FSG REIMAGINING SOCIAL CHANGE

Willingness to Pay for Sanitation Products in Rural Ethiopia

Final report on door-to-door auction results

May 2025

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Cover Photo Credit:	Door-to-door auction of sanitation products, Sodo Zuriya, Ethiopia (FSG)

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ACRONYMS AND ABBREVIATIONS

BDM	Becker-DeGroot-Marschak
CBHI	Community-based Health Insurance
D2D	Door-to-Door
DHS	Demographic and Health Survey
ETB	Ethiopian Birr
GoE	Government of Ethiopia
MBS	Market-based Sanitation
MP	Market Price
NSSP	National Sanitation Subsidy Protocol
OD	Open Defecation
OWNP	ONE WASH National Programme
PSNP	Productive Safety Net Program
SNNPR	Southern Nations, Nationalities and Peoples Region
T/WASH	USAID/Ethiopia Transform WASH
USAID	United States Agency for International Development
USD	United States Dollars
VAT	Value-added Tax
WASHPaLS #2	Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability #2
WTP	Willingness to Pay

GLOSSARY OF TERMS

Term	Definition
Basic sanitation	Improved toilets (see below) which are used by a single household.
Becker-DeGroot-Marschak (BDM) auction methodology	A method for determining an individual's willingness to pay (WTP) for a product in which individuals make a monetary bid for the product, "winning" if their "bid price" is equal to or above a randomly chosen "draw price". Winning individuals pay the "draw price," not their "bid price." The bid price is considered the WTP for both winners and losers of the auction. BDM auctions are considered incentive-compatible, meaning that people are encouraged to bid their true value for the product.
Demand curve	A line graph depicting the relationship between quantity demanded and price with quantity demanded on the x-axis and price on the y-axis. Typically, the curve slopes downwards, i.e., an increase in price lowers demand.
Improved toilet	A sanitation facility that is designed to separate excreta from human contact hygienically (WHO/UNICEF JMP, n.d.).
Kebele	Fourth level (and smallest) administrative unit in Ethiopia.
Market-based sanitation (MBS)	The development of a sanitation market in which the user makes a full or partial monetary contribution (with savings and/or cash equivalents) to purchase, construct, upgrade, and/or maintain a toilet from the private sector. Such an approach also strengthens the private sector's resilience, sustainability, and capability. This definition builds on the definitions of "Sanitation Marketing," i.e., strengthening supply by building the capacity of the private sector by layering a monetary payment by the user.
National Sanitation Subsidy Protocol (NSSP)	Document containing Government of Ethiopia's guiding principles and implementation modalities for the provision of sanitation subsidies. Under the NSSP, subsidies can only be introduced in woredas (administrative unit, see below) with at least 50 percent basic sanitation coverage. Within eligible woredas, only households enrolled in existing poverty alleviation programs (e.g., Productive Safety Net Program) can avail sanitation subsidies. These criteria are relaxed in exceptional cases, e.g., in pastoralist regions like Somali and Afar.
Price elasticity of demand	The ratio between proportional change in quantity demanded and proportional change in price (see Oxford University Press). In this study, it refers to the change in percentage of households willing to pay for basic sanitation with a change in the price of these toilets. Price elasticity is represented by the slope of the demand curve.
Regional state	First level of administrative unit in Ethiopia. A regional state is made up of multiple Zones (see below).
Toilet interface	The part of the toilet that the user comes in contact with during defecation; it can include toilets, pans, or urinals to collect the waste, and wet or dry flushing and cleansing mechanism (Agarwal, Khanna, Mukerji, & Abrao, 2023); refer to Table 1 of this report for a list of interface products included in the Ethiopia WTP study.
Woreda	Third level of administrative unit in Ethiopia. Woredas are made up of multiple Kebeles (see above)
Zone	Second level of administrative unit in Ethiopia. A Zone consists of multiple woredas (see above).

