliumbwa in Ciramba village, and Patient Mumbere in Sugulu village.

4.4.4 Data analysis

Following data collection, written transcriptions of informant interviews and focus group notes from the six research teams were first translated from Swahili and French into English. These transcriptions were then compiled into a master document and coded such that similar passages of text were identified using keywords. These keywords or codes were constructed in two ways. First, a set of predefined codes relating to key outcomes of the project were used to identify findings that directly linked to the quantitative study. Second, a set of additional codes was used in subsequent readings of the text in order to draw out emerging data. Focused coding was then used to combine similar ideas/keywords into larger themes in order to make comparisons across cases, to find patterns, differences, and similarities and to discern relationships. For example, keywords used to identify instances of

women's participation, leadership roles and women's empowerment in informant interviews were collated with actual behavioral observations to understand the position of women.

Major themes were identified through analyses conducted separately by the lead qualitative researchers in order to strengthen our individual reading of the data whilst also allowing space for different perspectives and insight into the data. In some cases, information was triangulated via follow up interviews with program staff. These were completed by a lead member of the qualitative research team in Bukavu in September. In other instances, clarifying information (such as the health card) was sought through third party informants or secondary literature was consulted. Major themes as well as broader consistencies identified within and across themes were grouped again into a smaller set of generalizations that serve as the major findings for the qualitative investigation.

4.5 Independence of the research team

The IRC provided considerable support to this research and in particular shared databases and provided security information to our data collection teams. Moreover, the IRC provided input at multiple points into the research design and analysis plan. Despite the overall engagement of the IRC, the research team was independent. First, at no point during the research did any of the research team receive remuneration from the IRC for their work on this research. Second, although the IRC provided input into the design and analysis plan, they did so with no information about the estimated effects.

4.6 Interpretation of results and threats to validity

Presentation and interpretation of results

The qualitative results will be introduced in Section 6, and are also presented in a separate qualitative report. The next section (Section 5) presents the main results, which we summarize in tables. Throughout this document these tables have a common structure. **Table 6** provides a summary of how to read the typical table.²⁸ Note that individual tables may differ from this canonical table, for example by showing effects broken down by subgroup. Also, for all tables the source of data is indicated so that interested readers can consult the instruments employed.

The results presented in this report provide estimates of the effects of the *Tuungane 1* program across a range of measures. We describe the estimated level of each measure across control communities (first row **Table 6**). This can be interpreted as the expected outcome in the absence of the program. This can be in dollars, percentages, or other units, depending on the measure.

We then provide the estimated effect of *Tuungane 1*, which is given by the difference in average outcomes in *Tuungane* areas to in control areas (second row **Table 6**). The number gives the direction and the size of the estimated effect.

Table 6: Example results table

	Source 1		Mean Effects
	Outcome measure 1	Outcome measure 2	
Control	0.78	0.23	0
<i>Tuungane</i>	0.014**	0.04	0.01
(se)	(0.05)	(0.08)	(0.21)
N	500	500	500

Notes: Based on measures ES12, EE102. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

²⁸ This setup is similar to HSW (2012).

For all estimates, we also provide estimated standard errors, which capture the degree of uncertainty about the estimates of treatment effects (third row **Table 6**). The smaller the standard errors are relative to estimated treatment effects, the more confident we can be in our results.

Given the size of the standard errors relative to coefficients we record the “level” at which a finding is significant. When we say that the results are “significant at the 95% level” this means that there is only about a 5% chance that we would observe such positive effects if in truth the program had no effects or had negative effects (so-called “false positives”). These cases are indicated with “***” markers in the tables; 90% confidence is marked “**” and 99% confidence is marked “****”. Note that, given the expectations about the program, these core tests are conducted as “one sided tests”— we are interested in testing whether there is sufficient evidence to reject the hypothesis that the program did not have any positive effect. A null result is interpreted as an inability to reject the null hypothesis of no or negative effect, at conventional significant levels. When a result is described as “insignificant” this means that the estimated effect size is too small for us to be confident that it did not arise by chance.

As an additional visual aid, we present results where *Tuungane 1* had a positive and statistically significant impact (one, two or three asterisks) in green. In cases where there are large negative effects we mark these with red. We highlight negative results when these would be considered significant under a two-tailed test at the 95% level (thus those with three asterisks (“****”) in our tables).

A number of tables include a “**Mean effects**” variable. The reason for this is that for many analyses we build on multiple, related measures. In this case, problems related to interpretation may arise. For example, it may be that all measures trend positive, but none are individually statistically significant. In such a case it is possible that effects are jointly significant across the family of measures. Conversely, it may be that one or another measure is significant in a family by chance while most are not, or even trend in the wrong direction. In such cases it is possible that there are no significant effects across the family of measures. In order to generate a meaningful summary of multiple effects within each family we follow the approach of Kling, Liebman and Katz (2007) and create standardized indices of outcomes on related items.²⁹

Threats to validity

Before moving to the results in the next section, we discuss three possible threats to the validity of the results presented in this study. First, attrition may bias the results of this study. However, the share of targeted villages visited and targeted surveys where data was collected for this study is high. Furthermore, we find that the number of missing villages and surveys do not correlate to *Tuungane 1* treatment status. Second, heterogeneity of timing and length of project implementation and data collection in each location could also bias results if not balanced between treatment and control. We are not concerned about this issue because timing decisions took place at the level of lottery bins; all units in lottery bin areas were first exposed to the project at the same time (although projects started at different times) and were visited by the research team at the same time. Third, in the event of spillovers from treatment to control communities, measured treatment effects would underestimate the true impact of *Tuungane 1*. Two features of the program make spillovers unlikely. First, “communities” are comprised of clusters of villages meaning that most treated villages are surrounded by treated villages and control villages by control villages. Second, populations in control areas reported very low levels of knowledge about *Tuungane*. We discuss these threats in more detail in Section 9.2.

²⁹ This is done as follows. First we redefine each of the variables of interest in a family, so that higher values for each variable imply positive effects. Second we rescale each of the redefined variables using the (weighted) mean and standard deviation of the control group units. The index is then the standardized average of the redefined rescaled variables.

5 Results

Before we present results on the key outcome indicators, we briefly discuss *Tuungane*'s reception amongst its target population. A more detailed discussion can be found in **Table 32** to **Table 35** in the appendix. To what extent were local populations aware of the program? How much did populations actually take part in *Tuungane 1* activities? How did they view the project? We present this information fully in Section 9.3. To summarize, *Tuungane* was successful in implementing a large number of projects in the target areas. Populations reported high levels of exposure to the program. *Tuungane* was known by name to almost 80% of the population of the area, although only 13% of the general population knew the correct envelope size of the VDC program and only 6% the correct dollar amount of the CDC program. The vast majority of respondents emphasized the project component of *Tuungane*. Only a minority mentioned working together and identifying needs, and even fewer emphasized elections when reflecting back on the program. Finally, participation in the program was high, with a large share of the population reporting to have attended at least one meeting, voting in these meetings, and having contributed materially to the project. Any absence of results is thus unlikely to be driven by a lack of population exposure.

We now present results related to this study's main outcomes: 1) service provision, 2) health, education and economic welfare, and 3) women empowerment.

5.1 Service provision

Our first outcome of interest is service provision. That is, the question of interest is whether *Tuungane 1* improved service provision in the communities in which it operated. We explore the impact of *Tuungane* on service provision in the health and education sectors across eight dimensions: 1) presence, 2) building condition, 3) capacity, 4) presence of material and supplies, 5) staff quality, 6) quality of administration, 7) community participation, and 8) service cost and utilization.³⁰

5.1.1 Dimension 1: Presence of service provision

An important component of service provision is the location of the facility providing the service. If a high quality primary school that provides high quality education is located at a five hours walk, service provision should surely be considered as low. *Tuungane 1* constructed 420 classrooms and 89 health facilities across 1,250 VDCs, and 458 classrooms and 73 health facilities across 280 CDCs. Not surprisingly, we find that compared to control communities, the *Tuungane 1* projects are significantly closer to *Tuungane 1* villages. Chiefs in control areas report to have to walk, on average, 64 minutes to reach the nearest *Tuungane* project, while chiefs in *Tuungane* areas walk on average only 16 minutes. Note that while only a fraction of chiefs in treatment areas did not know the distance from the nearest *Tuungane 1* project, a full 81% of the chiefs in control communities were unable to provide us this information. As a result, 64 minutes is likely to be an underestimate.

Did the *Tuungane 1* projects actually translate into locating primary school and health facilities closer to respondents? To answer this question we explore a number of different sources. First among them are the infrastructure surveys. The difference in share of infrastructure surveys collected by our surveyors in *Tuungane 1* treatment and control areas can be used as a behavioral measure of the nearby presence of education and health facilities, given that enumerator teams did not visit facilities located further than five kilometers. Specifically, insofar as the *Tuungane 1* program constructed schools and health infrastructure, we expect more infrastructure surveys from program areas. Results are provided in the first column of **Table 7** (for health) and **Table 8** (for education). In control areas, surveyors visited the health infrastructure in 70% of the villages. Results are similar in the group of villages that received the *Tuungane* program. In addition, in 67% of the control villages the school was visited. Again, we find a very similar result for *Tuungane* areas.

Second, we asked the village chief about the presence of the primary school and the health facility in the village. We also asked the village chief about the distance to the nearest primary school and health facility. On average, 53% of control areas have a health facility in the village, and 82% have a primary school in the village. The average

³⁰ In our pre-analysis plan we set out to measure only seven dimensions (dimensions 2 to 8).
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distance to the health facility and the primary school is about 12 minutes for both. We find that neither primary schools nor health centers are more present nor located closer to the village chief in *Tuungane* areas.³¹

Table 7: Dimension 1 – Presence service provider. Health

	ES	Chief		Chief 2012
	Visit	Presence	Distance	Presence
Control	0.70	0.53	11.82	0.34
<i>Tuungane</i> (se)	-0.01 (0.04)	-0.04 (0.04)	-3.91 (4.61)	-0.04 (0.34)
N	734	713	575	709

Notes: Based on measures EC85a, EC85c, CQ25. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Third, in order to be sure that these results are not driven by the second phase of the *Tuungane* program, we also make use of data collected in 2012; i.e. data collected before the onset of the second phase of *Tuungane*. The last column in **Table 7** and **Table 8** report the results. In 2012, 34% of village chiefs reported having a health clinic present in the village, and 64% of villages have a primary school present in the village. However, we again find very similar dynamics in *Tuungane* 1 treatment and control areas.

Table 8: Dimension 1 – Presence service provider. Education

	EE	Chief		Chief 2012
	Visit	Presence	Distance	Presence
Control	0.67	0.82	11.75	0.64
<i>Tuungane</i> (se)	0.03 (0.04)	0.02 (0.03)	9.05 (7.07)	0.01 (0.04)
N	734	713	663	708

Notes: Based on measures EC83a, EC83c, CQ24. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

In summary, within a five-kilometer (one hour walking) radius, individuals in *Tuungane* 1 treatment and control communities have the same presence of service providers. This seems surprising given that many *Tuungane* 1 projects included the construction of classrooms and health facilities. There are a number of possible reasons for this result. The first is that the facilities constructed by *Tuungane* 1 are located at more than a five-kilometer distance from the community. We find little evidence for this. Asking village chiefs about the presence of *Tuungane* 1 projects, 67% say there is a VDC project in their village, and 41% report the presence of a *Tuungane* 1 CDC project in the village. The second reason may be that *Tuungane* largely improved already-existing facilities, located within a five-kilometer radius.

5.1.2 Dimension 2: Building condition

An important component of service provision is the quality of the building in which services are provided. **Table 9** presents results related to the health sector. We visited the health centers and evaluated the facility, judging the quality of the floors and walls, and whether these were clean.³² In control areas, the majority of health facilities

³¹ The same result is obtained when exploring the same information based data from villagers (not reported).

³² We asked from the following list: mud, straw, wood/ bamboo, metal plates, concrete/ cement, tiles, plastic, stone, backed bricks, cardboard, other. Floors: mud (13%), straw (1%), metal plates (3%), cement (81%), baked bricks (1%), other (1%). Floors made of mud we consider 'low quality', the rest we consider 'high quality'. We have more variation in the material used for the walls: mud (8%), wood/ bamboo (2%), cement (16%), baked bricks (65%), other (9%). We consider walls made of cement and baked bricks 'high quality', the rest we consider 'low quality'.

have high quality floors (84%) and walls (86%). Also, the majority of floors (74%) and walls (63%) are considered clean. Our enumerators also listed the scope of infrastructure present. Specifically, the variable “Infra” is a mean effects measure of the presence of the following components: consultation room, treatment room, laboratory, observation room, pharmacy, maternity or delivery room, waiting room, nurses’ office, trash can in all rooms, incinerator, garbage hole, placenta hole, working latrines, showers.

As an additional source of data, we also interviewed five randomly selected villagers in the health facility’s catchment area. We asked these individuals their opinion of the facility, and whether there was a working toilet present. In control areas, about half of respondents rate the condition of the health facility positively, and 77% indicate that the health facility has a working toilet.

We find that *Tuungane 1* had a positive impact on the quality of the health facility. All measures are positive, and our overall measure is statistically significant. This overall result is largely driven by improvements in floor quality and working toilets. Communities that received the *Tuungane 1* program are nine percentage points more likely to have high quality floors. And individuals in *Tuungane 1* areas are four percentage points more likely to mention that the health facility has toilets.

Table 9: Dimension 2 - Building condition. Health

	Assessment					Villagers		Mean Effects
	Floor Quality	Wall Quality	Infra	Clean Floor	Clean Wall	Rate Building	Toilets	
Control	0.84	0.86	0.0	0.74	0.63	0.52	0.77	0
<i>Tuungane</i> (se)	0.09** (0.05)	0.04 (0.04)	0.06 (0.11)	0.01 (0.05)	0.04 (0.05)	0.03 (0.03)	0.04* (0.03)	0.16** (0.09)
N	504	463	503	499	500	3,226	3,188	730

Notes: Based on measures ES42, ES41, ES20-ES33, ES35, ES36, Q101a, Q106. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

We conducted a similar exercise related to schools to learn about the quality of education infrastructure. Among other things, enumerators judged the quality of school floors, walls and roofs, and the presence of windows and toilets. **Table 10** presents the information collected. Floor and wall quality is lower than in the health facilities. Only 52% (75%) of schools have a high quality floor (wall). Roof quality is high overall at 76%.³³ About a quarter of all schools have windows (27%), and the majority of schools have toilets (65%).

Table 10: Dimension 2 - Building condition. Education

	Assessment					Villagers		Mean Effects
	Floor Quality	Wall Quality	Roof Quality	Windows	Toilets	Rate Building	Toilets	
Control	0.52	0.75	0.76	0.27	0.65	0.39	0.57	0
<i>Tuungane</i> (se)	0.07* (0.05)	0.05 (0.04)	0.12*** (0.04)	0.09** (0.05)	0.06* (0.05)	0.06** (0.03)	0.02 (0.03)	0.16** (0.08)
N	552	482	552	554	555	3,176	3,201	731

Notes: Based on measures EE35, EE37, EE32, EE38, EE33, EE36, Q130a, Q134, Q135. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

³³ Floors: mud (45%), metal plates (1%), cement (50%), baked bricks (4%). Walls: mud (12%), wood/ bamboo (7%), cement (10%), baked bricks (58%), other (13%). Roofs: straw (17%), metal plates (79%), concrete/ cement (1%), baked bricks (3%). We take roofs to be made from straw as ‘low quality’, and the rest as ‘high quality’.

We also asked villagers in each school's catchment area about the school that we visited. In areas that did not receive the *Tuungane 1* program, a minority of respondents rate the school infrastructure positively (39%). And about 57% of them indicate that the school has working toilets – a number that corresponds to observations made by our enumerators.

We find evidence that *Tuungane 1* had a strong, positive impact on school infrastructure quality. Schools in treatment areas have 7 percentage point higher quality floors, a 12 percentage point higher quality roof, 9 percentage points more windows, and 6 percentage points more toilets, and they are rated 6 percentage points better by villagers. The overall indicator that combines all measures finds a positive, and statistically significant, impact of the *Tuungane 1* program.

5.1.3 Dimension 3: Capacity

Another important component of service provision is what a health or education facility can offer. For example, even if the physical building in which the health services are conducted is of high quality, this is of little use if there are no beds or nurses and doctors, and if it takes a long time before an individual receives care. Similarly, a school is of little use if there are no benches for children to sit on, there are few classrooms and no teachers to teach. **Table 11** presents the results for the health sector. We make use of data from four different sources. First, from our own enumerators, who counted the number of health providers and the total number of beds in the health facility. We find that in control areas, a typical health facility has around three health providers and eight beds.

Second, our enumerators also conducted a brief interview with a randomly selected health facility user. Specifically, they asked the respondent how long it took to be seen by a qualified health care provider, and how long it took before the individual was actually treated. In control areas, users had to wait for around five hours before being seen by a qualified health provider, and around six hours for treatment.

Third, enumerators also interviewed the director of the health facility and asked him or her about the number of nurses and doctors employed and the different treatments that the health facility offers. To measure the latter we asked the director about treatments for a list of ailments common in the Congo.³⁴ On average, three nurses work for the health center, and one in three health facilities has a doctor. We find that a typical health facility in control areas is able to treat five out of six common illnesses.

Table 11: Dimension 3 - Capacity. Health

	Assessment		Patient		Director			Villagers		Mean Effects
	# Health Providers Present	# Beds	Wait Personnel	Wait Treatment	# Nurses	# Doctors	Treatments	Rate Capacity	Wait Time	
Control	3.00	8.45	5.19	5.65	3.20	0.30	4.95	0.45	9.54	0
<i>Tuungane</i>	-0.05	0.65	1.68*	0.59	0.03	0.01	0.02	0.03	0.67	-0.03
(se)	(0.26)	(0.89)	(1.31)	(1.04)	(0.22)	(0.09)	(0.14)	(0.03)	(1.13)	(0.09)
N	500	495	415	411	499	472	493	3,202	2,930	731

Notes: Based on measures ES37, ES18, ES45, ES47, ES66, ES67, ES64, Q101b, Q114. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Finally, we again ask five randomly selected villagers about their health facility. In control areas, a minority (45%) of them rate the capacity of the health facility positively. Furthermore, individuals would expect to wait almost ten hours before receiving treatment in the event of having to visit the facility. This estimate is about twice as high as the response time reported by actual patients.

Overall, from **Table 11**, we find no impact of the *Tuungane 1* program on any of these indicators.

³⁴ These are the following six: 1) diarrhea, 2) wound, 3) infection of respiratory tract, 4) delivery, 5) dermatosis, and 6) high blood pressure.

Table 12 presents the results related to capacity for schools. We again build on four different sources. The first source comes from our own enumerators, whom we tasked to count the number of classrooms. In control areas, the typical school has 6.5 classrooms.

Our enumerators also visited a randomly selected class from those that were in progress and measured the size of the classroom. In control areas, a typical classroom is 29 square meters in size.

We also asked the school director the level of classes available to children at their school. Specifically, we asked whether students can take elementary (first two years of school), middle (middle two years of school) or terminal classes (last two years of school). We also asked about the number of teachers employed, and the number of students that are currently registered at the school. Information from the director reveals that 87% schools in control areas, on average, offer terminal classes. A typical school has eight teachers and around 262 students registered. Combining the two last indicators, we find that an average teacher has around 25 students.

Finally, we ask the five randomly selected villagers about the capacity of their school. Specifically, we ask them to rate the school's capacity, and to judge whether, in their opinion, the schoolrooms are sufficiently large. In control areas, a minority of villagers (42%) rate the capacity of the school positively, and around 70% of respondents think that the classrooms are sufficiently large.