EXECUTIVE SUMMARY

Despite a steep decline in rural open defecation (OD) rates in Ethiopia, only 7 percent of rural households had access to basic sanitation in 2019, with the **unaffordability of improved toilets** a key barrier. Recognizing this, Phase II of the Government of Ethiopia's (GoE) ONE WASH National Programme acknowledges the need to subsidize sanitation and complement market-based sanitation (MBS). Data on willingness to pay for basic sanitation is a key input for the design of effective subsidy policies and MBS interventions.

With this in mind, FSG and USAID/Ethiopia Transform WASH (T/WASH) partnered to **conduct a willingness-to-pay (WTP) study** of T/WASH's sanitation products in November and December 2023.

FSG and T/WASH used the Becker-DeGroot-Marschak (BDM) auction methodology to ascertain the price elasticity for toilet interface products (an interface upgrade and a new interface, both incorporating a SaTo pan and including installation). **The auctions were conducted with rural homeowners in need of improved toilets** (i.e., those with unimproved toilets and those practicing OD) in five T/WASH program regions—Oromia, Somali, Sidama, Central Ethiopia Regional State, and South Ethiopia Regional State.

The team analyzed the study results and created demand curves for each of three rural markets with differing products, prices, and context: (1) **upgrades** in all regions except Somali and Afar (referred to in this report as Ethiopia*), (2) **new toilets** in Ethiopia*, and (3) **new toilets** in **Somali and Afar** (referred to in this report as Somali + Afar).[1] Together, these three curves are representative of all target households, comprising 84 percent of Ethiopia's rural households.

KEY FINDINGS

1. As much as *three-quarters of rural households in Ethiopia* appeared unwilling to pay more than 40–50 percent of the current market price* for a basic sanitation product. In fact, only 23 percent were willing to pay the market price for an upgrade and 11 percent for a new toilet.

2. *Despite WTP increasing with affluence, even the top 20 percent of households by wealth are largely unwilling to pay the market price. Yet, affluence is an important driver of WTP of rural households in Ethiopia**, e.g., only a tenth of households from the two lower wealth quintiles (Bottom 40 percent) were willing to pay the market price for upgrades, but this increased to a quarter of households in the middle two wealth quintiles (Middle 40 percent) and a third of households in the upper wealth quintile (Top 20 percent).

3. *WTP is positively correlated with a household's estimate of the market price of toilet products in Ethiopia**. Rural households that believed the market price was equal to or higher than the actual market cost were more likely to express a WTP equal to or exceeding the market price. This relationship was relatively weaker for the Bottom 40

[1] The Somali region's context differs from other study regions in terms of the customer profile (i.e., most households are pastoralist) and materials and labor costs are higher in Somali. Therefore, Somali is analyzed separately and represents the Somali and Afar regions (i.e., Somali + Afar), while the other four regions represent the rest of Ethiopia (i.e., Ethiopia*).

percent, indicating that less affluent households may be constrained by their ability to pay.

4. *Most households with unimproved toilets in Ethiopia* desire new toilets*, but may opt to improve their existing toilets when informed of the benefits and the relatively lower cost of upgrade products.

5. *More than half of rural households in Somali + Afar appeared willing to pay the market price or more* for a new toilet, despite 94 percent being from the Bottom 40 percent. Potential reasons include strong preference for well-built toilets among households, higher knowledge of material and labor costs compared to other regions, misclassification of households into lower wealth groups due to discounting of livestock assets, and households' access to informal finance networks.

HIGH-LEVEL IMPLICATIONS AND RECOMMENDATIONS

FSG identified four implications for the GoE and MBS programs based on estimates of the maximum potential increase in basic sanitation coverage through current market conditions and provision of subsidies as per the GoE's current National Sanitation Subsidy Protocol (NSSP).

1. Relying on current market conditions will have limited impact on increasing basic sanitation coverage. Together, *current market conditions and subsidies might add at most 23-25 percent to basic sanitation coverage in Ethiopia**—the range represents a critical uncertainty of households' choice between installation of the cheaper upgrade interface and the new toilet interface. A sizeable share of households face exclusion as they are unwilling to pay market prices and are ineligible under current NSSP guidelines.