Table 12: Dimension 3 - Capacity, Education

	Assessment	Class	Director				Villagers		Mean Effects
	# Rooms	Room Size	Highest Class	# Teachers	# Students Reg.	Teacher/Student Ratio	Rate Capacity	Rooms Large	
Control	6.47	29.03	0.87	8.32	262.14	0.04	0.42	0.70	0
<i>Tuungane</i>	0.02	-2.36	-0.03	-0.58*	-29.76**	0	0.04*	0.07***	0.05
(se)	(0.28)	(3.79)	(0.04)	(0.42)	(16.09)	(0.00)	(0.03)	(0.02)	(0.07)
N	541	153	526	531	523	509	3,123	2,938	728

Notes: Based on measures EE31, EE26, EE54, EE53, EE55, Q101b, Q133. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Results for the impacts of *Tuungane 1* are weak. In treatment communities, a larger share of villagers rate the facility and classroom size positively. However, the first is only significant at the margin (90% confidence level). We also find a negative impact of the *Tuungane* program on the number of students registered. This result, however, is significant at the 95% significance level using one-tailed tests. Using two-tailed tests they are significant only at the 90% significance level, and we thus do not highlight this result.

5.1.4 Dimension 4: Presence of material and supplies

We next explore whether facilities have the material and supplies to provide quality service. **Table 13** presents results for the health facility. We build on two data sources. First, upon visiting the health facilities, our enumerators visited the stockrooms and calculated the number of antibiotics, anti-malaria and anti-inflammatory tablets present. The numbers presented in **Table 13** are averages, and we should highlight that a considerable number of health facilities do not have these medicines in stock at all: 21% of facilities do not have any antibiotics, 6% do not have anti-malaria tablets, and 22% do not have anti-inflammatory tablets.

We ask five randomly selected villagers to rate the equipment in their health facility. In control areas, 41% of respondents are of the opinion that the facility is sufficiently stocked.

Related to the impact of *Tuungane 1*, we find that areas that received the program are significantly better stocked with medicines. A possible explanation for this result is that the *Tuungane* program and the infrastructure component it entails, sends a positive signal to health center staff who will be more inclined to keep up their stocks.

Moreover, we can hypothesize that patient registry increases with better infrastructure, which would require more medication to treat the expending service users.³⁵

Table 13: Dimension 4 - Presence of material and supplies. Health

	Assessment			Villagers	Mean Effects
	# Antibiotics	# Malaria Tablets	# Anti-inflammatory Tablets	Rate Material	
Control	1293.38	781.80	868.85	0.41	0
<i>Tuungane</i> (se)	285.75* (211.38)	352.02** (164.05)	280.81* (177.97)	0.02 (0.03)	0.21** (0.10)
N	455	460	450	3,128	730

Notes: Based on measures ES38, ES39, ES40, Q101c. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Table 14 presents results related to schools. Our enumerators visited a randomly selected class from those classes that were in progress in order to collect information about the presence of a blackboard, the proportion of students that have a notebook and the proportion of students that have a textbook. Furthermore, the enumerators verified whether the teacher had notes prepared for class and whether they kept an attendance list (both are official requirements in Congo). In control areas, almost all (96%) ongoing classes have a blackboard, and an average of eight benches. While 68% of students have a notebook to write in, only 22% of students have a textbook. Among teachers, 72% have a text book, 79% have notes prepared and 75% keep an attendance list.

We also ask our five randomly selected villagers to rate the equipment in their school. In control areas, only 35% of respondents are satisfied with the material and supplies in the school.

Table 14: Dimension 4 - Presence of material and supplies. Education

	Class							Villagers	Mean Effects
	Blackboard	# Benches	Prop. Books	Prop. Notebooks	Teacher Book	Teacher Prep.	Teacher List	Rate Material	
Control	0.96	7.95	0.22	0.68	0.72	0.79	0.75	0.35	0
<i>Tuungane</i> (se)	0.00 (0.04)	2.44* (1.53)	-0.04 (0.07)	-0.01 (0.08)	0.01 (0.08)	0.09* (0.06)	0.13** (0.07)	0 (0.03)	-0.07 (0.08)
N	154	154	148	143	143	145	145	2,786	725

Notes: Based on measures EE24, EE25, EE22, EE23, EE27, EE28, EE29, Q130c. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Table 14 suggests that *Tuungane 1* had a positive impact on the number of benches, teacher preparation and the use of an attendance list, although the first two are only significant at the margin.

5.1.5 Dimension 5: Staff quality

Another key dimension of service provision is staff quality. We again measure this based on various indicators from different sources.

We ask the director of the health facility about the number of doctors and nurses employed by the facility, and obtain information about the qualifications of the director. In control areas, as can be seen in **Table 15**, there are around nine nurses for each doctor. Furthermore, the average director has around thirteen years of education and nine out of ten directors have a background in medical studies.

³⁵ This results was not replicated in the T2 evaluation. A possible explanation is that infrastructure was already in place by the second phase, meaning that the signal effect would have decreased by then.
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We also ask five randomly selected villagers to rate the quality of care and the health provider. The majority of respondents in control areas give a positive rating for quality of care (58%) and to the health providers (63%). Furthermore, we ask the villagers whether medical personnel is punctual. In control areas, 95% of respondents indicate that this is the case.

Table 15 presents very similar dynamics for these indicators across *Tuungane* treatment and control areas.

Table 15: Dimension 5 - Staff quality. Health

	Director			Villagers			Mean Effects
	Doctor/ Nurse Ratio	Director Education	Director Medical Studies	Rate Care	Rate Health Provider	Presence Health Provider	
Control	0.11	13.46	0.90	0.58	0.63	0.95	0
<i>Tuungane</i> (se)	-0.04 (0.03)	-0.12 (0.29)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	0 (0.01)	0.02 (0.09)
N	469	511	503	3,170	3,131	3,178	730

Notes: Based on measures ES66, ES67, ES56, ES57, Q101d, Q101e, Q98. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

We also explore whether *Tuungane* 1 increased staff quality at schools. **Table 16** presents the results. Upon their visit to an ongoing class, our enumerators checked for the actual presence of the teacher, and asked about their qualifications (when present). In control areas, teachers are present in 94% of the cases, and almost all teachers had studied pedagogy (97%).

Similar to the health facility, our enumerators also investigated the qualifications of the school director. In control areas, school directors have on average eleven years of schooling and 94% of them have studied pedagogy.

Finally, we ask the five randomly selected villagers about the quality of staff at their school. Specifically, we ask them to rate the school's teachers and ask whether the teacher is often absent, whether they are punctual, whether the respondent thinks the teacher is qualified to teach, and whether the teaching material is rigorous. Respondents rate the quality of teachers very similarly to health care providers, with 59% of respondents being positive. A minority of respondents stated that teachers are often absent (26%), and the large majority were of the opinion that the teachers are mostly punctual (92%), qualified (91%) and that the teaching material is rigorous (88%).

Across the board, we find very similar results in treatment and control areas.

Table 16: Dimension 5 - Staff quality. Education

	Class		Director		Villagers					Mean Effects
	Teacher Present	Studied Pedagogy	Director Education	Director Pedagogy	Rate Teachers	Teacher Absence	Teacher Punctual	Teacher Qualified	Teacher Rigorous	
Control	0.94	0.97	10.86	0.94	0.59	0.26	0.92	0.91	0.88	0
<i>Tuungane</i> (se)	0.03 (0.04)	0.03* (0.02)	-0.08 (0.37)	0.02 (0.02)	0 (0.03)	0 (0.02)	0 (0.01)	0 (0.01)	0 (0.02)	0.05 (0.08)
N	150	147	556	516	2,816	2,550	2,564	2,501	2,411	727

Notes: Based on measures EE19, EE30, EE45, EE46, Q130d, Q128, Q129, Q131, Q132. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

5.1.6 Dimension 6: Facility administration

Another dimension of service provision is the quality of administration. **Table 17** shows information related to the quality of administration at health facilities.

Upon visiting the health facility, our enumerators verify the presence of the director. They also confirm the physical presence of a number of key items for successful administration of a health facility: the sick register, staff register, stock register and the cash book in which receipts and payments of money are recorded. In control areas, the enumerators find the director present at the health facility in 81% of cases. They also find that in the majority of cases the sick register (93%), staff register (82%), stock register (77%) and cash book (73%) are present.

We also ask our five randomly selected villagers to rate the quality of administration in the health facility. Around 57% of villagers rate the administration of the health facility positively.

Overall, however, we find no impact of *Tuungane* 1 on the quality of administration in health facilities.

Table 17: Dimension 6 - Administration. Health

	Assessment					Villagers	Mean Effects
	Director Present	Patient Register	Staff Register	Stock Register	Cash Book	Rate Administration	
Control	0.81	0.93	0.82	0.77	0.73	0.57	0
<i>Tuungane</i>	-0.04	0.03	-0.03	0.04	0.02	0.03	0.06
(se)	(0.04)	(0.02)	(0.04)	(0.04)	(0.05)	(0.03)	(0.08)
N	506	497	494	478	482	2,928	731

Notes: Based on measures ES50, ES81, ES82, ES83, ES84, Q101f. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

In **Table 18**, we provide information about the quality of school administration. Upon visiting a school, our enumerators go through a similar exercise as for a health facility. They verify the presence of the director as well as of a number of key items for successful administration of a school: the personnel register and the national program (school directors need to have the latter available by Congolese law). In control areas, the director was present in 67% of cases. Within this 67%, enumerators located a personal register and a copy of the national program 89% and 63% of the time, respectively.

We also asked our five randomly selected villagers about the quality of administration in the school. In control areas, villagers rate the quality of school administration positively in 54% of the cases.

Across the board, we find very similar dynamics in *Tuungane* treatment and control areas.

Table 18: Dimension 5 - Administration. Education

	Assessment			Villagers	Mean Effects
	Director Present	Personnel Register	National Program	Rate Director	
Control	0.67	0.89	0.63	0.54	0
<i>Tuungane</i>	-0.01	0.02	0.05	0.00	-0.09
(se)	(0.05)	(0.03)	(0.05)	(0.03)	(0.08)
N	547	465	384	2,689	722

Notes: Based on measures EE39, EE61, EE60, Q130e. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

5.1.7 Dimension 7: Community participation

The interaction between a service provider and its users (the community), and between a service provider and the service committee is another important dimension of service provision.

Our enumerators asked the director of the health facility about the number of community meetings held between the facility and the community, whether the community had contributed in kind to the facility the preceding year,

and whether they did so with money. Enumerators also asked the director to list the members of the community service committee related to health (CODESA), they asked about the number of meetings organized between the facility and CODESA, and at how many meetings the director was present. **Table 19** shows that, in control areas, health facilities had held around four meetings with the community in the preceding year; that communities had contributed in kind to the health facility around one in nine times (11%), and that they had done so with money in only one out of every 25 times (4%). We find that directors know around nine members of the community's health committee, and that the director was present at around nine of a committee's eleven annual meetings.³⁶

We also ask our five randomly selected villagers about their opinion of the interaction between the community and the health facility. Furthermore, we ask respondents how often their household has contributed to the health facility in kind and in cash during the previous year. In control areas, 63% rate the interaction between health facility and community as positive, and around 5% (3%) of respondents mention that their household has contributed to the health facility in kind (in cash) during the previous year.

Related to the impact of *Tuungane 1*, we find very similar dynamics in program and control areas.

Table 19: Dimension 7 - Community participation. Health

	Director						Villagers			Mean Effects
	# Comm. Meetings	Contr. in Kind	Contr. in \$	Know CODESA	CODESA Meetings	Director Present	Rate Interaction	Contr. in Kind	Contr. in \$	
Control	4.46	0.11	0.04	9.46	10.96	8.82	0.63	0.05	0.03	0
<i>Tuungane</i>	-0.54	0.02	-0.02	-0.95*	-0.84	-1.32*	0.01	-0.01	-0.01	-0.07
(se)	(0.57)	(0.04)	(0.02)	(0.73)	(0.85)	(0.81)	(0.03)	(0.01)	(0.01)	(0.08)
N	416	454	451	463	460	473	3,112	2,974	2,892	732

Notes: Based on measures ES91, ES70, ES71, ES86, ES87, ES88, Q101g, Q112, Q113. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Table 20 presents information related to service provider and community interaction for education. We obtain the same information from the school director as we did from the director of the health infrastructure. In control areas, meetings between the school and the community happen around three times a year, which is less frequent than meetings between the community and the health facility. However, community contributions towards the school occur more often, with 28% (20%) of school directors mentioning that the community has contributed to the school in kind (in cash) at least once the preceding school year. On average, the director knows around six members of the community service committee related to education (COPA).³⁷ The school meets with the COPA around five times during a school year, at which the director is present in at least four cases.

We also ask our five randomly selected villagers about their opinion of the interaction between the community and the school. Furthermore, we ask respondents how often their household has contributed to the school in kind and in cash during the previous year. In control areas, 60% of respondents rate the interaction between the school and community as positive, which is very similar to what we found for the health sector. Around 8% (6%) of respondents mention that the community has contributed to the health facility in kind (in cash) during the preceding year.

Comparing *Tuungane 1* areas with control areas, we find that *Tuungane 1* areas are worse off when it comes to community participation. In treatment areas, there are fewer school-community meetings, fewer school-COPA meetings, and the director is present at fewer of the school-COPA meetings (the same result that we found for

³⁶ CODESA committee does not have a fixed number of members. Asking the village chiefs about the size of their village's CODESA committee, we find that the average size is 10.9 members (standard deviation is 9.4). This indicator therefore captures both committee size and knowledge by the director about the committee.

³⁷ Asking the village chief, we learn that the average size of the COPA is 7.3 (standard deviation is 3.72).

health infrastructure). This overall negative impact of *Tuungane 1* is reflected in the mean effects indicator. These results, however, are significant at the 95% significance level using one-tailed tests. Using two-tailed tests they are significant only at the 90% significance level, and we thus do not highlight this result. One explanation for this result is that due to the *Tuungane* program there is, in fact, less need for community participation.

Table 20: Dimension 7 - Community participation. Education

	Director						Villagers			Mean Effects
	# Comm. Meetings	Contr. in Kind	Contrib. in \$	Know COPA	COPA Meetings	Director Present	Rate Interaction	Contr. in Kind	Contr. in \$	
Control	3.15	0.28	0.20	5.67	5.01	4.40	0.60	0.08	0.06	0
<i>Tuungane</i>	-0.45**	-0.01	-0.02	-0.17	-0.71**	-0.59*	0.01	0	-0.01	-0.15**
(se)	(0.20)	(0.04)	(0.04)	(0.24)	(0.36)	(0.37)	(0.03)	(0.01)	(0.01)	(0.08)
N	503	485	474	522	506	516	2,916	2,888	2,839	730

Notes: Based on measures EE72, EE58, EE59, EE67, EE68, EE69, Q130f, Q140, Q141. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

5.1.8 Dimension 8: Service cost and utilization

The final dimension of service provision we explore relates to the cost of service provision and utilization by community members. **Table 21** presents results for the health facility. Upon visiting the health facility, the enumerators recorded whether or not it was open. In control areas, 97% of health facilities were open.

Table 21: Dimension 8 - Service cost and utilization. Health

	Assessment	Patient	Director			Villagers			Mean Effects
	Open	\$ Paid	# Patients Now	# Patients Last Month	Cost Index	Rate Cost	Cost Index	# Visits	
Control	0.97	10.59	4.03	190.73	0	0.28	0	3.95	0
<i>Tuungane</i>	0.01	1.48	0.75	-31.19*	0.18	0	0.03	-0.13	0.02
(se)	(0.02)	(3.22)	(0.88)	(21.20)	(0.15)	(0.02)	(0.06)	(0.37)	(0.11)
N	506	376	481	473	487	3,135	3,091	3,207	733

Notes: Based on measures ES14, ES49, ES69, ES68, ES58-ES61, Q101h, Q108-Q111, Q92. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

To learn about costs, our enumerators asked a randomly selected patient about the cost of their service. The average patient paid \$10.59.

Enumerators also surveyed the director of the health facility to learn about the number of patients currently present and the total number of patients during the previous month. Furthermore, the director was asked about the cost of a number of key services, which we combine into one cost index. These services are: the price for a visit, the price for a consultation, the price for a health card, and the price for an overnight stay.³⁸ In control areas, around four patients were present at the time the enumerator visited the facility. In total, an average of 191 patients visited the facility the preceding month.

We also ask our five randomly selected villagers about service cost and utilization. Specifically, we ask their opinion about the cost of health services at the facility. We also ask the community members the price for a visit, for a

³⁸ Separately, as reported by the director, the average costs are (standard deviation): price for a visit: \$2.13 (2.20), price for a consultation: \$1.20 (1.18), price for a health card: \$0.68 (1.22), and the price for an overnight stay \$3.72 (8.24). Separately, as reported by the villagers, the average costs are (standard deviation): price for a visit (including medication): \$19.40 (36.80), price for a consultation: \$2.23 (3.84), price for a health card: \$1.13 (1.91), and the price for an overnight stay \$3.64 (6.03).

consultation, for a health card, and for an overnight stay. Finally, we ask how often a member of the household has visited the facility in the preceding year. We find that in control areas, only 28% of respondents rate the costs of the health facility positively. Furthermore, members of their household had visited the health facility on average 4 times that year.

Across all indicators, we find similar dynamics in control and treatment areas.

Table 22 presents information related to service cost and utilization for schools. Our enumerators only found 31% of the schools open. The reason for this is that part of the data was collected during the school holiday. In these instances, enumerators aimed to visit the director of the school in the village for the interview.

In the schools that were open, our enumerators visited an ongoing class and counted the number of boys and girls present. In control areas, the average class consists of around 18 boys and 15 girls. We find very similar numbers in *Tuungane 1* areas.

Enumerators also surveyed the school director to learn about the number of students present, and the cost of education. In control areas, the school director reports that there are on average 231 students present, the monthly school fee per child is \$2.14 and the “functioning fee” (to be paid once per trimester to the school) is \$0.82 per child. We find that there are, on average, almost 27 fewer students present at school in *Tuungane 1* areas. This result is statistically significant at the 95% significance level using a one-tailed test (not when using a two-tailed test).

Table 22: Dimension 8 - Service cost and utilization. Education

	Assessment	Classroom		Director			Villagers				Mean Effects
	Open	Boys	Girls	Students Pres.	School Fee (\$)	Fee (\$)	Rate Costs	Cost (\$)	School Fee (\$)	Fee (\$)	
Control	0.31	17.65	15.47	231.99	2.14	0.82	0.32	86.27	2.38	1.79	0
<i>Tuungane</i>	-0.02	2.11	1.09	-26.79**	-0.13	0.09	0	-9.74*	-0.21**	0.16	-0.01
(se)	(0.05)	(1.71)	(1.66)	(15.28)	(0.16)	(0.15)	(0.02)	(6.14)	(0.11)	(0.15)	(0.09)
N	520	147	147	521	528	419	2,893	2,261	2,635	1,687	730

Notes: Based on measures EE13, EE20, EE56, EE47, EE48, Q130g, Q121, Q137, Q138. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

We also asked our five randomly selected villagers about service cost and utilization. As with the health facility, community members rate the school badly: only 32% are positive about the costs in this case. The average cost of having a child of school age (6-12) go to school is \$86.27 per child per year, which includes fees, books, uniform and transport. Our respondents in control areas report that the school fee and the function fee are, on average, \$2.38 and \$1.79, respectively.

In *Tuungane 1* areas we find that the overall costs of education and school fees are less in treatment areas. The first result is statistically significant at the 90% significance level, and the latter at the 95% significance level.

5.2 Health, education and economic welfare

5.2.1 Health outcomes

Having discussed our first set of outcome indicators (service provision), we move to our next set of outcome indicators: health outcomes. Did *Tuungane 1* improve the health conditions of community members? To answer this question we ask our randomly selected villagers a number of questions related to the health outcomes of their

family.³⁹ The top row of **Table 23** lists average health outcomes in control areas across a number of different indicators. We ask each respondent whether during the previous year anybody from the household has fallen ill to the point that he/she needed medical care. In control communities, we find that this was the case for a full 77% of respondents. We also asked each respondent whether any child in the household younger than five years old passed away during the previous year. 13% of respondents answered in the affirmative; a result that echoes findings by other surveys conducted in Congo. For example, the 2013 national DHS survey found that overall under-five mortality was 14.8% in 2007 and 10.4% in 2013. We find similar dynamics in *Tuungane 1* and control areas.