2. MBS interventions targeted at households not willing to pay current market prices could help increase basic sanitation coverage through two strategies:

    a. *Emphasize price awareness in existing sales and marketing activities*, as WTP appears to be positively correlated with price awareness. Also, knowing the prices of upgrades and new toilets can convince those with unimproved toilets to opt for cheaper upgrades.

    b. *Reduce product costs (e.g., through product design, delivery model innovations)* to lower the price and capture the WTP of more households. A 25 percent reduction in price of upgrades and new toilets could add another 5-7 percent to basic sanitation coverage in Ethiopia*. Reducing product costs can also help reduce the subsidy burden.

3. *Revisiting the subsidy eligibility criteria for Ethiopia*, possibly alongside reducing or tiering levels of subsidy households are entitled to, could increase coverage* by extending subsidies to more of the least affluent households. Currently, many rural households would not qualify for subsidies, as only households in woredas (administrative units) with at least 50 percent basic sanitation coverage are eligible to receive subsidies. Even if this condition were removed, just over a fifth of households from the Bottom 40 percent, arguably amongst the most vulnerable, are enrolled in an existing poverty alleviation program required to qualify for subsidies.

4. *In Somali + Afar, current market conditions and the NSSP together could help all target households access basic sanitation*. This is driven by two factors: (1) more than half the target households in these regions are willing to pay the market price; and (2) the NSSP permits relaxing the woreda and household eligibility criteria for pastoralist regions; presumably all households unwilling to pay the current market price in Somali + Afar could qualify for full subsidies.

Different strategies are needed to increase basic sanitation coverage in Ethiopia* compared to Somali + Afar. In Ethiopia*, where most rural households are unwilling to pay current market prices, MBS interventions should focus on increasing price awareness, promoting low-cost upgrades, and reducing product prices. In Somali + Afar, where most households are willing to pay market prices, MBS interventions should focus on ensuring access to toilet construction materials and labor. The GoE can support MBS efforts and revisit the NSSP criteria to ensure vulnerable households can access subsidies.

1.0 INTRODUCTION AND OBJECTIVES

Ethiopia has made significant strides in reducing open defecation (OD) over the last two decades with national OD rates falling from 82 percent in 2000 to 27 percent in 2019 (Central Statistical Authority [Ethiopia] and ORC Marco, 2001; Ethiopian Public Health Institute and ICF, 2021), including from 92 percent to 35 percent in rural areas—the fastest rate of reduction in the world (Ethiopia Ministry of Health 2021). However, most of the gains made in this period came from unimproved toilets, especially in rural areas where 56 percent of households use unimproved toilets, and only 7 percent have access to basic sanitation. To remedy this, the Government of Ethiopia (GoE) has set a target of achieving 60 percent basic sanitation[2] coverage (rural and urban) by 2025 (Ethiopian Public Health Institute and ICF, 2021; Ministry of Health - Ethiopia, 2021).

The prevalence of unimproved toilets can, in part, be attributed to the inability of households to afford available basic sanitation products. Experience from the United States Agency for International Development (USAID)/Ethiopia Transform WASH (T/WASH) activity suggests many Ethiopian households cannot afford basic sanitation products. As a result, most rural households build their toilets on their own, typically using locally available materials such as wood and mud, without the support of trained artisans, often resulting in poor-quality non-durable toilets (Osterwalder, 2019).

Phase II of the GoE ONE WASH National Programme (OWNP)[3] acknowledges the need to subsidize sanitation and complement market-based sanitation (MBS). An understanding of how much Ethiopian households are willing to pay for basic sanitation is a critical input to design effective subsidy policies and MBS interventions.

In 2019, as part of the USAID Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) Activity, FSG partnered with T/WASH to assess the potential impact of tax exemptions on demand for sanitation products. This work included conducting a willingness-to-pay (WTP) study. However, prevailing circumstances at the time necessitated estimating a demand curve synthesized from secondary data instead (see Tax Exemptions: A Catalyst for Demand and Supply of Plastic Sanitation Products).[4] Appreciating the utility of the synthetic curve for the assessment and other applications, the Ethiopia Federal Ministry of Health and other stakeholders were keen to have a demand curve based on primary data. As a result, in November and December 2023, FSG and T/WASH conducted a WTP study to ascertain the price elasticity of demand for sanitation products in rural Ethiopia.

The primary objective of the study was to develop national demand curves for rural sanitation products which could: (1) help the GoE, donors, and implementers develop sanitation subsidy programs and MBS programs; (2) inform the GoE on policy interventions such as tax

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2 As per the WHO/UNICEF Join Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), improved sanitation facilities are those designed to hygienically separate excreta from human contact. Basic sanitation refers to the use of improved facilities which are not shared with other households; limited sanitation refers to use of improved facilities shared between two or more households; and unimproved sanitation refers to use of pit toilets without a slab or platform, hanging toilets or bucket toilets (WHO/UNICEF JMP, n.d.).

3 The OWNP is a sector-wide approach that brings together ministries, development partners, academia, and civil society organizations to a common goal of one plan, one budget, and one report. Phase I of OWNP was implemented from 2013 to 2017 and Phase 11 from 2018 to 2020.

4 Primary data collection was not possible due to COVID-19. As secondary data on household WTP for sanitation was not available, FSG generated a “synthetic” demand curve by contextualizing data from Kenya.

exemptions; and (3) help the private sector develop and refine sanitation products at different price points for the rural market.

To assess WTP, FSG and T/WASH used the Becker-DeGroot-Marschak (BDM) auction method. The BDM auction method has been used to develop sanitation demand curves in rural contexts of multiple developing countries, including Kenya (Peletz, et al., 2019) and Cambodia (Shah, Shirrell, Fraker, Wang, & Wang, 2013). In a BDM auction, individuals make a monetary bid for a product, "winning" it if their "bid price" is equal to or above a randomly chosen "draw price" hidden in a folded chit or inside an envelope. Winning individuals pay the "draw price," not their "bid price," and both prices are recorded in the survey.

Conventionally, auctions for sanitation products have been conducted through door-to-door (D2D) surveys. In such surveys, the auction itself is preceded by a screening interview[5] and a demonstration of how the auction will work. The screening interview allows researchers to identify an eligible sample of households for the auctions, and the auction demonstration familiarizes potential participants with the auction process. Additionally, potential participants can use the time between screening and auction (three to five days) to consider their bid and prepare funds should they win.

However, D2D surveys can be time-consuming and expensive. Conducting auctions at a common location where households gather (e.g., marketplace, hardware store) is an alternative approach with the potential to save time and costs. Therefore, a secondary objective of the WTP study was to compare the relative effectiveness and efficiency of D2D and marketplace-based settings for the auction to help sanitation programs, researchers, and funders/donors plan WTP studies in a cost-effective manner.

This report focuses on the findings of the D2D survey, which was the primary setting for the study. The findings from the comparison of the D2D and marketplace surveys are captured in a separate technical supplement. This report is structured as follows:

- Section 2 summarizes the research methods, including the study design, analysis frame, and limitations of the study.
- Section 3 presents the key findings.
- Section 4 outlines the high-level implications of these findings for GoE's subsidy policies, MBS program donors, and implementers.

[5] In screening interviews, researchers collect data on key respondent characteristics that help determine respondents' eligibility to participate in the main study, the auction. From the eligible households, researchers can draw a stratified random sample for the main study, ensuring representation of households with specific characteristics of interest (e.g., wealth quintile).

2.0 RESEARCH METHODS

2.1 STUDY OVERVIEW

FSG and T/WASH used the BDM auction methodology to determine how much rural Ethiopians are willing to pay for basic sanitation products. The team conducted auctions in five T/WASH program regions, targeting rural homeowners in need of improved toilets, i.e., those with existing unimproved toilets and those practicing OD (see Sections 2.1.1 and 2.1.2). To cater to the differing sanitation needs of these households, two products offered by the T/WASH program were auctioned—an interface upgrade and a new toilet interface (see Section 2.1.3 and Table 1). Both products incorporate a SaTo Pan and include installation.[6] In line with MBS guidance, the study was conducted during the harvest season, during and immediately after which households typically have more funds available for discretionary and major purchases compared to the rest of the year (UNICEF, 2020).