In control areas, 2% of respondents told us that the head of the household had passed away in the preceding year, and 16% told us another member of the household had passed away.⁴⁰ We find no difference between *Tuungane 1* control and treatment areas.

Table 23: Health outcomes

	Villagers						Mean Effects
	Medical Care	U5 Mortality	Death Head	Death Other	Sick Head	Sick Other	
Control	0.77	0.13	0.02	0.16	0.31	0.58	0
<i>Tuungane</i>	-0.01	-0.01	0.00	0.00	-0.04**	0.02	0.03
(se)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)	(0.05)
N	3,395	3,365	3,400	3,401	3,396	3,395	3,401

Notes: Based on measures Q88, Q89, Q60A-D. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Finally, we ask our respondents about serious illness in the household during the preceding year. For a full 31% of households, the head of the household had been seriously ill the previous year, a number which increases to 58% when discussing the other members of the household. We find evidence that fewer heads of household fell ill in *Tuungane 1* areas. This result is both economically and statistically significant. This positive impact of the program, however, does not carry over to our other indicators, and our overall indicator (which we construct so that a positive effect means lower mortality/illness), reflects this result.

5.2.2 Education outcomes

Next, we investigate outcomes related to education. The question we aim to answer here is whether the *Tuungane 1* program improved education outcomes. To explore this question, we collect data from two different sources. Our first set of indicators comes from the five randomly selected villagers. We ask each of them about the schooling situation of the children in their household, separating out boys and girls. **Table 24** shows that in control areas, on average, one daughter and one son have been in school uninterrupted since their sixth year of age. We also ask each respondent how many of the household's children have never attended school in their life. We find that around one in every third household has a child that has never been to school. We would expect more children in *Tuungane* areas to have uninterrupted attendance and fewer children to never have attended school. However, we do not find that *Tuungane 1* had an impact on school attendance.

Our second set of indicators for education is based on individual behavior rather than on what people report to us in a survey. We administer an exam to children of school-going age in each applicable household. In each household with children between the age of 6 and 11, we randomly select a child and conduct a brief exam to understand their level of: 1) mathematics, 2) French and 3) science. The questions used were informed by the national curricula for primary schools, developed the Congolese Ministry of Education. They were collected from books regularly used in schools as well as from teachers' textbooks. The exams were administered only after the

³⁹ Based on discussions with the implementation partner we do not focus on rates and types of illness, but on more severe disease and mortality.

⁴⁰ We do not ask the cause for passing away, but we assume that the vast majority is for health reasons.

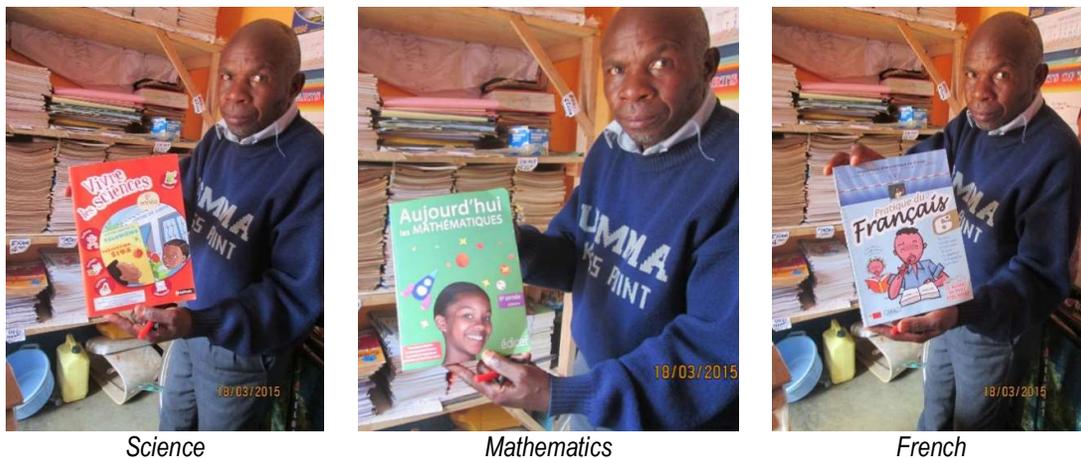
approval of the children's parents. The questions the child received depended on their age. Our enumerators first asked the question in French (the official language of education). If the answer was incorrect, the question would be repeated in the local language. From **Table 24** we see that in control areas, on average, children answered 2.4 out of six questions correctly. Not surprisingly, the average grade increases to 2.94 when questions were also asked in the local language. We find that, on the whole, *Tuungane 1* had no impact on children's performance in these exams.

Table 24: Educational outcomes

	Villagers				Children's Exam		Mean Effects
	Uninterrupted Attendance (daughters)	Uninterrupted Attendance (sons)	Never Attended (daughters)	Never Attended (sons)	Grade (French)	Grade (Local)	
Control	1.06	1.36	0.39	0.35	2.40	2.94	0
<i>Tuungane</i>	-0.04	-0.04	-0.01	-0.01	-0.11	-0.17	-0.05
(se)	(0.05)	(0.06)	(0.04)	(0.04)	(0.14)	(0.14)	(0.04)
N	2913	2937	2805	2794	1259	1259	3054

Notes: Based on measures Q115, Q118, EX11. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Figure 4. Exam related to Mathematics, Science, and French



Notes: From the primary school Imani 2 in Cinjoma village. Thanks to director Mitima Barhalengehya Lweru.

5.2.3 Economic welfare

We next explore outcomes related to economic welfare. Did *Tuungane 1* improve the economic situation of the households in its catchment area? To answer this question, we ask the five randomly selected villagers about a wide set of economic indicators. As a first indicator, our enumerators judge the respondents' quality of housing. They record whether roofs are largely made of mud, straw, wood, metal sheets, cement / concrete, roof tiles, plastic cover or another material. Similarly, they record whether the floors were largely made of mud, plastic, unbaked bricks, wood / bamboo, stones, "semi-durable" (pebbles, sand, cement and tree sticks), baked bricks, cement / concrete, metal sheets, cardboard or other.⁴¹ We construct a measure of roof quality to reflect a roof made out of metal sheets, concrete or tiles. High quality walls are those made of semi-durables, baked bricks, and cement. The first two columns in **Table 25** show that 39% of households live in buildings with a high quality roof and only 10%

⁴¹ Roofs: straw (61%), wood (1%), metal sheets (36%), roof tiles (1%), plastic cover (1%). Floors: mud (29%), unbaked bricks (56%), wood / bamboo (4%), "semi-durable" (pebbles, sand, cement and tree sticks) (1%), baked bricks (8%), other (1%).

of households live in a building with a high quality wall. Contrary to expectations, we find that the quality of walls is lower in *Tuongane* 1 areas than in control areas, with a share of households with a high quality wall that is two percentage points lower. This result is statistically significant at the 95% significance level using a one-tailed test (but only at the 90% significance level using a two-tailed test).

Table 25: Economic welfare

	Villagers					Mean Effects
	Quality Roof	Quality Wall	Assets	Consumption (\$)	Earnings (\$)	
Control	0.39	0.10	0.0	85.04	12.17	0
<i>Tuongane</i>	-0.03	-0.02**	-0.06	-7.65*	0.68	-0.09*
(se)	(0.03)	(0.01)	(0.06)	(5.46)	(1.56)	(0.06)
N	3395	3359	3145	3400	2942	3402

Notes: Based on measures Q39, Q40, Q37, Q54, Q74. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Table 26: Asset ownership

	Control	<i>Tuongane</i>	(se)	N
Assets	0	-0.06	(0.06)	3,145
Basins	1.42	0	(0.06)	3,362
Beds	1.09	0	(0.09)	3,303
Jerry cans	2.80	-0.24**	(0.14)	3,376
Bikes	0.44	-0.05	(0.04)	3,330
Boats	0.05	0	(0.02)	3,255
Boxes	1.51	0.01	(0.05)	3,402
Buckets	1.29	-0.1	(0.13)	3,353
Cabinets	0.14	0	(0.02)	3,256
Chairs	2.97	-0.17	(0.14)	3,350
Cows	0.12	0.01	(0.03)	3,255
Goats	1.25	-0.04	(0.12)	3,286
Hoes	3.03	-0.20**	(0.12)	3,387
Lamps	0.93	153	(0.06)	3,290
Mattress	0.74	-0.01	(0.06)	3,310
Motor	0.06	0.01	(0.01)	3,265
Pans	5.00	-0.28*	(0.18)	3,330
Phones	0.57	-0.06*	(0.05)	3,291
Photo cameras	0.02	0	(0.01)	3,256
Pigs	0.30	-0.01	(0.05)	3,265
Poultry	3.38	-0.1	(0.28)	3,303
Radios	0.54	-0.02	(0.03)	3,311
Rooms	3.24	-0.12	(0.10)	3,402
Straw mattress	1.50	0.01	(0.08)	3,358

Notes: Based on measure Q37. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

As an additional indicator of economic welfare we look at household asset ownership. To do so we build on information about a range of items that the family may own, including livestock, household furnishings, equipment and technology. These measures correlate highly (the Cronbach's alpha score for these items is high at 0.78), suggesting that they jointly reflect an underlying attribute (wealth) reasonably well. The indicator "Assets" in **Table**

25 is an index of asset holdings formed using principal component analysis. The results suggest no effect of *Tuungane* on asset holdings overall.

Table 26 gives information for each asset that makes up this index. An average household has around 1.4 basins, 1.1 beds, 2.8 jerry cans, etc. Looking at these individual measures confirms that *Tuungane* 1 had largely no impact on asset ownership, and in cases where it did, the results point negatively. Specifically, compared to control areas, households in *Tuungane* 1 areas own fewer jerry cans, hoes, pans and phones. The first two results are significant at the 95% confidence interval (one-tailed tests), while the latter two are significant only at the 90% confidence interval (one-tailed tests).

Next, we explore consumption, which in many studies is taken to be the main indicator of a family's wealth. The indicator "Consumption" in **Table 25** is the aggregation of household spending in various areas during the preceding 30 days: food, medicine, leisure, clothes, alcohol, cigarettes, seeds, household equipment, small works, and large works. In control areas, the typical household in Eastern Congo has a consumption of \$85.04 in the preceding month. In *Tuungane* 1 areas the amount of money spent on consumption is lower: on average, \$7.65 less is consumed, a result that is economically important but fails to reach statistical significance (90% confidence level in a one-tailed test).

Table 27: Consumption

	Control	<i>Tuungane</i>	(se)	N
Consumption	85.04	-7.65*	(5.46)	3,400
Food	40.48	-1.9	(2.59)	3,194
Medical	24.23	-1.15	(1.91)	3,334
Leisure	1.02	-0.32	(0.33)	3,374
Clothes	7.26	-0.58	(1.18)	3,386
Alcohol	2.94	-0.52	(0.62)	3,323
Cigarettes	0.65	-0.12	(0.14)	3,375
Seeds	3.65	-0.93	(1.04)	3,376
Household	1.94	-0.13	(0.79)	3,388
Small works	1.31	-0.66*	(0.40)	3,390
Large works	4.78	-1.83	(1.62)	3,384

Notes: Based on measure Q54. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Table 27 gives information by individual consumption categories. We find that food makes up almost half of all consumption expenditures, with medical costs amounting to more than a quarter of expenditures. We find that the impact of *Tuungane* 1 points negative for all these consumption categories. However, just one category (small works) is statistically significant, and only marginally so.

Finally, we ask individuals about the aggregate earnings of all household members during the preceding seven days. We find that households in control areas earn around \$12.17 per week. Households in *Tuungane* areas earn more or less the same amount.

5.3 Women's empowerment

Our final major outcome of interest is women's empowerment. As described in the initial project document (IRC, 2006), women are thought to be particularly disenfranchised by conflict and there was a hope that socioeconomic projects with a village level focus would lead to the greater involvement of women. Many other elements of the program emphasized this theme, such as trainings focused on the needs of women and the requirement that village development committees would be gender balanced. In this section, we will explore the impact of *Tuungane* 1 as

a whole on outcomes related to women's empowerment. Next, we also explore the impact of gender parity for those communities that participated in the *Tuungane* program.

We build on a number of different indicators collected from the randomly selected villagers and the village chief. As a first indicator, we ask the respondents' opinion about the following statement: "In this village, women should have the same rights and obligations as men." From **Table 28** we see that in control areas 58% of respondents agree with this statement. We also ask our respondents under what conditions a husband is justified in beating his wife. We present our respondents with a list of the following events (in brackets we present the share that responds in the affirmative): 1) if she goes out without telling him (23%), 2) If she refuses to have intercourse with him (34%), 3) if she neglects the children (28%), 4) if she burns the food (14%), 5) if she argues with him (35%), 6) if she conducts infidelity (66%), 7) if she uses contraceptives (26%), and 8) if she drinks alcohol (41%). The average number of events answered in the affirmative is 2.64. We also ask our respondents about the existence of a women's association in the community. We find that 22% of respondents report there to be a women's association, and among them 32% are a member. We also calculate the proportion of boys to girls who have received uninterrupted education since the age of 6, and the relative proportion never to have been to school. **Table 28** shows that, in fact, more girls have been in school since the age of 6 than boys. However, we also find that, compared to boys, girls are more likely never to have been to school.

Finally, we ask the village chief about membership of the local development committee. We ask for the total number of members and for the number of members who are women in order to calculate the proportion of female members in the local development committee. We find that around one third of the committee is made up of women.

Table 28: Women's empowerment

	Villagers						Chief	Main Effects
	Women Rights	Hit Women	Women Association	Member Association	School Attendance (Prop.)	School Never (Prop.)	Committee (Prop.)	
Control	0.57	2.64	0.22	0.32	0.79	0.81	0.33	0.0
<i>Tuungane</i>	-0.03*	-0.12	-0.01	0.07	-0.04	-0.01	0.04*	-0.02
(se)	(0.01)	(0.10)	(0.02)	(0.05)	(0.04)	(0.07)	(0.03)	(0.08)
N	3,382	3,387	3,219	686	1,845	579	209	732

Notes: Based on measures Q237, Q241, Q183d, Q184, Q115, Q118, EC105d, EC105e. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

We find little evidence that *Tuungane* 1 had an impact on women's empowerment. We find some evidence that respondents are more negative in *Tuungane* 1 areas about the role of women in their communities, but also that women make up a larger share of the membership of the local development committees. These results, however, are only weakly statistically significant. Note that these results mirror those found in 2012 (see HSW (2012) and Van der Windt (2018)).

Gender parity effect

The *Tuungane* 1 program was implemented with a variation in treatment to learn about the impact of having women in leadership positions. Specifically, VDC and CDC management committees were required to consist of an equal number of men and women. However, for a randomly selected subset of management committees this gender parity requirement was lifted. Specifically, 149 CDCs were (not-randomly) sampled to enter a "parity lottery." A total of 74 CDCs (and thus all the 325 VDCs in these CDCs) were randomly selected to have the mandated gender parity lifted. In contrast, a total of 75 CDCs (337 VDCs) were required to have gender parity. This random variation in gender parity status thus allows us to learn about the impact of having women in leadership positions. **Table 29**

compares communities that had gender parity with those that did not. We find no evidence that placing women in leadership positions had an impact on female empowerment.

Finally, **Table 36** in the appendix shows that there is also no evidence that mandating gender parity had an impact on service delivery or on health, education or economic wealth outcomes. Also these results mirror those found in 2012 (see HSW (2012) and Van der Windt, Humphreys and Sanchez de la Sierra (2018)).

Table 29: Gender parity and women's empowerment

	Villagers						Chief	Main Effects
	Women Rights	Hit Women	Women Association	Member Association	School Attendance (Prop.)	School Never (Prop.)	Committee (Prop.)	
Not-parity	0.56	2.70	0.21	0.30	0.74	0.78	0.29	0
Parity	-0.03	-0.11	-0.06	0.03	0.01	0.02	0.09	-0.07
(se)	(0.03)	(0.21)	(0.05)	(0.05)	(0.08)	(0.15)	(0.07)	(0.18)
N	817	823	777	140	425	128	43	180

Notes: Based on measures Q237, Q241, Q183d, Q184, Q115, Q118, EC105d, EC105e. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level. Gender parity information based on data from the implementing partner. Only for those villages that entered the parity lottery.

5.4 Results from additional analyses

We now briefly discuss additional results related to social outcomes, heterogeneous effects and *Tuungane 2*. These results relate to secondary outcomes. Details are presented in Sections 9.5 to 9.10 of the annex.

Governance

We follow HSW (2012) and explore the impact of the *Tuungane 1* program on governance by looking at the following dimensions: participation (**Table 38**), accountability (**Table 39**), transparency (**Table 40**), efficiency (**Table 41**) and capture (**Table 42**). We find some impact of the *Tuungane* program on participation in community-wide governance activities. In *Tuungane 1* areas, individuals are six percentage points more likely to report to participate in a village meeting and two percentage points more likely to report to vote during the 2011 elections. We find no results related to the other dimensions.

Intra-village cohesion

The *Tuungane 1* program placed emphasis on community collaboration. The name *Tuungane*, for example, translates to “working together” in Swahili. We find no evidence, however, that the *Tuungane* program improved intra-village cohesion (**Table 43**).

Inter-village cohesion

We also find little evidence that *Tuungane 1* had a positive impact on inter-village cohesion. (**Table 44**).

Heterogeneity by type of community

The *Tuungane 1* program might have had a different impact in different types of villages. In response, we explore the impact of the program in different subgroups of villages (**Table 45**). Specifically, we explore this possibility across two dimensions: community level of conflict and community level of wealth before the onset of the program.⁴²

Related to conflict, we find that the negative impact of *Tuungane 1* on economic welfare seems to be largely driven by communities that have experienced conflict before the program onset.

⁴² See section 14.1 for further explanation on how these different subgroups are defined.
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Related to community wealth, we find that *Tuungane 1* had a particularly strong positive impact on service provision in areas that already had health or education infrastructure present. We also find that there is a negative impact of *Tuungane 1* on education outcomes in those areas that already had a school in 2006, and a negative impact on wealth in areas that did not yet have a school in 2006.

Heterogeneity by type of *Tuungane* project

We also disaggregate the results of *Tuungane 1* by type of project. Specifically, we subgroup communities by whether they have received a health or education project. Across each dimension, we also separate out whether the community received a CDC or CDV level project. We explore the impact of *Tuungane* education and health projects separately. Do keep in mind that we cannot make causal claims on this disaggregated study. A positive correlation between having a *Tuungane 1* health project and better health outcomes might not be causal since although *Tuungane 1* was randomly assigned, the choice of health project was not. For example, it is possible that health facilities are chosen in those areas where health outcomes are particularly bad.

Related to health, we find that, communities with a CDC health project in relations to control communities, are positively associated with better service provision in the health sector, while negatively associated with community participation in the education sector.

Related to education, we find that VDC projects are positively associated with service provision in the education sector, and specifically with building quality and material and supplies.

Tuungane 2

A second phase of *Tuungane* (Laudati, Mvukiyehe & van der Windt, 2018) took place subsequently to *Tuungane 1*. This phase took place in a non-randomly selected subset of treatment and control villages of *Tuungane 1*. Importantly, a community's treatment status during the first phase had no impact on the community's treatment status for the second phase. We find that the positive results of the *Tuungane 1* program seem to be largely driven by those places that did not receive the second phase of the *Tuungane* program. Furthermore, *Tuungane* has a negative impact on economic welfare for those communities that received both phases of the program (**Table 47**).

6 Discussion

This report has presented a large set of results related to service provision, and to health, educational and economic welfare outcomes. In this section, we discuss three findings from the previous section in more detail. The three topics mentioned here, however, are just several of the significant findings revealed through the qualitative component. Other topics we have reserved for lengthier discussion in a separate qualitative report that covers outcomes from the wider program. There we engage with a more nuanced analysis of more complex and difficult concepts of participation, (economic) welfare, and women's empowerment among others – and in doing so illustrate ways that the program was both beneficial and hindered at varying levels and degrees among village beneficiaries that are not revealed through the quantitative findings.

In the remainder of this section, readers should consider as they read through the qualitative discussion that villagers were identified and visited based on suggestions with IRC field staff. In other words, the villages visited were not randomly chosen but were chosen to represent a broad array of experiences. It thus should not be surprising that the villages expressing a negative view toward the *Tuungane* project as these were pre-identified as such. This does not invalidate the responses and individual experiences highlighted here, particularly given that even those programs identified as 'positive' reflected negative experiences and vice versa. However, this method of sampling should be taken into consideration when making broader general claims attributable to the collection of *Tuungane* villages.

6.1 Building and equipping primary schools and health facilities

The *Tuungane 1* program had a positive impact on the quality of health facility and school infrastructure (**Table 9** and **Table 10**). Similarly, **Table 13** shows that *Tuungane 1* also had a positive impact on the availability of medicines, and to a lesser extent on materials and supplies in schools (**Table 14**). These findings are echoed by our qualitative findings. As the village head of [village 6]⁴³ Center stated, "The local population appreciates the building of the [classrooms for the secondary] school because it is a sustainable realization." A female focus group participant from [village 4] said, "The women consider [the school building] as a monument left by *Tuungane* and their children easily go to school. There is nothing more positive than that." In brief, we thus find consistent evidence that *Tuungane 1* improved what it directly provided.

We would like to highlight the item that community members spoke of most when discussing project quality: school roofs (which correspond closely with the result in **Table 10**). Individuals consistently mentioned the importance of replacing school roofs, which were previously constructed with local plant materials, and are now made of iron sheets. Specifically, respondents highlighted two results of this.

First, the replacement of school roofs with iron sheets led to a reduction in leaking roofs, and as a result the students were able to also attend school during rainy season. As the chairperson of the COPA in [village 60] mentions "we can cite as an example this [*Tuungane 1*-funded] school which improves the conditions of the teachers who now teach in modern rooms with good blackboards, which is an added value to their performance. The same level of change is noticed at the level of the children who can now study even when it is raining."

The second implication of having improved school roofs highlights a possible indirect impact of the program on educational outcomes. Informants consistently emphasized that the improvement in the school roof released parents from the responsibility of continuous repair. "We now rest with the ancestors' way of building", the village chief of [village 42] stated. Similarly, respondents of a female focus group in the same village exclaimed, "The biggest beneficiaries of the [classroom building] projects are all the parents because they no longer bringing sticks and the like to build and rebuild the school." As the village chief of [village 34] indicates "The decrease of thatch availing, has a very positive impact for the population who [in the past] had to be so busy in thatch collections [that] they were preoccupied from their regular household work. And we know that it is these domestic works which make it possible for parents to buy school material and pay for the school fees for the children as revenue from domestic works feed the whole family." The head of COPA in the same village presents a similar argument. "Instead of being

⁴³ For anonymity purposes, village names have been taken out of this report.
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busy on thatch assembling, I would take advantage from this free time to go and work on my field, enlarging its dimensions which will consequently result in more production which I will then sell in order to resolve existing problems in my house, such as settling the payment of the school fees or buying goods for my children.”

Given this information, it seems surprising that we don't find evidence of a positive impact of *Tuungane 1* on the other dimensions of service provision nor on outcomes related to health, education and economic welfare. However, the fact that *Tuungane* did not have an impact on these dimensions of service provision perhaps relates to the fact that the program did not target these dimensions of service provision directly. Training service providers was not part of the *Tuungane* program. Likewise, activities to decrease the cost of medicines and education did not feature in the program.

Next, we would like to highlight a number of factors that were commonly cited as having affected impacts on service provision in the health and education sectors. Specifically, we will raise three additional local realities that *Tuungane 1* did not influence directly, but that are important to consider during program design to improve the quality of service provision. These are: 1) compensation of service providers, 2) power dynamics within the community, and 3) geographical factors.

Compensation of service providers

In Congo, school teachers are paid little by the government. Moreover, it is difficult for many parents to pay school fees, which contribute to teachers' salaries. As a result, compensation for teachers was highlighted consistently by respondents as hindering improvements in educational quality. The difficulties financing service providers impacted on service provision in a number of ways. The following two were mentioned most often. First, it shaped the attendance of educational directors and teachers themselves. As explained by one instructor in [village 42] village, “our salary is meagre which is the reason why sometimes I leave for a moment and do my handiwork, we miss books, this TMB (Trust Merchant Bank) system delays and we miss a follow up, because all of us are at Kabalo looking for money and days pass and the national program gets disrupted.” Second, children at times had to partake in fund raising activities, instead of school activities.

Power dynamics within the community

Another important factor to improve service provision is existing local level dynamics. We found local level dynamics to be important for the level of overall participation and engagement in the project by different actors, inclusion in the decision-making process regarding project identification, and as discussed here, the ability of different beneficiaries to access and have control over facility services. For example, a male informant from [village 20] explains that in their primary school: “We now have less qualified teachers because those who were qualified were chased by the current schoolmaster; instead he hired the ones according to his affinity/kinship relations with them and, some students left the school for other schools that are far from here. As a result, the overall quality of the teaching has reduced.” Similarly, according to a men's focus group in [village 9] where the headmaster is said to have captured the entire workings of the administration, “That [*Tuungane* funded] school shows no advantage to the community and we no longer trust its educational effectiveness where the headmaster runs it as a private school. There exists no parents' committee, the headmaster dismissed everybody and even the child of the chairperson of the former committee has been chased from sitting for the State Exams.”

Intra-community divisions also took the form of religious rivalries between the Protestant and Catholic Churches. These rivalries often involved control over school buildings and appear to be less influential for the other *Tuungane* sectors. As the chairperson of CODESA in [village 14] explains, these conflicts affected facility use as well as broader engagement with development efforts. “People living here at [village 14] are made of several tribes of whom the majority are Bareg and Bashi. Divisions arising from religion impacts the population: a Catholic believer cannot send his child to study in a Protestant school... Such divisions underlie failure in the village because when Bashi suggest something, Barega oppose the idea and vice versa. Hence, development activities are expected to be initiated from outside, because here, people do not understand one another.” A *Tuungane* staff member notes how such divisions impact student's studies. In [another village], he explains, the location of the public school on

grounds near to the Catholic church was hindering registration such that the 2014-2015 academic year was delayed until June as a result of the conflict.

Geographical realities

Another issue that was raised numerous times relates to geographical realities in the DRC. Many school and health facility directors do not live in the same village as where the infrastructure is located. Respondents highlighted the implications that this has for the management of the facilities. As a focus group with men in [village 68] reveals. “Concerning the school, the leadership is weak because the headmaster lives in [different villages] so he arrives here after every two weeks.” These circumstances also affect head health staff, as noted by men in [village 6] Center. “The physician is in a difficult position because he comes from very far to reach here and he can even spend three days without being present here.”⁴⁴

Service cost and utilization

Finally, we would like to highlight a number of issues related to service cost and utilization. Do community members make more use of health and education facilities due to *Tuungane 1*? We found this not to be the case for health facilities (**Table 21**). For schools, we find mixed results: schools in *Tuungane* areas have fewer children present, however school fees are significantly less (**Table 22**).⁴⁵ There are a number of subtle dynamics behind these results that we would like to highlight.

The ability of parents to send their children to school and individual villagers to seek treatment at a health facility depends on their financial capacity. For many community members, these costs are very high. Participants in a men's focus group in [village 13] claim to have witnessed a reduction in the number of children attending school due to a recent increase in school fee payments. In regards to health facilities, even in cases where drugs were made locally available (whether through the *Tuungane 1* program itself; other NGO programs; government programs; or via the efforts of the health staff themselves), the cost for services and medication were prohibitively high for many households. In some cases, despite the availability of drugs in the local health post, people still preferred to travel to receive cheaper drugs at another facility.

Although *Tuungane 1* did not directly influence cost, evidence suggests that the program had indirect effects. One reason for this is that, in some instances, school and health administrators increased costs in response to improved building quality and the presence of more materials. For example, following the opening of a *Tuungane* health center and maternity ward in [village 1], many community members were found to be attending a health facility elsewhere. Rather than this being a result of a badly built center, it was found that villagers had stopped attending the *Tuungane 1* facility because the head of the health care center was reportedly charging patients as much as five times more than neighboring clinics.

Other evidence suggests that *Tuungane 1* had a positive impact in the case of vulnerable groups. A focus on vulnerable populations was a central component for the program. Accounts by the program's field staff as well as village residents suggest that health and education administrators provided alternative options to vulnerable populations to gain access. Some villages could pay for services in kind versus instead of cash, while others simply waived fees for vulnerable groups all together. As noted by one field staff member, sometimes the reduction in school fees for vulnerable groups was offset through increases in other parents' fees. “For example in [another village], vulnerable people paid two times less than they did at the launch of *Tuungane 1* activities. At [another village] hospital, vulnerable people didn't pay anything for a period of 6-8 months. In the education sector, we discussed how to bring vulnerables to school. For instance, in [another village], there was a garden where people harvested cabbage (choux) and onions; at [another village] secondary school, they produced potatoes; in [another

⁴⁴ Note that we have found no evidence that because of the *Tuungane 1* program the management of facilities fell to individuals located further away.

⁴⁵ Keep in mind that the evaluation took place during the time period when many schools were closed for holiday.

village] parents contributed 50FC each to help pay the school fees for vulnerable children. In [another village], COPA and teachers allow vulnerable children to study for free.”

Discrimination in utilization by gender

Finally, in addition to economic concerns, we would like to highlight one additional dynamic related to school attendance: the difference in children’s attendance by gender.⁴⁶ The willingness and ability of parents to send their female children to school is based on various factors including their children’s respective contributions to household efforts as well as parental priorities and valuation of their children’s education – conditions which are shaped by broader social (gendered) norms. In a story retold by a *Tuungane* field staff member, the head of [another village] village illustrates that in some cases education is not valued as much as children’s contribution to the household. “We do not need any school in this village. Even though our children are not educated, they can cultivate and we have no need of any *Tuungane* built school here.” In some villages the attendance of girls increased due to the presence of programs directed specifically towards girls’ educational attainment. In [village 42], for example, respondents cite the presence of iron sheets as having been influential in bringing children in general to school, yet to explain that “the most number of pupils are the girls” since “Caritas came to help [the girls] and paid the school fees for them.”

6.2 Barriers to women’s empowerment

An important component of the *Tuungane 1* program was the focus towards improving women’s empowerment. However, we do not find evidence that *Tuungane 1* had a positive impact on women’s empowerment (**Table 28**), nor do we find evidence for an impact of placing women in leadership positions (**Table 36**). Similar results were found in Van der Windt, Humphreys and Sanchez de la Sierra (2018) and Van der Windt (2018) for a large set of outcomes related to female empowerment based on data collected in 2012. In this section we discuss these results in more detail. First, we discuss how qualitative evidence suggests that the program was successful in bringing women into the public sphere, and in increasing their engagement in public discussions. Second, however, we discuss the lack of evidence that the opening of such spaces actually resulted in any significant change to women’s lives.

A considerable number of (female) respondents and *Tuungane* staff emphasized the success of the program when it came to involving women in decision making. A female leader in [village 18] explains that, “*Tuungane* did well [for women] as it created a space for a woman to be involved; *Tuungane* is democratic, it doesn’t discriminate and it called for men to understand that women are equally able to make positive change in society.” Similarly, when asked about changes that have occurred in the village, women in [village 42] responded that, “we women, we had nothing to say, but today we stand up and begin to shout. We even have the women’s development group where we can meet whenever we want.” The broader changes brought to women were also noted by *Tuungane* field staff. “In the former time, women in Walungu had no right to show up in meetings, but currently, through the different trainings, they take part in different meetings held there.” Furthermore, ideas about roles might have spilled over from the village level to the household. For example, in some villages, trainings for gender parity created significant resistance from men in the village. In [village 5], for example, a focus group with men revealed significant resistance. “The notion of gender parity drove some women to become boastful towards their husbands. It is a deep change NGOs brought about, negatively transforming the attitudes of women here... The notions on gender parity is negatively taken here as bringing about trouble among the community. These notions pretending to contribute to our development in fact worsened the mentality of the women... all these things changed the attitudes of the women who, nowadays do no longer submit themselves to their husbands.”

However, we have no evidence that the opening of public spaces to women actually resulted in any significant change to their lives. Our data suggest that this is because of deeply ingrained traditional customs, wherein women take a backseat. In multiple villages, when asked who in the village holds power, women responded, as did a female leader from [village 18], that “only men have positions of power”. The leader further explains that,

⁴⁶ As we found in **Table 22**, an average classroom in control areas contains 17.65 boys and 15.47 girls.
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“...decisions are taken by men. Even at the groupement office, no woman works there and when conflicts arise it is the wise men who work on managing them.” The lack of key leadership positions as well as general participation within the wider governance of the village outside of NGO-created committees and leadership positions was, as a female informant from [village 4] noted, “due to ‘customs’”. Interviewees suggest that projects such as *Tuungane*, which seek to “spread [ideas] about gender equity, are not fruitful at all. Customs have no consideration towards women.” The village head of [village 9] also identifies a disconnect between gender sensitive training and the realities of its implementation. “We should...let women gain access into the leadership. We have been trained by AIBEF and *Tuungane* but the theories remained mere theories and nothing is being implemented so far. People are repulsive to the idea of women sharing leadership with men.” In [village 1], where *Tuungane* 1 built a health center and a maternity facility, we asked a focus group of men the definition/concept of women’s empowerment, translated in Swahili as *Uwezeshaji wa wamama*, to which they replied that “woman’s empowerment depends on the power her husband has”.

It is thus important to emphasize that observing women in leadership positions does not automatically translate to female empowerment. In almost all villages, women held some level of leadership position. Oftentimes, however, these were positions within NGO-created committees, local associations (such as MUSO) or health/education facilities as nurses or teachers, rather than positions within local government or administration. In fact, most of the locally-founded committees or associations where women held leadership positions were associations founded for and on behalf of women, such as maternity groups and women’s loan associations. A woman held up as an example of a female leader in the village, when describing her roles, stated that one was to “advise [women] how to better live with their husbands.” In other words, these roles (and the women’s influence within them) were seen as contributing to the community but not as positions which transferred or shifted (or even shared) power from/with men.

Thus, being afforded access to leadership positions through gender sensitive training or the explicit creation of gender parity committees does not eliminate the many cultural barriers that exist for women on the ground. The paradox of *Tuungane* 1’s ability to increase leadership positions of women without increasing their power in society was nicely summed up by women in [village 12]. After giving an example of a woman leader in the village, they further noted, “however, only the men hold power here... the committees here are always made of men, there is no woman involved or elected to make part of any committee...we are in a village, aren’t we?”.

We thus find no evidence that *Tuungane* 1 was able to influence the actual power of women in society. However, this does not mean that *Tuungane* 1 did not have an impact. Gender roles are difficult to change, and this likely takes generations. We find that *Tuungane* 1 did provide women with access to decision-making, some for the very first time. It is possible that this engagement will be a seed for female empowerment.

6.3 Community expectations of infrastructure

Overall, communities were grateful for the infrastructure provided through the *Tuungane* project. Only in rare cases were building projects abandoned or promised but never attempted. In those cases that this happened it was often the result of security concerns, or due to technical barriers; particularly Watsan projects which required specific water depth conditions to be met for the construction of wells. In a few cases, *Tuungane* projects were not finished due to a lack of community contribution. It should be quickly noted that some of these cases were due not to a lack of will on the part of community members but because in some areas, the timing of project implementation coincided with an important seasonal harvest cycle for which the redirection of residents’ time would have risked their household’s food security. Unsurprisingly, in some cases, residents failed to provide the necessary community contributions and lost the project funding as a result.

For those villages where infrastructure was built, most villagers identified the positive impact of this construction as ‘visible’ evidence of the project’s efforts. Further investigation revealed that, beyond a very general appreciation of this ‘hardware’, however, individual perceptions of the program and project outcomes were often marred in perceptions of unmet expectations. Unmet expectations referred to a range of tangible results related to building construction as well as intangible results related the very process of implementation. Given the emphasis of this

report and of the *Tuungane I* program on the 'hardware' aspects of the project, we purposefully draw attention to the expectations related specifically to the built infrastructure itself.

Note that in our discussions with community members, we asked informants to also tell us about other projects in the area brought and supported by outside organizations. It should be noted that general complaints against project implementation and outcome were not specific to the *Tuungane* program.

People spoke of unmet expectations about tangible outcomes in three common ways. First, informants expressed disappointment in the quality of the completed project. A primary school director explains that, "the way they built the school didn't please us, because at the other villages [funded through *Tuungane*] they built in bricks, but here they built with the ground." Claims of buildings being constructed in a 'traditional manner' were a common complaint but not the only quality issue. Claims of poor quality were also raised in relation to sustainability. Oftentimes, such cases were associated with claims of embezzlement and theft. As a chief relayed in reference to a primary school built with *Tuungane 1* funding, "the project hasn't been well executed because of robbery and mismanagement. We agree IRC has erected buildings, but for how long time? The building quality is not that good since the entrepreneurs and masons have embezzled the funds and stolen sacks of cement." In cases of mills and water points, the lack of sustainability, either in project maintenance or original construction design, which often resulted in the projects not being operational, effectively negated the positive impact of the project. As noted by another chief, following the implementation of a mill which, "quickly fell non-operational...we thus stepped backward."

Second, individuals expected more of whatever was constructed or provided by the project. Residents of one village, for example, expressed the unmet expectations of the number of classrooms: "*Tuungane* did not perform well because of the lack of transparency in the achievement of the work... instead of six rooms they only built five at the primary school." Complaints were most often heard in reference to the number of classrooms. It is thus important to note that in order to be recognized (and thus teachers registered for receipt of their salaries) by the state, schools must meet a minimum requirement of six classrooms. Thus, while claims in some cases reflected a real sense that the project had promised more rooms than were in fact constructed, in other cases, claims reflected a more general disappointment that more had not been accomplished, particularly given the funds provided. Multiple informants in Katanga villages for example noted that "we believe [*Tuungane*] did something positive but they could have done far better than that." The men's focus group explains, "Let us state [our satisfaction with the project] is partial because we wanted to remain with an important souvenir... we needed a complete building for the school classrooms. *Tuungane* did a somewhat good job but we heard a lot of claims and complaints concerning the [school] building compared to the funds devoted for the work." An interview with another village resident draws attention to an additional unmet expectation, "You can go and see at the school: the children are squeezed into the classrooms which are overcrowded and they are seated 5 pupils to a single desk. That is unacceptable." In this instance, the number of classrooms as well as the facility facilities were seen as being insufficient.

Third, individuals assumed that additional aid would accompany project construction, either in the form of additional materials or in the form of services provided within the finished facility. Schools built with *Tuungane 1* funds, for example, were expected to include materials such as benches and tables. Health posts were expected to be stocked with medicines and to be provided with funds for beds and equipment. A village chief noted that "people expected drugs, clean water... They promised to hire a nurse and [provide] drugs. Nowadays we have only the building... but no drugs, no microscope, nor a bed on which a patient can sleep." The head of another village eloquently summed up the impact of the building without any accompanying materials this way. "We feel no great change here. Of course we have a health center but standards of life are stagnant at a low level. The health center is simply a skin with no flesh inside: no medicines, no physician, and no electric power." In other cases, people expected that changes in services would accompany the construction of infrastructure. Residents expected that the payment of school fees would be suspended, while residents in other areas expected a reduction in school

fees. Others expected that medicine would be provided for free, and two villages expected that *Tuungane 1* would bring other fee reduction programs such as the “Vas y Filles” program, which allows girls to attend school for free.⁴⁷

In conclusion, *Tuungane 1* did improve upon existing infrastructure across the village landscape in Eastern DRC, but this achievement must be qualified with the tensions that underlie the overall success and effectiveness of the project. As noted by a women’s focus group, communities tended to “expect more from *Tuungane*” even in the case when respondents agreed that the IRC had otherwise successfully implemented the said project. This led many to feel that the project remained, in many respects, incomplete. Whether based on ‘real’ or ‘perceived’ promises and experiences, unmet expectations can have important implications for overall project outcomes.