FSG took several measures to ensure the validity and fairness of the auction process, including explaining auction rules and conducting a demonstration auction to ensure informed participation, withholding information on market prices to not bias bids, and dropping households whose bids were not reflective of their genuine WTP (see Section 2.1.4). The team analyzed the resultant data and created three demand curves representing three markets with differing products, prices, and customer behavior: (1) upgrades in all regions except Somali and Afar, (2) new toilets in all regions except Somali and Afar, and (3) new toilets in Somali and Afar regions. Together, these three curves can be used to represent the demand behavior of homeowners without improved sanitation in rural Ethiopia. Where possible, the team further disaggregated the demand curves by wealth quintile to determine the impact of affluence on WTP (see Section 2.1.6).

2.1.1 TARGET MARKET

FSG and T/WASH targeted rural homeowners with individual unimproved toilets and those practicing OD, representing 84 percent of Ethiopia's rural households. The remaining 16 percent were not included in this study (referred to as *'non-target households'* in this report; see Box 1) because they

- **Live in rented homes,** as tenants typically do not have the agency and willingness to invest in improvements to a rental house;
- **Have improved toilets,** as they have attained the desired sanitation status; and
- **Share toilets,** as distinguishing WTP of individual versus collective households is challenging.

[6] Details of the SaTo pan can be found at https://preprod.sato.lixil.com/product/sato-103/.

Box 1: Key Definitions

- **Target households:** Households included in the study sample, i.e., homeowners who lack improved sanitation. In this report, calculations on the potential impact of WTP on sanitation coverage is based only on data from target households.
- **Non-target households:** Households excluded from the WTP study, i.e., tenants, and households with shared toilets or improved access. In this report, calculations on the potential impact of WTP on sanitation coverage excludes non-target households.
- **Unserved households:** Households with measured WTP below the current market price and who are not eligible for subsidies as per the GoE's National Sanitation Subsidy Protocol (NSSP).

2.1.2 STUDY GEOGRAPHY

The five T/WASH program regions included in the study—Oromia, Somali, Sidama, Central Ethiopia Regional State, and South Ethiopia Regional State—account for 71 percent of the target households in Ethiopia (Figure 1). Of these, Oromia has the largest share of target households (44 percent), and Somali has the lowest share (6 percent). Initially, the research team planned to include two other regions (Amhara and Tigray), which account for another 27 percent of the target households, but security considerations prevented their inclusion. The team did not consider the other regions in Ethiopia, as together they account for only two percent of the target households.

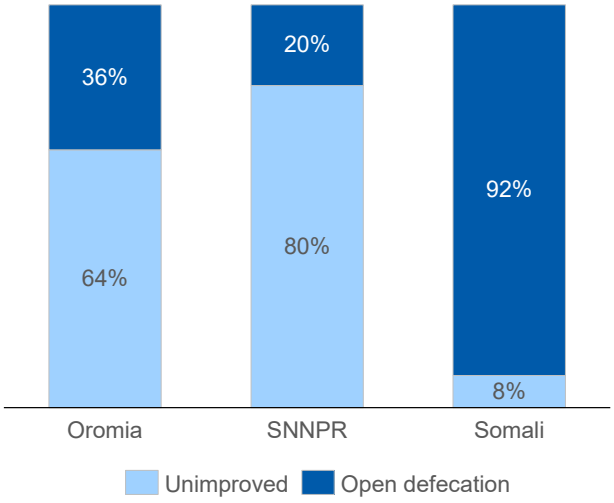
Of the five study regions, Central Ethiopia Regional State, South Ethiopia Regional State, and Sidama emerged from the erstwhile Southern Nation, Nationalities and Peoples Region (SNNPR) between 2020 and 2023. However, national-level data on these new regions is unavailable as the most recent national-level datasets are dated before 2020 (e.g., Ethiopia Mini Demographic and Health Survey, 2019 [DHS-19]). To extrapolate the results using national datasets properly, the research team analyzed these three regions together and used the nomenclature SNNPR throughout the study.[7]

[7] A fourth region—Southwest Ethiopia Regional State—was also formed from the erstwhile SNNPR but was not included in the study.