First, and possibly most importantly, unmet expectations of community members may lead to what a *Tuungane* field staff note as “a crisis of trust”. This can delegitimize the overall project and may threaten any additional associated changes sought by the program. In the case of *Tuungane*, which seeks to promote ‘software’ changes in good governance, community perceptions of the program as not practicing what is taught in trainings on governance was widely recorded in our discussions with community members across different villages.

Second, unmet expectations present a barrier to broader project goals of ownership, and even self-efficacy. To better understand this point we draw on evidence showing the importance of (the perception of) well-built projects for people’s lives. As female residents of a village noted in a focus group when describing the impact of the *Tuungane 1* built primary school, “we are proud of the presence of the school here, our children are neat in uniform and there is a good atmosphere in the village.” As the chairman of the CDV further noted, “[the school] is a good thing for the village: the children are educated, and are prepared for the development of the village, which is full of newcomers who come because of the presence of the school. The same for traders.” Projects that were well built enabled a rise in the village’s status, or at least in villagers’ perceptions of their communities’ progress up the development ladder. This was evident in conversations across different villages. When discussing the positive outcomes of schools for example, it was not the number of students that was most often highlighted by informants but the diversity of villages from which students traveled to attend the school. These changes were often contrasted with existing structures/conditions in neighboring villages (ours is better) and particularly with urban residents (even people from Lubumbashi can come here and eat). The importance of this final point is summed up by an IRC staff member: “The prestige projects, the ones that are better built, have a huge psychological effect on the community. Having a proper school. A proper health center. To me it has an impact on how the infrastructure is maintained after the program leaves, and on how the program is evaluated by the communities.” When analyzing the impact of unmet expectations on project outcomes then, it is equally important to consider not only what the implications of explicitly negative community perceptions are, but what the loss of these positive associations holds.

⁴⁷ The full range of items that people mentioned when we asked community members their expectations of the project sheds light on the importance of understanding the wider context in which communities see not only *Tuungane*, but aid and development programs in general. Also mentioned by individual informants were a range of items from flour and machetes to houses and fish. In these instances, it is extremely unlikely that such expectations were raised by the program or program staff but rather it more likely illustrates that people’s expectations of *Tuungane* are influenced by and tied to the broader political economy in which outside organizations are seen as the main actors that ‘bring development’ to individual lives through the provision of aid projects in light of a largely non-responsive state. Village members are thus likely influenced by stories, messages, and past experiences with other organizations. These dynamics are deserving of a more thoughtful analysis, but are noted here only briefly to highlight them for future discussions.

7 Conclusion and implications

7.1 Summary

This report describes the results from a randomized evaluation of the impacts of *Tuungane 1*—a major community-driven reconstruction program in Eastern Congo, funded by the UK government’s DFID and implemented by the International Rescue Committee (IRC) and CARE International between 2007 and 2011—and offers policy implications from these findings. An initial evaluation study conducted immediately following the implementation of the VDC phase of the program found no impact associated with the program (HSW 2012). Five years later, we conducted another evaluation to capture any possible longer-term impacts and to measure any impacts from the implementation of the larger CDC phase of the program, allowing us to capture the long-run effects of the program operating at a higher level of decision-making. We also provide results on one important variation in the design introduced in the *Tuungane 1* program: a requirement of gender quotas as part of the formation of community development committees.

Table 30 presents a summary of the main results. Overall, we find that the *Tuungane 1* program had a positive impact on the quality of health and education infrastructure, and to some extent on the presence of material and supplies. However, evidence of further impact is weak. We do not find evidence that *Tuungane 1* improved other dimensions of service provision: capacity, staff quality, administration and cost and usage of these facilities. We also find no evidence that the program led to improvements in health and educational outcomes. While there is some evidence that fewer heads of household fell ill in *Tuungane 1* areas in the year prior to the survey, we fail to find evidence for improvement across a larger set of health outcome indicators. There is also little evidence of positive economic effects. Instead, we find some (generally scattered) evidence suggesting adverse effects. Finally, when it comes to the role of women, we do not find evidence to suggest that *Tuungane 1* led to improvements in female empowerment.

Table 30. Summary Results

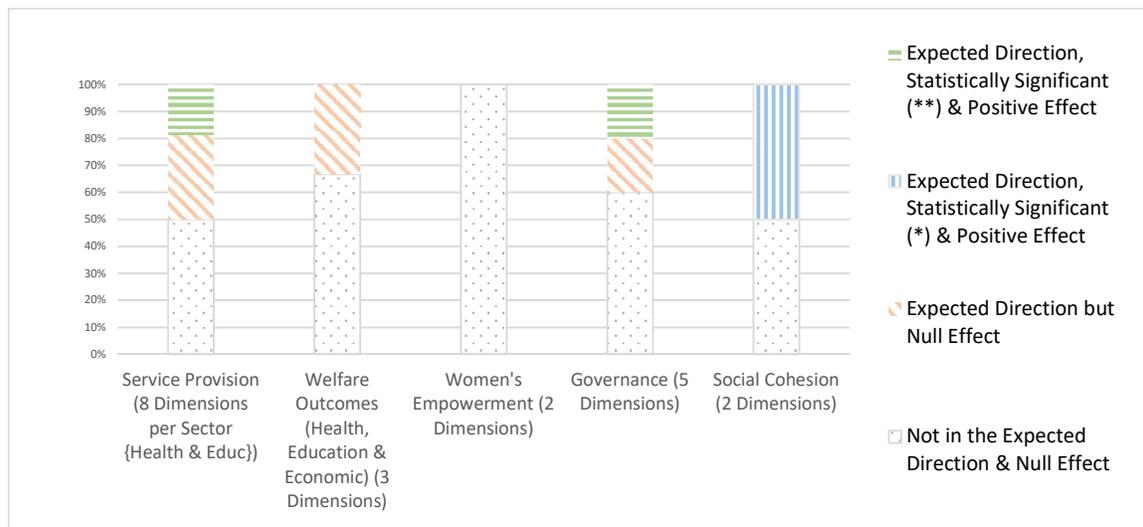
Outcomes	Adverse effect?	Support for hypothesis?
<i>Service provision: health</i>		
Presence	★	★★★★
Building condition	★	★★★★
Capacity	★	★★★★
Material and supplies	★	★★★★
Staff quality	★	★★★★
Administration	★	★★★★
Community participation	★	★★★★
Service cost and utilization	★	★★★★
<i>Service provision: education</i>		
Presence	★	★★★★
Building condition	★	★★★★
Capacity	★	★★★★
Material and supplies	★	★★★★
Staff quality	★	★★★★
Administration	★	★★★★
Community participation	★	★★★★
Service cost and utilization	★	★★★★
<i>Health, education, welfare, empowerment</i>		
Health outcomes	★	★★★★
Education outcomes	★	★★★★
Economic Welfare	★	★★★★
Women empowerment	★	★★★★

Notes: A hypothesis receives one star if the overall estimated effect goes in the expected direction but the effect is not statistically significant, and two, three, or four stars if these effects are also significant at the 90%, 95% or 99% level (one-tailed test). Flags for adverse effects are provided in cases where a negative result would be considered significant in a two-tailed test at the 95% level. Results based on mean indices.

As well as presenting the main program outcomes, this evaluation also considered a number of other social outcomes. Specifically, we looked at the extent to which *Tuungane 1* had an impact on governance, intra-village cohesion, and inter-village cohesion. One of the overarching assumptions of the *Tuungane 1* program was that the participatory dimensions of the program would lead to broad improvements in good governance and social cohesion. As the CDC project phase required multiple villages to work together, these projects in particular were expected not only to lead to improvements in intra-village cohesion but also to improve inter-village cohesion. Our results do not show any evidence that *Tuungane 1* led to improvements in governance. Although we find some evidence of positive results relating to participation, one dimension of governance, this is scattered across indicators and we find no evidence of a positive impact on any of the remaining dimensions of governance measured: accountability, transparency, efficiency or capture. We also find no evidence that *Tuungane 1* activities led to improvements in social cohesion, whether within or across villages.

What do we make of these results? It's challenging to make an overall assessment of the *Tuungane 1* program impacts, given that on some measures (even within the same family of outcomes), the measured effects are positive and statistically significant; on others, they are null or even negative. Given that we do not have reliable priors on what (and how large) program impacts should be (if any) and standard metrics on which to base our assessment, we are left to rely on two alternative or complementary assessment methods: On the one hand, we can use the standard statistical approach and investigate the effects on "key outcomes of interest" against the null hypothesis of no effect. Yet this approach, which essentially entails looking at statistically significant" differences in means of key outcomes between recipient and non-recipient communities or households/individuals, may not be adequate because we need to be finding out about not only the outcome -by-outcome results, but also about significant broader patterns across these outcomes (Fearon et al. 2008). From this vintage point, the graph below shows the categories for which null impacts are found and the categories for which positive effects are found as well as the significance of these findings. The overall assessment as highlighted in the Summary Results **Figure 5** below show that the evidence for impact is weak across the categories of outcomes.

Figure 5. Overall Summary Statistics Results



Notes: The service provision dimensions include for each sector (health and education): 1) presence, 2) building condition, 3) capacity, 4) presence of material and supplies, 5) staff quality, 6) quality of administration, 7) community participation, and 8) service cost and utilization. The welfare dimensions include: 1) health, 2)

education, and 3) economic. The Women's Empowerment dimensions include: 1) women's empowerment 2) gender parity and women's empowerment. The Governance dimensions: include 1) participation, 2) accountability, 3) transparency, 4) efficiency, and 8) capture. The Social Cohesion dimensions include: 1) intra-village cohesion, and 2) Inter-village cohesion. A hypothesis falls under the Grey dotted (.) bar if the overall estimated effect does not go in the expected direction and the effect is not statistically significant, a hypothesis falls under the Orange diagonal (I) bar if the overall estimated effect goes in the expected direction but the effect is not statistically significant, and the hypothesis falls under the Blue vertical (I) bar if the overall estimated effect goes in the expected direction and the effects are also significant at the 90% level (* p<0.05) (one-tailed test), and the hypothesis falls under the Green horizontal (-) bar if the overall estimated effect goes in the expected direction and the effects are also significant at the 95% level (** p<0.01) (one-tailed test). Results based on mean indices. Statistical significance: * p<0.05, ** p<0.01, *** p<0.001. We do not find any adverse effects (cases where a negative result would be considered significant in a two-tailed test at the 95% level).

Overall, as **Figure 5** indicates, the *Tuungane 1* program had a measurable, positive impact on most measures associated with the creation of local infrastructure and their quality. However, on most measures related to economic/material well-being and social change, we fail to find evidence that the experience with *Tuungane 1* led to changes in service provision, service welfare, women's empowerment, governance or social cohesion. Some aspects of service provision (building condition, presence of supplies) and governance (participation) show modest impacts. Taken together, our findings point to a number of conclusions, which we discuss below, providing some thoughts on potential implications for CDD policies and programing.

In sum, while recognizing the need for continued research, we consider that the findings in this report, in relation to the current state of our knowledge, provide some justification to complement government efforts to rebuild infrastructure in fragile and conflict settings. However, the evidence also poses a challenge to the assumptions and arguments underlying the *Tuungane 1* CDD approach in improving economic well-being and social welfare. These findings also warrant further impact evaluation research in order to generate more nuanced and actionable empirical findings to guide further CDD policy and program design.

7.2 Implications in terms of program delivery

- **The *Tuungane 1* program shows a strong positive impact on the quality of building infrastructure for both the health and education facilities.** The *Tuungane 1* program had a measurable, positive impact on activities under its control—namely improvements in the quality of infrastructure and to some extent on the presence of material and supplies. Our results indicate that grants can help improve basic building infrastructure for schools and health centers.
- **Supply and demand side factors need to be addressed for comprehensive improvements in service provision.** The findings show that other dimensions of service provision including presence of service providers, staff quality, administration quality, community participation, capacity of the institutions and service cost/utilization do not improve. Service quality relies on a wide variety of complementary factors. These include availability of quality staff to fill positions opened up by built infrastructure or the quality of the services provided, which in turn is dependent on the quality of human capital such as administration capacity, or teacher/health worker capacity.
- **Similarly, the qualitative findings suggest that beneficiaries need a better grasp of the program objectives; demand-side factors are in play.** When asked, people respond that the main program goal is just infrastructure and do not mention any other service provision outcome (such as quality of education or healthcare). There is an opportunity for policies to implement CDD programs by starting from the needs, taking a more holistic approach and developing a plan to assess service provision constraints at both a macro and micro level. On the former, this

could imply an analysis of necessary circumstances that local populations require for use of any project (i.e. money to pay for services; awareness of the availability of services). On the micro level this could mean taking into account socio-political dynamics (e.g. local power struggles and conflicts; marginalization of different ethnic groups).

7.3 Implications on social downstream effects

- **The *Tuungane 1* program appears to have had limited downstream health, education and economic effects.** Indeed, the overall results for the impacts of the program on service outcomes related to health, education, economic welfare are surprisingly lacking.⁴⁸ Some arguments can be made for this lack of effects, which relate to scale and intensity of program. The size of the investments, i.e. the block grants, was small relative to other community driven rehabilitation programs. In the *Tuungane 1* program, the larger CDC investment corresponds to approximately \$4 per person per year over two years. To put these numbers in perspective, the BRA-KDP program in Aceh had investments targeted at around \$20 per capita per year and the Millennium Village initiative targets aid at \$120 per capita per year. Additionally, by IRC estimates, about 0.7% of the population (12,510 of 1,780,000 people) were directly involved in VDC member trainings, only a fifth of whom, took part in CDC trainings. This limited geographic scope could explain the limited effects found at the CDC level. These findings highlight the need to carefully consider program design elements as it may influence performance and hence achievement of program goals.

7.4 Implications beyond local service provision

- **The *Tuungane 1* program had weak to no positive impacts on social change-related outcomes including governance and social cohesion.** The secondary analysis which studied long-term effects show limited or no effects on most governance measures, including accountability, transparency, efficiency, and capture. Additionally, no effects were found on social cohesion either at the inter-village level or at the intra-village level.⁴⁹ This evidence highlights that CDD programs in its current *Tuungane 1* design have limited ability to impact the “soft elements” such as social norms and community dynamics. Part of the explanation for this is that social and institutional change process are simply difficult, long-term processes, rarely altered from the outside effectively (Bowles and Gintis 2004).

⁴⁸ In terms of economic outcomes, the results from similar evaluations of major CDD programs across countries are mixed. In Sierra Leone, villages receiving the CDD program (GoBifo) show signs of greater market activity, including an increase in the presence of formal community bank accounts, and meanwhile beneficiary households have more assets and amenities. In contrast, in Liberia, there is only weak evidence that the CDD program impacted material wellbeing (gains in livelihoods, employment and asset holdings are weak although access to education improves significantly). Also, in the DRC (*Tuungane*), no effects were found on economic welfare including hours worked, asset holdings, housing quality and even some adverse effects on income. In Afghanistan, the CDD program (NSP) had no conclusive impacts at midline or endline on income levels, income regularity, consumption levels, consumption allocations, assets, or food insecurity, however, there were some positive gender impacts including increases in girls' school attendance and in women's access to medical services.

⁴⁹ In terms of social welfare outcomes, the results are also mixed across countries. For example, in Sierra Leone, CDD did not impact measures of social capital (trust, collective action, group membership and information), participation in local governance, conflict, and political and social attitudes. In the DRC, the CDD had limited impact on socio-political attitudes and behaviors expect for some weak impact on trust and willingness to complain about poor project implementation. In contrast, in Liberia, the CDD program had increased social cohesion, showed some evidence that it reinforced democratic political attitudes and increased confidence in local decision-making procedures. In Afghanistan, the CDD program (NSP) impacted participation in national electoral processes and some measures of acceptance of democratic practices. However, the impact on perceptions of government weakened considerably following project completion.

- **The *Tuungane 1* program had a positive impact on the participation indicator including participation in village meetings, likelihood of voting (self-reported) and household contribution to public goods.** There is potential to capitalize on community participation to foster more social/civic engagement (and inclusiveness), as well as to translate into better welfare outcomes. For example, it may not be enough to increase representation of community members in different forums and associations but also to foster meaningful engagement between individuals attending these gatherings and working together on an activity. Researchers found that informing Ugandan citizens of the dismal state of local health service delivery and holding meetings between citizens and health workers to design and agree on action plans significantly reduced provider absenteeism, increased utilization, and improved health. (e.g. Nyqvist, de Walque, and Svensson. 2017). Ensuring that the CDD programs assemble and disseminate relevant information is critical as it enables the community to focus on actionable tasks, which in turns impacts, other governance measures such as accountability and efficiency.

7.5 Implications on female empowerment

- **Gender parity in development programing may not be enough on its own to lead to greater female empowerment and gender equality.** In the discussion section, we noted that while a key aim of the *Tuungane 1* program was to harness women’s empowerment and gender equality by ensuring gender parity on CDD project committees, we found no positive impact of gender parity requirements on female empowerment, despite some evidence of more female participation in the program. Our inference from these findings is that gender quotas, which increase the number of women in leadership positions, may not be enough in isolation to alter entrenched gender roles and norms, and transform the power relations that maintain women’s subordinate position in society. Gender empowerment deserves further attention—both from programmatic and research standpoints—if development programs such as CDD are to achieve greater gender equality. We also noted that subsequent detailed investigations of the gender effects from the *Tuungane 1* program based on the data collected for the first evaluation (e.g., Van der Windt, Humphreys, Sanchez de la Sierra 2018; Van der Windt 2018) reached the same conclusion of no evidence of effects from the gender-specific aspects of the *Tuungane 1* program (gender parity, in this case). This finding corresponds with the finding in HSW (2012) according to which, while the gender parity requirement served to increase the number of women on community project committees, it did not introduce new, pro-gender equality norms and practices.

7.6 The future of CDD programs

- **CDD programs have the potential to assist government efforts to rebuild infrastructure in the wake of destructive conflicts.** The findings presented in this study confirm that the *Tuungane 1* program delivered on its primary goal, which is the improvement of health centers and schools and as such it was a reasonably effective mechanism for the delivery of local infrastructures. This finding is noteworthy, especially given the near absence of functioning public infrastructures and the challenging and volatile nature of environments in which CDD programs are carried out. This finding is consistent with findings from other impact evaluations from major CDD program—from Afghanistan (Beath et al. 2013), to Liberia (Fearon et al. (2008) to Sierra Leone (Casey et al. 2011), among others—which also found positive impacts of CDD programs on the implementation, and to some extent on the quality, of infrastructure projects that get delivered to targeted communities.

- **CDD programs vary across scale and intensity, which policy makers need to think about prior to program design.** Some arguments can be made for the lack of effects found in the *Tuungane 1* study in relation to downstream economic effects or social welfare effects. The factors relate to scale and intensity of program. The size of the investments, i.e. the block grants, was perhaps small relative to other community driven rehabilitation programs. The length of the program may have been too short to have an impact on these rigid social welfare outcome measures. Future CDD programs need to incorporate time and scale thinking into their designs and implementation.

- **Additional interventions may be required to complement the current CDD model to bring about social and institutional change.** This may be necessary given the importance of outcomes, such as social cohesion, collective action or cooperation in post-conflict and fragile states. Paluck and coauthors have experimented with and undertaken systematic reviews of a number of interventions aimed at social change including targeted interventions on influencing norms perception, prejudice and conflict resolution, adoption of community minded-behaviors and media effects. In one study, Paluck and Shepherd (2012) using repeated, complete social network surveys of a public high school, found that changing the public behavior of a randomly assigned subset of student social referents changed their peers' perceptions of school collective norms and their harassment behavior, providing rigorous evidence against the idea that attitudes and behaviors including prejudice and harassment is resistant to change. In another study from Rwanda, Paluck conducted a yearlong field experiment and tested the impact of a radio soap opera featuring messages about reducing intergroup prejudice, violence, and trauma in two fictional Rwandan communities. Compared with a control group who listened to a health radio soap opera, listeners' perceptions of social norms and their behaviors changed with respect to intermarriage, open dissent, trust, empathy, cooperation, and trauma healing. However, the radio program did little to change listeners' personal beliefs. There is also evidence showing potential of grassroots mobilization strategies to improve collective action measures. In any case, more research and experimentation are needed to identify the most effective policies to enhance inclusiveness, collective action and behavior change in war-torn communities.

- **Complementary interventions are needed to specifically address gender-based issues and transform gender norms.** While there is a lack of evidence on interventions to effectively address gender norms and practices, some mechanisms show promise. Another intervention that began in Latin America and the Caribbean, and targets participants' perceptions of social norms of masculinity through peer-to-peer meetups and engagement in community centers or other gathering places. The cross-program comparisons indicate that a significantly smaller proportion of participants in intervention sites report supporting traditional gender norms as compared to control sites, although it must be mentioned that the evaluations rely on participants' self-report and focus more on personal attitudes than on social norms, which are a primary target of the program. (Barker, Nascimento, Pulerwitz, & Segundo, 2006). One tool to address norms towards gender based violence and gender equality is the mass media. For instance, access to cable television in India, including international programming where women are more outspoken, was associated with a significant decrease in the reported acceptability of domestic abuse (Jensen & Oster, 2009). In short, while many barriers to women's empowerment and gender equality are embedded in existing power structures and difficult to eliminate in the short-term, others can be more malleable. The interventions referenced here can occur relatively quickly and possibly at lower cost, which would therefore make them easier to scale-up.

8 References

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9 Appendix

9.1 Balance *Tuungane 1* treatment and control areas

The analyses in this study rely on randomization, which guarantees that the treatment and control areas are similar in expectation. In practice, however, it is possible for them to differ simply by virtue of unlucky draws. To test this, we compare the different treatment conditions. We make use of the data collected between 2010 and 2011, where we limit ourselves to pre-treatment information (assuming no differences in recall) and variables that do not change due to the program (assuming no differences in migration). We analyze the following variables at the village level: distance to the kingdom capital, presence of infrastructure (specifically: wells, schools, clinics, churches and meeting halls) in 2006, and in-migration in 2006 (IDPs, returned-IDPs, refugees and repatriated refugees). At the individual level we analyze the respondents' age.

Table 31 lists the average of each variable for treatment and control areas, and the difference between both. The d-statistic is the difference in (weighted) means expressed in (weighted) standard deviations of the control group outcome. We find that there are no strong differences across the two groups, which is consistent with expectations given random assignment.

Table 31: Balance

	Control	<i>Tuungane</i>	d-stat	N
Distance from major urban center	9.03	8.79	-0.02	802
Presence infrastructure in 2006	7.73	6.94	-0.11	724
In-migration in 2006	7.85	6.92	-0.03	701
Age	33.74	39.3	-0.03	5,410

Notes: Based upon the following measures: QE13E, CQ23-27, CQ136-139, QF9. D-statistic is the difference in (weighted) means expressed in (weighted) standard deviations of the control group outcome. Data and analysis also in Humphreys, Sanchez de la Sierra and Van der Windt (2018).

9.2 Threats to validity

We discuss three types of threats to validity: attrition, heterogeneity of implementation and spillovers.

Attrition

Our target was to gather data on 781 villages. The household survey was to be gathered for five households per village. In addition, in each village one survey would be conducted with the village chief. In fact, the survey teams successfully visited only 734 out of the 781 villages (94%). In total, 3,402 out of the 3,905 targeted household surveys were collected (87%), and survey teams conducted interviews with 713 out of the targeted 781 village chiefs (91%). In total, 501 primary schools and 507 health facilities were visited. Given that we visited 734 villages, this amounts to 68% and 69%, respectively. The targeted data was not gathered for a number of reasons, which include inaccessibility of some regions for safety and security reasons. Another important loss of data was due to various failures in the field which can range from loss, damage, or theft of tablets, water damage to paper surveys. Specifically related to the infrastructure survey, also the absence of the primary school or health facility can be a reason for visiting fewer than the targeted facilities (see Section 5.1.1). There are two points we would like to make related to missing data. First, the number of missing villages and surveys do not correlate to *Tuungane* treatment status. Second, compared to other studies conducted in the region, the share of targeted villages visited and targeted surveys conducted is high. HSW (2012), for example successful collected data in 72% of their targeted villages and with 62% of their targeted individuals.

Heterogeneity

As shown in Figure 1 there is heterogeneity both in the timing and length of project implementation and the timing and length of data collection relative to project implementation. While the timing of project initiation spanned approximately two years (with the first lottery date being in July 2007 and the last in April 2009), the data gathering spanned approximately seven months (with the first village that was visited on June 2, 2015 and the last villages visited on December 15, 2015). Thus, areas that launched late also had a shorter lag between project start (and likely project finish) and measurement. These timing decisions, however, all took place at the level of lottery bins. All units inside lottery bin areas were first exposed to the project at the same time (although projects started at different times) and were visited by the research team at the same time, thus ensuring strong balance in timing issues between treatment and control areas at the bin level. The implication of this heterogeneity is that the results should be seen as the average of a set of experiments that varied in time to measurement.

Spillovers

Another concern we note is that *Tuungane* may produce spillover effects across communities. If part of the effect of *Tuungane* was to improve outcomes in control areas, then this added contribution of the project would lead to estimates of smaller, rather than larger, program effects. Two features however suggest that this is not likely. First, in this case “communities” are comprised of clusters of villages meaning that most treated villages are surrounded by treated villages and control villages by control villages. Third, as found in HSW (2012), populations in control areas reported very low levels of knowledge about *Tuungane*. In future analyses, however, we may aim to directly take spillover effects into account, for example, by exploring the effect of distance from the nearest *Tuungane* village (conditional on remoteness).

9.3 Exposure and reception among populations

Before we present detailed results on the key outcome indicators we discuss *Tuungane*'s reception amongst its target population. To what extent were local populations aware of the program? How much did populations actually take part in *Tuungane 1* activities? How did they view the project? HSW (2012) explored these questions based on survey data collected in 2010 and 2011. In this section we explore how the populations assess the *Tuungane 1* program in 2015. Do people remember *Tuungane* five years later? Importantly, due to the timing of the data collection, HSW (2012) largely explored perceptions about *Tuungane 1* VDC phase (**Figure 1**). Is the awareness of the program different five years later after also the CDC phase was also implemented? We present our results by contrasting the responses in 2010 with those in 2015.

Note that the 2015 results below do not only reflect changes due to an additional five years and the program's CDC component. The results also partially reflect the second phase of the *Tuungane* program, which took place between 2011 and 2014 in a subset of *Tuungane 1* control and treatment communities; i.e. before the 2015 data collection. Villagers may have difficulties keeping both phases apart and thus individuals' perceptions of the *Tuungane 1* program are likely to include their opinion about the second phase as well. The combined effect is not clear. It could be that an additional five years decreased knowledge of the *Tuungane* program, while the CDC phase and the second *Tuungane* phase may have increased program knowledge.

Knowledge

We present results from a series of questions that aim to assess the exposure of populations to the project and the extent to which it succeeded in its goals of implementing participatory development.

The first question we address is the extent to which *Tuungane* is known among the population. As we can see from **Table 32**, in 2015 *Tuungane* was known by name to almost 80% of the population of the area. Across all three provinces, more people were aware of the program in 2015 than in 2010. Rates were considerably higher among men than among women, which was also the case in 2010. Interpretation of all subsequent questions in this section should take this base knowledge rate into account, since respondents who do not know of *Tuungane* are also assumed not to know who implemented it or to have taken part in *Tuungane* elections, and so on. Thus the maximum value that any of these other measures of exposure can take is 81%.

Table 32: Population has heard about *Tuungane*

		2010 HSW (2012)		2015	
Women	Haut Katanga	65% (281)	59%	82% (363)	80%
	South Kivu	63% (309)		89% (407)	
	Tanganyika	44% (157)		60% (162)	
Men	Haut Katanga	71% (299)	71%	83% (371)	82%
	South Kivu	82% (319)		90% (436)	
	Tanganyika	56% (184)		70% (226)	
			65%		81%

Notes: Based on measure Q249.

Those that knew about *Tuungane* generally knew who implemented it. In 2010, 40% of all respondents reporting that IRC implemented the project in IRC areas and that CARE did so in CARE areas. Only 3% guessed other groups. These numbers are similar in 2015, with 36% and 4% respectively.

Next, we explore knowledge of the size of *Tuungane* grants. In 2010, only 22% of the general population (who have heard of *Tuungane*) reported the correct answer of \$3,000 for VDC projects. Knowledge of CDC envelopes was much weaker, with only 7% of the population guessing in the \$30-\$90,000 range. Not surprisingly, we find that in 2015, these numbers are lower. Only 13% of the general population reported \$3,000 for VDC projects, and 6% of the population guessed the CDC project envelope to be between \$30,000 and \$90,000.

We also asked respondents what they thought the *Tuungane* program was for. Was it primarily about bringing economic development? Or were the social components a core element? Respondents were asked to describe what they thought *Tuungane* was and enumerators recorded whether or not the response included references to projects, to elections, to the idea of “working together,” or to identifying community needs (all four, and other elements, could be contained in a single answer). In 2010, as can be seen in **Table 33**, the vast majority of those responding emphasized the projects. In most sites only a minority (25%) mentioned elections or needs identification. Similarly, in 2015, most people emphasize projects as one of the major components of the *Tuungane* program. Only a minority mention working together (37%) and identifying needs (21%). Only 9% mention elections.

Table 33: What was *Tuungane* about? Views from the field

		2010		2015	
		HSW (2012)			
Projects	Haut Katanga	69% (406)	74%	51% (374)	64%
	South Kivu	85% (446)		76% (643)	
	Tanganyika	58% (176)		63% (244)	
Elections	Haut Katanga	21% (405)	25%	5% (36)	9%
	South Kivu	27% (429)		8% (70)	
	Tanganyika	23% (1740)		13% (52)	
Working Together	Haut Katanga	65% (406)	48%	42% (309)	37%
	South Kivu	32% (428)		31% (258)	
	Tanganyika	41% (176)		41% (161)	
Identifying Needs	Haut Katanga	29% (406)	25%	20% (148)	21%
	South Kivu	26% (421)		21% (179)	
	Tanganyika	10% (174)		21% (83)	

Notes: Based on measure Q251.

Complaints

We asked respondents about complaints related to *Tuungane* by giving them a list and asking them to indicate whether they agree with the complaint, disagree or have no opinion.⁵⁰ **Table 34** lists the share of respondents who agreed with each complaint. In 2010, the most common complaint relates to slow implementation (58%) and to the fact that the process required too many steps (50%). Other frequent complaints relate to a lack of influence on the selection of projects (49%).

Table 34: Complaints about *Tuungane*

	2010	2015
The whole process (decisions and project implementation) took too long	58% (900)	45% (846)
The implementing organization did not behave well in the village	21% (311)	16% (295)
The selected projects were not the most important for this village	18% (293)	14% (264)
The selected projects have not helped enough people in this village	19% (310)	17% (326)
I had no real influence on the selection of projects	49% (784)	35% (650)
Disagreements in this village have not been well managed	23% (347)	16% (292)
The process required too many steps and procedures to be followed	50% (714)	37% (689)
There was not enough information about the process	38% (584)	29% (539)
There was embezzlement in this village (corruption, nepotism, etc.)	22% (283)	24% (442)
The allocation of money through the villages was not made fairly	22% (257)	21% (389)
The project has created divisions and conflicts in the community	25% (381)	17% (308)

⁵⁰ The latter option – have no opinion – was only possible in 2015. As a result, we expect complaints to be lower in 2015 on the whole.

The VDC was controlled by the chief	32% (448)	17% (500)
The CDC was controlled by the chief	22% (252)	23% (386)
The VDC did not reflect our needs	20% (273)	10% (183)
The CDC did not reflect our needs	22% (274)	9% (155)

Notes: Based on measures TP30 (for 2010) and Q260 (for 2015).

We find that these three complaints were also the most common in the 2015 *Tuungane* program, although the share of respondents that reported agreement was approximately 15% lower than in 2010. The remaining complaints, apart from two, were cited approximately 5-10% less in 2015 than in 2010. The two exceptions focused on embezzlement and control over the CDC by the chief, for which the share of respondents who agreed increased only marginally by 2% and 1% respectively.

Participation

What level of participation in *Tuungane* activities did populations report? **Table 35** presents information about participation across three dimensions, separately for men and women. The first dimension explores whether respondents have attended any meetings associated with *Tuungane* (where those that have not heard of *Tuungane* are recorded as not having attended meetings). Second, we present the share of respondents that have voted at least once during these meetings. Finally, we show reported rates of contribution.

Table 35: Population Participation in *Tuungane*

		2010 HSW (2012)	2015
Women	Attendance rates	23% (780)	36% (224)
	Voting rates	21% (796)	28% (177)
	Contribution	10% (796)	30% (176)
Men	Attendance rates	36% (822)	46% (319)
	Voting rates	35% (847)	38% (271)
	Contribution	18% (847)	39% (261)

Notes: Based on measures Q254 –Q257.

In 2010, 30% of the population (36% for men, 23% for women) reported having attended at least one meeting. A total of 21% of women and 35% of men voted during the elections. Contribution rates were somewhat lower than voting and meeting participation rates. Overall, 18% (10%) of men (women) contributed to projects in some form (material, labor or money). In 2015, we find that these numbers are higher across the board. Particularly, community contribution rates are higher in 2015 with around over a third of individuals mentioning having ever contributed materially to the *Tuungane* program. In summary, as in 2010, respondents in 2015 both know of the *Tuungane* program and report high levels of participation.

9.4 The impact of gender parity

Table 36 presents the results for the effects of the gender parity treatment variation, comparing communities required to have gender balanced VDC and CDC committees with communities where this was not a requirement. We find no evidence that placing women in leadership positions had an impact on service delivery or on health, education or wealth outcomes. This result mirrors that of HSW (2012), and Van der Windt et al (2018).

Table 36: Heterogeneous impact by gender parity

Outcome	Impact of gender parity (se)	
	Health	Education
<i>Service provision:</i>		
Building	0.03 (0.17)	-0.14 (0.14)
Capacity	-0.08 (0.18)	-0.17 (0.14)
Material and Supplies	-0.22 (0.25)	-0.13 (0.16)
Staff Quality	-0.13 (0.17)	-0.15 (0.16)
Administration	0.04 (0.16)	-0.15 (0.17)
Community	-0.19* (0.13)	0 (0.15)
Costs and Usage	0.08 (0.20)	-0.07 (0.16)
Health, education and wealth		
Health	0.06 (0.11)	.
Education	-0.05 (0.08)	.
Wealth	-0.09 (0.09)	.

Notes: Gender parity information based on data from the implementing partner. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

In regards to gender parity and women's empowerment in particular, the qualitative findings support those of the quantitative findings. The qualitative findings, discussed in more detail in Section 6, also draw attention to the broader socio-political context which likely shaped the results shown here.

9.5 Additional social outcomes

This study also explores a set of additional hypotheses. We left these for the appendix as we had decided, before the onset of this study, that they were not the study's main outcomes of interest. In this section, we explore whether *Tuungane* had an impact on a number of social outcomes: governance, intra-village cohesion, and inter-village cohesion.

Secondary hypotheses and outcomes are listed in **Table 37**.⁵¹ Survey question numbers are in parentheses. Governance has been separated in five different dimensions to stay consistent with HSW (2012).⁵²

Table 37: *Tuungane* 1 secondary hypotheses

Secondary hypothesis	Measure (measure in 2015 survey)
T1 had a positive impact on governance	<p>Participation:</p> <ul style="list-style-type: none"> • Participation in village meetings (Q199A) • Voiced opinion during meetings (Q199B) • Household contribution to public good (Q194) • Village chief decision making process (EC194-196,Q232) • Participation in 2011 election (EC207, Q218,Q219) • Chief contacts other authorities (EC205) <p>Accountability:</p> <ul style="list-style-type: none"> • Seek support for community initiatives and the private sector (Q196-197) • During last six months, met governance actors (Q199C-I) • During last six months, village chief met governance actors (EC205) • Relationship between population and village chief (Q211-212, Q228, Q232-233) • Accountability of COPA/CODESA (EC198-204, EC206, Q200) <p>Transparency:</p> <ul style="list-style-type: none"> • Willingness to collect information about the management of public resources for which they are beneficiaries (Q269, Q271) • Knowledge of government (Q242) • Opinions regarding citizens' right to transparency (Q233,Q235) • Bribery (Q107, Q123, Q136) <p>Efficiency:</p> <ul style="list-style-type: none"> • Success in seeking support for community initiatives and the private sector (Q196-197) • Use of receipts (EC185, Q209) <p>Capture:</p> <ul style="list-style-type: none"> • President of village committees or associations is elected (Q180,Q185) • Taxes paid in relations to income and asset index (Q207-208) • Access to services for everyone (Q190-191) • Preference to have outsiders manage development funds (Q198)
T1 had a positive impact on intra-village cohesion	<ul style="list-style-type: none"> • Cleavages in the community (Q186-Q189) • Contribution in trust game towards fellow villagers, and the chief (Q277, Q280) • Organization of management of resources (EC121-128)

⁵¹ In fact, we had also listed as hypothesis that "T1 has inflated prices in the community". We do not explore that here. Furthermore, we had also suggested to explore the heterogeneous impact of T1 by type of community for social cohesion and previous support from international organizations. We also do not do that in this study.

⁵² These five dimensions are: 1. Participation (the extent to which villagers are willing and able to be part of the public decision making), 2. Accountability (the willingness and ability of community members to sanction leaders for poor performance and the willingness of leaders to respond to citizen requests), 3. Transparency (accessibility of information related to public decision making), 4. Efficiency (the extent to which implementation makes good use of resources available), 5. Capture (the extent to which benefits of public projects are broadly distributed).

	<ul style="list-style-type: none"> • Ability to organize public goods provision (Q192-194) • Presence of community organizations (EC105-EC120)
T1 had a positive impact on inter-village cohesion	<ul style="list-style-type: none"> • Contribution in trust game towards individuals from other villagers (Q281) • Village associations work together with other villages (EC105g-EC120g, Q182) • Management of resources with other villages (EC121j-128j) • Coordination of village chief with other villages (EC179-180) • Organization of public goods projects with other villages (Q195)
T1 had a heterogeneous impact by type of community	<ul style="list-style-type: none"> • We explore differences by conflict and wealth
T1 had a heterogeneous impact by type of project	<ul style="list-style-type: none"> • We explore differences by the following projects: school, health facility

9.6 Governance

Our first secondary outcome of interest is governance. We follow HSW (2012) and examine this outcome along five dimensions: participation, accountability, efficiency, transparency, and capture.⁵³ We will discuss each dimension in turn.

9.6.1 Participation

We define participation as the extent to which villagers are willing and able to be part of public decision making. In the main text we explored this concept in the context of service provision. In this section, we look more broadly towards community governance, although we note that there is likely to be overlap between both. We make use of a large set of indicators of participation to estimate the impact of *Tuungane 1*. **Table 38** shows that in control areas, 42% of respondents were present during a village meeting that took place during the six months preceding the survey. Among those that were present, 38% actually spoke during the meeting. We also ask our respondents whether they contributed (either time, money or labor) to voluntary projects during the last six months. For this question, we referred to a list of six public works that communities are most likely to partake in.⁵⁴ We find that respondents answer in the affirmative for 1.35 projects.

We also explore individuals' participation in public decision making outside of the community. We find that in control areas, a full 92% of individuals voted in the 2011 presidential elections, and that 35% of respondents participated during an election meeting or campaign. We also ask respondents their opinion about the following statement: "Everybody has the right to participate in political and economic decisions even if he/she does not understand all aspects of the problem in question." In control areas, 64% of respondents agree with this statement. Our final measure of participation comes from the village chief. We ask the chief which activities – of a list of eleven activities related to his interaction with the community and other actors - he has undertaken in the preceding six months.⁵⁵ In control areas, of the eleven activities, village chiefs have undertaken around two.

We find some evidence that the *Tuungane 1* program had a positive effect on community participation. In *Tuungane 1* areas, individuals are six percentage points more likely to participate in a village meeting. We also find that

⁵³ HSW (2012) implemented a \$1,000 unconditional cash transfer program called "RAPID" to obtain behavioral measures of governance. We did not implement such a program and will thus largely build on information collected from surveys.

⁵⁴ These are the following activities: 1) construction and maintenance of primary schools or health infrastructure, 2) construction or maintenance of roads, 3) construction or maintenance of wells, 4) organization of security patrols, 5) maintenance of a church or mosque, 6) construction of a market.

⁵⁵ These are the following activities: 1) contact the police or judiciary for problems related to the village, 2) contact the military for problems related to the village, 3) contact provincial government for problems related to the village, 4) contact national government for problems related to the village, 5) contact local, decentralized government entities (ETDs) for problems related to the village, 6) contact the chief of the grouping or chiefdom for problems related to the village, 7) contact MONUSCO to ask to initiate a village project, 8) contact an international NGO to ask to initiate a village project, 9) contact the national assembly member that represents the village, 10) contact armed groups, 11) contact CODESA/COPA to discuss a development project related to the village.

Tuungane 1 led to an increase of two percentage points in (reported) voting during the 2011 elections. These results are statistically significant at the 95% level (one-tailed test).

Table 38: Governance - Participation

	Present Meeting	Spoke in Meeting	Voluntary Contribution	Voted 2011	Election Meeting	Right to Participate	Interaction	Mean effects
Control	0.42	0.38	1.35	0.92	0.35	0.64	2.37	0
<i>Tuungane</i>	0.06**	0.00	0.00	0.02**	0.02	0	-0.04	0.16**
(se)	(0.02)	(0.03)	(0.07)	(0.01)	(0.02)	(0.02)	(0.21)	(0.09)
N	3,372	1,496	1,310	3,390	3,373	3,368	711	734

Notes: Based on measures Q199, Q194, Q218, Q219, Q232, EC205. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

9.6.2 Accountability

We define accountability as the willingness and ability of community members to sanction leaders for poor performance and the willingness of leaders to respond to citizen requests. Again, we build on a large number of indicators to explore whether *Tuungane 1* had an impact on accountability. As a first measure, we ask respondents how many accountability-related activities they have undertaken from a list of seven activities during the preceding six months.⁵⁶ **Table 39** (column “Interaction”) shows that the average household undertakes less than one of these activities. We also ask respondents how well their local committees (COPA and CODESA) undertake activities from a list of eight accountability-related activities.⁵⁷ We find that in control areas, the local committee undertakes around four of these. Our next two indicators ask respondents about accountability related to the chief. From **Table 39**, we learn that in control areas 71% of respondents mention that when important decisions are made, the village chief informs the population of the reasons for the decision. Furthermore, half of all respondents mention that when one is not satisfied with village decisions, there are other bodies that can be contacted which can affect the decisions. Also, we find around 17% of respondents are of the opinion that they feel capable of influencing their leaders to meet their expectations. Finally, we ask respondents about their opinion related to the following statement: “As citizens we have a responsibility to regularly check and question the actions of our provincial and national political leaders.” We find that 26% of respondents in control areas agree with the statement. Finally, we also ask the village chief about how well their local committees (COPA and CODESA) undertake activities from a list of accountability-related activities.⁵⁸

Compared to control areas, we find the same dynamics in *Tuungane 1* areas.

Table 39: Governance - Accountability

	Interaction	Local Committee	Chief Informs	Other Bodies	Influence Leaders	Verify Leaders	Local Committee	Mean effects
Control	0.74	3.85	0.71	0.50	0.17	0.26	2.66	0
<i>Tuungane</i>	0.05	0.01	0.00	0.00	0	-0.01	-0.06	0.02

⁵⁶ The activities are the following: 1) meet the village chief to raise an issue, 2) meet a member of a village management committee to raise an issue, 3) contact the police or the judiciary about some problems you had, 4) meet or contact other state officials about some problems you had, 5) meet representatives of MONUSCO or NGOs to raise an issue, 6) participate in a demonstration or a peaceful protest march, 7) meet with influential individuals, but without authority recognized by the state (e.g. armed groups).

⁵⁷ These activities are the following: 1) inform the public about its actions, 2) inform the population of resource management, 3) inform the community about the performance of providers and the quality of services, 4) allow people like you to participate, 5) be consulted before making decisions, 6) ensure that local resources are used for public purposes and not for private interests, 7) conduct advocacy with the state authorities on community needs, 8) inform state authorities about the performance of providers and the quality of services.

⁵⁸ This is the same list asked to the household, with one difference: points 4 and 5 are merged for the chief, which explains in part the lower score compared to households.

(se)	(0.06)	(0.19)	(0.02)	(0.02)	(0.02)	(0.02)	(0.20)	(0.09)
N	3,394	2,640	3,277	2,922	3,034	3,365	599	733

Notes: Based on measures Q199c-i, Q200a-h, Q211, Q212, Q228, Q233, EC206a-d,g. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

9.6.3 Transparency

We define transparency as the accessibility of information related to public decision making. To measure transparency we implemented a survey experiment. If taking part in the *Tuungane 1* intervention has made communities more transparent, then it is likely that valuable information about public resources has become more accessible. To test this claim, we explore the willingness of selected villagers to obtain relevant information about the management of public resources for which they are beneficiaries. Specifically, each fifth (randomly selected) villager is presented with the opportunity to seek information about the revenues received in the last period for either the school or the main health facility (also randomly selected). These are the same schools and health facilities visited by our enumerators for the infrastructure surveys. Respondents are offered \$1 as compensation for attempting to retrieve the information and an additional dollar upon success. In our context, these are considerable sums of money. Our enumerators check the veracity of the information and condition the second payment on accuracy.⁵⁹ We ask a total of 301 (229) individuals whether they are willing to collect the data from the school (health facility). Our first interest is in the willingness of the villagers to participate in this exercise.

Table 40 shows that around 80% of people are willing to collect information. We find this result for both schools and health centers. The people that refused gave various reasons. For schools: that it is not appropriate to ask for this information (16, 32%), that the respondent did not have time (10, 20%), that the husband of the respondent refuses or would refuse the collection of this information (0, 0%), that the game is strange to them (2, 4%), school is closed for holiday (11, 22%) and other (11, 22%). For health infrastructure: that it is not appropriate to ask for this information (20, 42%), that the respondent did not have time (10, 21%), that the husband of the respondent refuses or would refuse the collection of this information (1, 2%), that the game is strange to them (4, 8%), and other (13, 27%).

Table 40: Governance - Transparency

	Accept School	Accept Health	Knowledge	Verify Chief	Mean effects
Control	0.80	0.82	2.40	0.75	0
<i>Tuungane</i>	0.05	-0.07*	-0.04	-0.01	-0.06
(se)	(0.05)	(0.06)	(0.08)	(0.02)	(0.08)
N	301	229	3,206	3,373	730

Notes: Based on measures Q269, Q271, Q242, Q235. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

In addition to this survey experiment, we collect two indicators to explore the impact of *Tuungane 1*. The first is another measure of transparency: the extent to which individuals are informed about key decision makers. We ask respondents about the name of: 1) the Prime Minister of the DRC, 2) the member of the National Assembly who represents the community, 3) the largest party in the National Assembly, 4) the governor of the province, 5) the head of their territory, and 6) the leader of their grouping. We measure how many of these respondents answer correctly. We find that an average respondent answers about half correctly. Finally, we also ask respondents to what extent they agree with the following statement related to transparency: "As inhabitants of the village, we have

⁵⁹ This is the same survey experiment as conducted in HSW (2012).
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a duty to regularly check and question the actions of our village chief". **Table 40** shows that three quarters of respondents agree with this statement.

On the whole, we find that there is no strong evidence for an estimated effect of *Tuungane 1* on transparency.

9.6.4 Efficiency

We define efficiency as the ability to organize in order to achieve ends.⁶⁰ To measure efficiency, we ask respondents whether during the preceding six months the members of the village have approached the state or an international NGO to ask them to initiate a development project to benefit the village. If a respondent replies in the affirmative, we ask whether the request was successful. **Table 41** shows that 6% (4%) of communities approached the state (international NGO) for a project in the preceding six months. When they did, they were successful in 26% and 35% of cases, with the state and the international NGO respectively.

We find that there is no difference between control and *Tuungane 1* communities.

Table 41: Governance - Efficiency

	Approached State	Successful State	Approached NGO	Successful NGO	Mean effects
Control	0.06	0.26	0.04	0.35	0
<i>Tuungane</i>	-0.01	0.03	0.00	0.08	-0.03
(se)	(0.01)	(0.07)	(0.01)	(0.09)	(0.07)
N	3,041	167	3,104	118	730

Notes: Based on measures Q196, Q197. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

9.6.5 Capture

Our last dimension of governance is capture, which we define as the extent to which benefits of public projects are broadly distributed. We again measure this based on a number of different indicators. First, we ask our respondents to indicate the existence of development committees in the community that manage community resources.⁶¹ We then ask the respondent to tell us, for each existing committee, whether the leaders of the committee are democratically elected by the community. **Table 42** shows that in control areas there are on average two committees, of which the vast majority (88%) have leaders that are democratically elected. As a second indicator, we ask respondents the same questions about associations that exist in the village.⁶² We find that in control areas there are, on average, 1.4 associations per village, of which again the vast majority (83%) elect their leaders. Only around 6% of respondents indicate that the village chief had collected taxes in the preceding 30 days. Finally, we asked respondents who would be best to manage the funds if the village were to receive \$1000 for development. 26% of respondents say that the village development committee should do so.

We find no difference between those areas that received *Tuungane 1*, and those that did not.

⁶⁰ Note that HSW (2012) define efficiency as the extent to which implementation makes good use of resources available. Without the RAPID \$1000 unconditional cash transfer program we found that we would not be able to measure this definition.

⁶¹ We prompt the following committees: 1) Water/ Sanitation, 2) Roads and erosions, 3) Health (CODESA), 4) Education/ School (COPA), 5) Farming/ Agriculture, 6) protection/ security, 7) Conflict Resolution, 8) Development General, and 9) Other.

⁶² We prompt the following associations: 1) an association affiliated to the church/ mosque, 2) a peasant association, 3) an association of the elderly, 4) an association of women, 5) a youth organization, 6) an association of former combatants / militia 7) an association for savings and credit, 8) an association to support a certain politician or political party, 9) a human rights association, 10) a cultural association / ethnic, and 11) other.

Table 42: Governance - Capture

	Committee Exist	Committee Elected	Association Exist	Association Elected	Collected Tax	Committee Funds	Mean effects
Control	2.02	0.88	1.40	0.83	0.06	0.26	0
<i>Tuungane</i>	0.04	0.00	-0.02	-0.01	-0.01	0.01	0
(se)	(0.11)	(0.01)	(0.12)	(0.02)	(0.01)	(0.02)	(0.09)
N	3,366	2,525	3,354	1,658	3,324	3,226	730

Notes: Based on measures Q176, Q180, Q183A-I, Q185, Q207, Q198. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

9.7 Intra-village cohesion

The *Tuungane 1* program, which translates to “working together” in Swahili, placed emphasis on community collaboration within projects. As a result, we hypothesize that the program had a positive impact on intra-village cohesion. We collect a number of different indicators to explore this in more detail. First, we ask our respondents about the existence of cleavages and division in the community.⁶³ **Table 43** shows that in each community around 1.52 cleavages are present.

We also conducted behavioral games with our respondents to learn about trust – a key component of intra-village cohesion. Specifically, we played a trust game (also called an investment game). The rules for the game are as follows. We gave respondents 1,000 Congolese Francs (around \$1), and told them to send part of the money (they could choose to send nothing) to another individual. Whatever was sent to the other individual was then tripled by our enumerators, and the recipient was asked how much he or she wanted to give back to the respondent. In areas with high levels of trust we expected respondents to contribute a large part of the 1,000 Francs. We played the game several times with different recipients to learn about different levels of trust towards different individuals. **Table 43** shows that in control areas, on average, 387.80 Francs were contributed to fellow villages, and 431.34 Francs to the village chief.

We also ask respondents whether any voluntary projects have taken place in the village in the preceding six months. We ask about six different types of commonly occurring projects, and find that, on average, less than one of them is undertaken.⁶⁴

Table 43: Intra-village cohesion

	Cleav.	Trust Vill.	Trust Chief	Projects	Comm. Owner.	Dev. Comm.	Whole Pop.	# Meet	# Orgs.	Main Effect
Control	1.52	387.80	431.34	0.72	1.26	0.39	0.94	1.61	2.98	0
<i>TUUNGANE</i>	-0.06	-11.40	-22.20	-0.04	0.05	-0.01	-0.04	0.14	0.18	-0.03
(se)	(0.05)	(17.27)	(14.49)	(0.06)	(0.15)	(0.04)	(0.03)	(0.18)	(0.18)	(0.09)
N	3,190	1,362	1,304	3,373	465	703	271	251	711	734

Notes: Based on measures Q186, Q277, Q192, EC121b-128b, EC105a-c, EC105a-120a. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

The final set of indicators come from the village chief. We ask the chief whether the community is capable of independently determining the rules of access and use for a number of community resources: 1) arable land, 2)

⁶³ The cleavages were not prompted. We have a list from which they could check the following cleavages: 1) between the rich and poor, 2) between men and women, 3) between the young and the elderly, 4) between indigenous and newcomers, 5) between the different religions, 6) between the tribes or ethnic groups, 7) between civilians and ex-combatants/ militia, 8) between pastoralists and farmers, 9) between people of different political parties, and 10) between educated and uneducated.

⁶⁴ These include: 1) construction and maintenance of primary schools or health infrastructure, 2) construction or maintenance of roads, 3) construction or maintenance of wells, 4) organization of security patrols, 5) maintenance of a church or mosque, 6) construction of a market.

community forest, 3) pasture, 4) water (lake, rivers), 5) mineral mine, 6) quarry for stone/ sand, 7) hunting reserve, and 8) other. The chief reports some community control for around 1.26 resources. We next ask the village chief about the village development committee. We find that these exist in 39% of communities, that they meet around 1.61 times per month and that they largely (94%) serve the whole population. Finally, we ask the village chief about the existence of a list of 16 associations. We find that there are around 3 of them in the community.⁶⁵

Related to the impact of the *Tuungane 1* program on intra-village cohesion, we find no difference between program and control communities.

9.8 Inter-village cohesion

As part of *Tuungane 1*'s CDC projects, multiple villages (also called LLUs, the level at which we collect data for our study) had to work together. As a result, we hypothesize that the program also had a positive impact on inter-village cohesion. As a first indicator, we ask about the existence of cleavages between villagers from the survey village and that of nearby villages. We find that in control areas, on average, 1.47 cleavages are present. Next, we explore the trust game that we played with our respondents. In one version of the game our respondents had to decide how much to trust individuals living in other villages. **Table 44** shows that trust in individuals from nearby villagers is only slightly lower than trust in fellow villagers (see **Table 43**).

Our respondents contribute on average 376.40 of their 1,000 Francs to those from nearby villages. We next ask our respondents whether the committees that exist in their village (**Table 42**) work together with committees from other villages. Similarly, we enquire whether the voluntary projects that were undertaken in the community during the preceding six months (**Table 43**), were undertaken in collaboration with individuals from other villages. We find that this is the case for an average of 1.35 (out of nine) committees, and 0.45 (out of six) projects.

We also build on data collected from the village chief. We ask a similar question to the chief related to the community's organizations and resource management (**Table 43**). We find that, on average, 0.65 organizations exist per village that work with other villages, and for every two villages there is one community resource that is managed alongside another village. Finally, we ask the chief about the functions and activities that he or she has undertaken in the three months preceding the survey. We find that in 26% of communities the chief has managed conflict between his/her village and a neighboring village. Around 15% of chiefs mention that they have hosted the chief of a nearby village.

We find little evidence that *Tuungane 1* had an impact on inter-village cohesion. There is some evidence that more resources but fewer conflicts are managed with other villages. These results, however, are only significant at the margin.

Table 44: Inter-village cohesion

	Cleavages Other Village	Trust Other Village	Committee Other	Projects Other	Organizations Other	Resources Other	Manage Conflict	Hosted Other	Mean effects
Control	1.47	376.40	1.35	0.45	0.65	0.49	0.26	0.15	0
<i>TUUNGANE</i>	-0.05	-21.40*	0.01	0.00	0.04	0.07*	-0.05*	0.01	0.13*
(se)	(0.06)	(11.44)	(0.09)	(0.03)	(0.02)	(0.05)	(0.04)	(0.03)	(0.08)
N	3,150	1,368	2,419	1,393	626	456	654	654	733

Notes: Based on measures Q277, Q182A-I, Q195A-F, EC105g-EC120g, EC121j-EC128j, EC179B, EC179I. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

⁶⁵ We prompt the following associations: 1) an association affiliated to the church/ mosque, 2) a peasant association, 3) an association of elderly, 4) an association of women, 5) a youth organization, 6) an association of former combatants / militia, 7) an association for savings and credit, 8) an association to support a certain politician or political party, 9) a human rights association, 10) a cultural association / ethnic, and 11) other.

9.9 Heterogeneous effects of the *Tuungane* program

9.9.1 Heterogeneous impact by type of community

The *Tuungane 1* program might have had a different impact in different types of village. We try to understand whether this is the case by dividing the dataset into different groups and assessing whether there are different impacts of *Tuungane 1* within these groups. We explore the impact of the program based on two types of community characteristics: conflict and wealth. Measurements related to both characteristics are based on the situation before program onset: i.e. these are pre-treatment variables. **Table 45** presents results. Column “*Tuungane Base*” presents the study’s main results (the combined results indicator) as a reference. The top row in **Table 45** indicates the number of villages in each subgroup.

Table 45: Heterogeneous impact by type of community

Outcome	<i>Tuungane</i> Base N=781	Conflict Migration		Wealth			
		No N=349	Yes N=139	Schools		Health Clinics	
				No N=313	Yes N=400	No N=532	Yes N=186
Building	0.16** (0.09)	0.12 (0.11)	0.16 (0.20)	0.08 (0.11)	0.16* (0.12)	0.11 (0.10)	0.22* (0.16)
Capacity	-0.03 (0.09)	-0.13 (0.13)	0.03 (0.17)	-0.10 (0.14)	-0.04 (0.10)	-0.1 (0.10)	0.11 (0.17)
Supplies	0.21** (0.10)	0.14 (0.13)	0.26* (0.20)	0.12 (0.16)	0.26** (0.12)	0.16* (0.11)	0.33** (0.18)
Staff	0.02 (0.09)	-0.08 (0.13)	0.09 (0.18)	-0.08 (0.13)	0.01 (0.11)	-0.08 (0.10)	0.12 (0.15)
Admin.	0.06 (0.08)	0.08 (0.11)	0.06 (0.17)	-0.13 (0.12)	0.19** (0.11)	0.01 (0.10)	0.28** (0.13)
Comm.	-0.07 (0.08)	0.09 (0.12)	-0.16 (0.15)	-0.15 (0.13)	-0.04 (0.10)	-0.13* (0.10)	0.07 (0.13)
Costs	0.01 (0.11)	0.15 (0.19)	-0.14 (0.22)	0.02 (0.21)	0.04 (0.10)	0.03 (0.14)	0.03 (0.15)
Building	0.16** (0.08)	0.07 (0.11)	0.22 (0.19)	0.10 (0.13)	0.19** (0.11)	0.15* (0.10)	0.20* (0.15)
Capacity	0.06 (0.07)	-0.01 (0.11)	-0.01 (0.16)	-0.03 (0.12)	0.12* (0.09)	0.02 (0.09)	0.16* (0.12)
Supplies	-0.07 (0.08)	-0.22** (0.10)	0.22 (0.18)	-0.26** (0.13)	-0.01 (0.11)	-0.12 (0.10)	-0.07 (0.15)
Staff	0.05 (0.08)	-0.12 (0.11)	-0.04 (0.16)	0.03 (0.14)	0.08 (0.09)	0.06 (0.10)	0.03 (0.11)
Admin.	-0.09 (0.08)	-0.11 (0.12)	-0.18 (0.17)	-0.20* (0.13)	-0.04 (0.11)	-0.14* (0.10)	0.01 (0.14)
Comm.	-0.15** (0.08)	-0.16* (0.11)	-0.26* (0.19)	-0.23** (0.13)	-0.13 (0.11)	-0.20** (0.10)	-0.11 (0.13)
Costs	-0.01 (0.09)	0.03 (0.13)	0.1 (0.17)	-0.07 (0.15)	0.07 (0.11)	-0.08 (0.10)	0.27* (0.18)
Health	0.03 (0.05)	0.03 (0.07)	0.18* (0.12)	0.12* (0.08)	-0.02 (0.07)	0.03 (0.07)	0.10 (0.08)
Education	-0.05 (0.04)	-0.06 (0.06)	0.00 (0.10)	0.09 (0.07)	-0.12** (0.06)	0.00 (0.05)	-0.08 (0.07)
Wealth	-0.09* (0.06)	-0.14** (0.08)	-0.01 (0.13)	-0.16** (0.09)	-0.04 (0.07)	-0.08 (0.06)	-0.11 (0.12)

Notes: Subgroups based on EC62, and data collected between 2010 and 2011: CQ140 and CQ24-5 in HSW (2010). *** (***) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

Results by initial conflict exposure

We first explore whether *Tuungane* had a different impact by exposure to conflict. We measure exposure to conflict based on data from HSW (2010). These data include information from the village chief about whether any individuals had left the village in the three years before the start of the program (2005, 2006 or 2007). We find that this is the case for 139 communities, and not the case for 349 communities. We now look at the impact of *Tuungane* in each of these four different groups.

Columns three to four in **Table 45** present the results for conflict. We would like to emphasize two results. First, the impact of *Tuungane 1* on supplies in the education sector is very different by conflict status. While the effect is positive in areas with previous experience to conflict, it is negative (and statistically significant) for those communities that did not have previous conflict experience.

Second, the negative results found relating to the impact of *Tuungane 1* on economic welfare seems to be particularly driven by communities that have experienced conflict before the program onset. This negative impact is significant at the 95% confidence level using one-tailed tests.

Results by initial community wealth

The final four columns in **Table 45** present the results related to community wealth. We measure wealth in two different ways: the presence of schools in 2006 and the presence of health infrastructure in 2006. We find that 313 villages had no schools at the onset of the *Tuungane 1* program, while 400 villages did have at least one school. A total of 532 villages did not have a health facility in the village, while 186 villages did have at least one health facility present in 2006. Again, we now explore the impact of *Tuungane 1* in each of these four subgroups. We find five results that we would like to highlight.

First, when we look at service provision related to health, we find that results pointing to improvements in building conditions and the availability of material and supplies are particularly strong for those areas in which there was already infrastructure.

Second, in those areas where infrastructure was already present, *Tuungane 1* also led to improvements in administration quality.

Third, moving to service provision related to education, we find that *Tuungane 1* had a positive impact on building condition and capacity especially in areas where there was already health infrastructure and a school present.

Fourth, our main result ("*Tuungane* base"), which estimated a negative effect of the *Tuungane 1* program on community participation in school-related activities, seems to be driven solely by those areas where no infrastructure was yet present.

Finally, we highlight that there is a negative impact of *Tuungane 1* on education outcomes in those areas that already had a school in 2006, and a negative impact on wealth in areas that did not yet have a school in 2006. These results are statistically significant at the 95% confidence level when using a one-tailed test, but not when using a two-tailed test.

9.9.2 Heterogeneous impact by type of *Tuungane* project

The impact of the *Tuungane 1* program may also depend on the type of project that was implemented. Some communities selected a VDC project in the health sector and a CDC project in the education sector. The construction of a hospital may have a stronger impact on the quality of health in a village than the construction of a school. Similarly, a CDC health project may have had a stronger impact than a VDC project. We explore this further in this section. We make use of program tracking documents provided by our implementing partners, to create a variable that indicates which project a community received: CDC health, VDC health, CDC education, VDC education. A total of 73 (182) out of 280 CDC projects were in the health (education) sector. And in total, 98 (258) out of 479 VDC projects were in the health (education) sector.⁶⁶

Table 46 presents the results. Again, the column “*Tuungane Base*” presents the study’s main results as a reference. The top row in **Table 46** indicates the number of villages in each subgroup. The results presented are thus outcomes in villages that received a specific type of project compared to the control group. In other words, the column related to “Health” and “CDC” compares outcomes in the communities that received a CDC project in the health sector, to outcomes in communities that did not receive the *Tuungane 1* program.

It is important to keep in mind that in this section we cannot make causal claims in the same way as in the rest of the report. A positive correlation between having a *Tuungane 1* health project and better health outcomes might not be causal since although *Tuungane 1* was randomly assigned, the choice of health project was not. For example, it is possible that health facilities are chosen in those areas where health outcomes are particularly bad.

We first explore the association between *Tuungane 1* projects in the health sector and this study’s outcome measures. We find five results that we would like to highlight. First, we find that particularly CDC health projects are positively associated with building quality, capacity, administration and the presence of material and supplies in the health sector.

Second, VDC health projects are negatively associated with community participation in the health sector. And CDC health projects are negatively associated with community participation in the education sector. The latter is statistically significant at the 95% confidence level using a two-tailed test. The first is significant at the 95% level only for a one-tailed test.

Third, we find that the CDC health project is associated with fewer materials and supplies in schools. This result is only significant at the 95% significance level using a one-tailed test.

Fourth, we do not find an association between health projects and health outcomes. One explanation for this result could be that health projects (rather than other projects) were chosen by communities with very bad health outcomes in the first place.

Finally, we find a negative association between the VDC health projects and the economic welfare of Congolese households. This result, however, is significant at the 95% significance level only when using a one-tailed test.

Next we look at the role of *Tuungane 1*’s CDC and VDC education projects. The last two columns in **Table 46** present the results. We would like to highlight three results in particular. First, we find little association between *Tuungane 1* education projects (CDC and VDC) and service provision outcomes in the education sector, except for a negative correlation between VDC health and material and supplies. There is no positive association between the projects and outcomes like building quality, capacity or supplies as we found in the health sector for *Tuungane 1*’s health projects.

Second, we find that education-related projects, specifically VDC projects, are positively associated with service provision in the health sector, and specifically with building quality and material and supplies.

Third, we find evidence that the VDC education projects are negatively associated with health outcomes, and that CDC education projects are negatively related to education outcomes. Both results, however, are statistically

⁶⁶ In total, 1,250 VDC projects were implemented. We collected data only in a (randomly selected) subset of 479 communities. *Final Report of the Tuungane 1 (2007-2011) Program Impact Evaluation*

significant at the 95% confidence level only when using one-tailed tests (when using two-tailed tests these results are significant only at the 90% level). Again, do keep in mind that one explanation for this result could be that CDC school projects (rather than other projects) were chosen by communities with very bad education outcomes in the first place.

Table 46: Heterogeneous impact by type of project

Outcome	Tuungane Base	Health		Education	
		CDC N=73	VDC N=182	CDC N=98	VDC N=258
<i>Service Provision: health</i>					
Building	0.16** (0.09)	0.34*** (0.12)	0.17* (0.13)	0.08 (0.10)	0.19** (0.10)
Capacity	-0.03 (0.09)	0.22** (0.13)	-0.22 (0.20)	-0.08 (0.11)	-0.10 (0.11)
Material and Supplies	0.21** (0.10)	0.43*** (0.13)	0.12 (0.19)	0.16* (0.12)	0.21** (0.11)
Staff Quality	0.02 (0.09)	0.08 (0.12)	-0.25* (0.16)	-0.02 (0.10)	-0.10 (0.11)
Administration	0.06 (0.08)	0.15* (0.11)	-0.03 (0.15)	0.03 (0.09)	0.10 (0.09)
Community Participation	-0.07 (0.08)	-0.13 (0.11)	-0.25** (0.12)	0.00 (0.10)	-0.08 (0.09)
Costs and Usage	0.01 (0.11)	0.31 (0.28)	-0.21* (0.15)	-0.09 (0.10)	-0.06 (0.10)
<i>Service provision: education</i>					
Building	0.16** (0.08)	0.19* (0.12)	0.12 (0.14)	0.11 (0.09)	0.05 (0.10)
Capacity	0.06 (0.07)	-0.07 (0.10)	0.08 (0.15)	0.03 (0.08)	0.08 (0.08)
Material and Supplies	-0.07 (0.08)	-0.18** (0.11)	-0.11 (0.15)	-0.02 (0.10)	-0.18** (0.10)
Staff Quality	0.05 (0.08)	0.03 (0.12)	0.00 (0.16)	0.01 (0.09)	0.05 (0.09)
Administration	-0.09 (0.08)	-0.06 (0.13)	-0.09 (0.16)	-0.12 (0.10)	-0.05 (0.09)
Community Participation	-0.15** (0.08)	-0.30*** (0.12)	-0.14 (0.21)	-0.08 (0.10)	-0.11 (0.11)
Costs and Usage	-0.01 (0.09)	-0.16 (0.14)	-0.07 (0.16)	-0.02 (0.10)	0.00 (0.10)
<i>Health, education, economic welfare</i>					
Health	0.03 (0.05)	0.06 (0.07)	-0.09 (0.11)	-0.02 (0.06)	-0.11** (0.06)
Education	-0.05 (0.04)	-0.08 (0.07)	-0.05 (0.08)	-0.10** (0.05)	-0.02 (0.06)
Wealth	-0.09* (0.06)	-0.10 (0.09)	-0.16** (0.09)	-0.08 (0.06)	-0.03 (0.06)

Notes: Project type information based on data from the implementing partner. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

9.10 Exposure to the Tuungane program

In this study we explore the impact of the first phase of the Tuungane program, which was implemented between 2007 and 2011. Between this first phase and our data collection in 2015, a second phase of Tuungane took place.

This second phase of *Tuungane* was carried out between 2011 and 2014. Importantly, and in contrast to the program's first phase, communities were not randomly assigned to treatment for this second phase, which was implemented in a subset of both treatment and control communities of the program's first phase.

Importantly, a community's treatment status during the first phase had no impact on the community's treatment status for the second phase. We show this in the report related to impact evaluation of the second phase of *Tuungane* (Laudati et al, 2018).

The second phase of the program has an impact on the interpretation of the results in this study, however. The results presented in this study should be interpreted as the results of *Tuungane 1*, after which another large development program has taken place in a subset of communities.

In **Table 47**, we present the results from comparing communities that received only the first phase of *Tuungane* to pure control communities (third column), and comparing communities that received both phases of *Tuungane* to pure control communities (fourth column). We find that the positive results of the *Tuungane 1* program seem to be largely driven by those communities that did not receive the second phase of the *Tuungane* program. Furthermore, *Tuungane* has a negative impact on economic welfare for those communities that received both phases of the program.

Table 47: Exposure to *Tuungane* program

Outcome	<i>Tuungane</i> Base	T1 & No T2 N=518	T1 & Received T2 N=263
<i>Service provision: health</i>			
Building	0.16** (0.09)	0.28*** (0.11)	-0.06 (0.09)
Capacity	-0.03 (0.09)	0 (0.11)	-0.1 (0.15)
Material and Supplies	0.21** (0.10)	0.31*** (0.13)	0 (0.13)
Staff Quality	0.02 (0.09)	0.12 (0.11)	-0.17 (0.13)
Administration	0.06 (0.08)	0.08 (0.11)	0.03 (0.12)
Community Participation	-0.07 (0.08)	-0.09 (0.11)	-0.05 (0.12)
Costs and Usage	0.01 (0.11)	0.05 (0.15)	-0.08 (0.13)
<i>Service provision: education</i>			
Building	0.16** (0.08)	0.25*** (0.10)	0 (0.11)
Capacity	0.06 (0.07)	0.13* (0.09)	-0.09 (0.10)
Material and Supplies	-0.07 (0.08)	-0.08 (0.10)	-0.04 (0.14)
Staff Quality	0.05 (0.08)	0.07 (0.10)	0.01 (0.11)
Administration	-0.09 (0.08)	-0.05 (0.11)	-0.15 (0.12)
Community Participation	-0.15** (0.08)	-0.14* (0.10)	-0.17 (0.14)
Costs and Usage	-0.01	-0.1	0.17

	(0.09)	(0.10)	(0.16)
<i>Health, education, economic welfare</i>			
Health	0.03 (0.05)	0.01 (0.07)	0.06 (0.08)
Education	-0.05 (0.04)	-0.02 (0.05)	-0.09* (0.07)
Wealth	-0.09* (0.06)	-0.03 (0.07)	-0.21*** (0.09)

Notes: Project type information based on data from the implementing partner. *** (**) [*] indicates significance at the 99% (95%) [90%] level. Based on one-tailed tests. Standard errors clustered at the CDC level.

9.11 List of qualitative villages visited

Table 48 to **Table 50** shows the list of villages visited by the qualitative team denoted by location, sector and project type along with, when provided, IRC field staff's overall assessment of the project's success. It denotes only those sectors for which the projects were constructed in the immediate vicinity of the listed village and which villagers identified during the course of our field visit to the area. For example, in [village 20] three primary level classrooms plus four toilets were built with *Tuungane 1* funds at the VDC level while an additional six secondary level classrooms along with five toilets were built at the CDC level. This village also benefited from T2 funding with a health center at the CDC level in neighboring village. The village also received RAPID funding which it used to help construct a road while it also received T2+ funding. The table does not include projects that were constructed in other villages. In the case of [village 20], we thus list education as the only project sector for the village, since the health center was built in another area and was mentioned only briefly by the chief and never by villagers, despite open ended inquiries about changes brought to the village and projects implemented in the area. Likewise, we do not list projects for which funds never arrived. In [another village] for example, communities had begun digging a foundation for a *Tuungane 2* promised health center that was never completed due to the arrival of Mai-Mai in the area and the subsequent insecurity and displacement of the population.

Table 48: Selection qualitative villages: South Kivu

#	Territory	Village	Sector	Program	Score
1	Mwenga	[village 1]	Health	T2	Positive
2	Mwenga	[village 2]	Watsan	T1	Negative
3	Mwenga	[village 3]	Education	T1 & T2	Positive
4	Mwenga	[village 4]	Health	T1 & T2	Negative
5	Mwenga	[village 5]	Education	T2	Positive
6	Mwenga	[village 6]	Education	T2	Positive
7	Walungu	[village 7]	Education	T1 & T2	Negative
8	Walungu	[village 8]	Education	T2	Positive
9	Walungu	[village 9]	Education	T1 & T2	Negative
10	Walungu	[village 10]	Health	T2	Positive
11	Walungu	[village 11]	Health	T1 & T2	Positive
12	Walungu	[village 12]	Transport	T1	Negative
13	Walungu	[village 13]	Education	T1	Negative
14	Walungu	[village 14]	Education & Health	T1 & T2	Positive
15	Kalehe	[village 15]	Watsan & Transport	T1 & T2	Positive
16	Kalehe	[village 16]	Education	T2	Positive
17	Kalehe	[village 17]	Education	T2	Negative
18	Kalehe	[village 18]	Market & Health	T1 & T2	Positive
19	Kalehe	[village 19]	Market	T2	Negative
20	Kalehe	[village 20]	Education	T1 & T2	Negative
21	Kalehe	[village 21]	Non <i>Tuungane</i>	Non <i>Tuungane</i>	NA
22	Kalehe	[village 22]	Health	T2	Positive
23	Kalehe	[village 23]	Market	T1 & T2	Negative
24	Uvira	[village 24]	Education	T1	Positive
25	Uvira	[village 25]	Transport	T1	Positive
26	Uvira	[village 26]	Health	T1	Negative

27	Uvira	[village 27]	Education	T1	NA
28	Uvira	[village 28]	Education	T1	Negative

Table 49: Selection qualitative villages: Tanganyika

#	Territory	Village	Sector	Program	Score
29	Kalemie	[village 29]	Health & Market	T1& T2	Negative
30	Kalemie	[village 30]	Health	T1 & T2	Positive
31	Kalemie	[village 31]	Water	T1 & T2	Positive
32	Kalemie	[village 32]	Health	T2	Positive
33	Kalemie	[village 33]	Education	T2	Negative
34	Kongolo	[village 34]	Education	T2	Negative
35	Kongolo	[village 35]	Education & Health	T1 & T2	Negative
36	Kongolo	[village 36]	Education	T2	Positive
37	Kongolo	[village 37]	Education	T1 & T2	Positive
38	Kongolo	[village 38]	Education	T1 & T2	Positive
39	Kabalo	[village 39]	Education	T2	Positive
40	Kabalo	[village 40]	Education	T1	Negative
41	Kabalo	[village 41]	Health & Education	T1	
42	Kabalo	[village 42]	Health & Education	T1 & T2	Positive

Table 50: Selection qualitative villages: Haut Katanga

#	Territory	Village	Sector	Program	Score
43	Kasenga	[village 43]	Watsan	T2	Positive
44	Kasenga	[village 44]	Education	T1 & T2	NA
45	Kasenga	[village 45]	Education	T1 & T2	Positive
46	Kasenga	[village 46]	Education	T2	Negative
47	Kasenga	[village 47]	Education	T2	Negative
48	Kasenga	[village 48]	Education	T2	Positive
49	Kasenga	[village 49]	Education	T2	Positive
50	Kasenga	[village 50]	Education	T2	Positive
51	Kipushi	[village 51]	Watsan	T2	Positive
52	Kipushi	[village 52]	Watsan & Market	T1 & T2	Positive
53	Kipushi	[village 53]	Mill & Watsan	T1 & T2	Negative
54	Kipushi	[village 54]	Watsan	T2	Positive
55	Kipushi	[village 55]	Mill & Watsan	T1 & T2	Positive
56	Kipushi	[village 56]	Mill & Watsan & Education	T1 & T2	Positive
57	Kipushi	[village 57]	Education	T1 & T2	Positive
58	Mitwaba	[village 58]	Education	T1	Positive
59	Mitwaba	[village 59]	Education	T1	Negative
60	Mitwaba	[village 60]	Education	T1	Negative

61	Mitwaba	[village 61]	Education & Market & Watsan	T1 & T2	Negative
62	Mitwaba	[village 62]	Health	T1	Negative
63	Kambove	[village 63]	Watsan & Health	T1	Negative
64	Kambove	[village 64]	Watsan	T1 & T2	Positive
65	Kambove	[village 65]	Health & Watsan	T1 & T2	Negative
66	Kambove	[village 66]	<i>Non Tuungane</i>	<i>Non Tuungane</i>	<i>Non Tuungane</i>
67	Kambove	[village 67]	Education	T1 & T2	Negative
68	Kambove	[village 68]	Health & Education	T1	Positive
69	Kambove	[village 69]	Education	T2	NA