Figure 1: Ethiopia WTP Study Regions

While most target households in Oromia and SNNPR have pit latrines, one-third of target households in Oromia and one-fifth in SNNPR practice open defecation (OD). In Somali, nearly all households practice OD, with only 8 percent of households having a pit latrine (Figure 2). For the D2D survey, we classified pit latrines as unimproved if a slab/platform was either missing, not fully covering the pit, or constructed with logs and covered with mud. Only a few households in the study area were found to have pit latrines with intact concrete slabs and classified as improved.[8] These households are considered as non-target households and are excluded from the WTP study.

Figure 2: Sanitation Profile of Target Households in Research Regions



Within the study regions, the team selected 20 woredas—the research woredas—adjacent to T/WASH-intervention-woredas based on two criteria (see Annex IV for the list of research woredas and kebeles):

[8] In line with the guidance provided by the WHO/UNICEF JMP: https://washdata.org/reports/jmp-2018-core-questions-household-surveys

i. **Low price awareness:** To assess WTP, FSG and T/WASH asked households to bid for a toilet that suits their needs (see Sections 2.1.3 and 2.1.4). Knowledge of the market prices of improved toilets, which is highly likely in T/WASH intervention woredas, could have anchored and biased households' bids. For instance, customers could have bid low if they believed the study would influence current prices for existing products or set prices for new products. To avoid this, the team selected non-T/WASH intervention woredas, where product and price awareness would likely be low.

ii. **Product accessibility:** Well-established supply chains were needed to ensure households with winning bids received a toilet. Further, a mason's presence was necessary at the auction to collect payments from winners and, thereafter, install the sanitation product. Masons from T/WASH intervention woredas could fulfill this role as they are trained to construct the toilets properly. Therefore, the selection focused on woredas within easy reach of T/WASH woredas to ease logistics and associated costs for the masons.

2.1.3 PRODUCTS AUCTIONED

FSG and T/WASH included two product categories in the study—an interface upgrade ("*upgrade*") and a new toilet interface ("*new toilet*"). Installation was included in the auctioned product offer. As households in Somali prefer to maintain more distance between themselves and the toilet pan, a separate upgrade product, with a raised squatting platform, was offered to them. The new toilet product was the same in all study regions, though some households in Somali may have opted to raise the footrests of the new toilet at an additional cost post installation. The three products were as follows (see images in Table 1):

1. **Concrete skirting with SaTo pan** (upgrade option for Oromia and SNNPR): A SaTo pan installed in an existing solid wooden/dirt floor and surrounded with 1 square meter of concrete plaster.
2. **Lowland SaTo retrofit** (upgrade option for Somali): A SaTo pan installed in an existing solid wooden/dirt floor after improving the floor with concrete plastering and raised footrests.
3. **Concrete slab with SaTo pan** (new toilet option for all study regions): A circular reinforced concrete slab measuring 1.2 meters in diameter and 5 cm in thickness, with a SaTo set into it.

The prices for these toilet products, including installation, varied among regions owing to different material and labor costs (see Table 1).

Table 1: Products Auctioned as Part of the WTP Study

Upgrade				New Toilet	
					
Concrete skirting with SaTo pan		***Lowland SaTo retrofit***		***Concrete slab with SaTo pan***	
Region	**Market Price**	**Region**	**Market Price**	**Region**	**Market Price**
Oromia	Ethiopian Birr (ETB) 1,500 *(United States Dollars [USD] 27)*	Somali	ETB 3,000 *(USD 54)*	Oromia	ETB 2,600 *(USD 47)*
SNNPR	ETB 1,500 *(USD 27)*			SNNPR	ETB 2,630[a] *(USD 47)*
				Somali	ETB 3,800 *(USD 68)*

Notes: a. Within SNNPR, the market price in Sidama (ETB 2,800) was higher than that in Central Ethiopia Regional State and South Ethiopia Regional State (ETB 2,500); the weighted average for the region is ETB 2,630.

2.1.4 STUDY DESIGN

The WTP study consisted of three stages, designed to ensure that only eligible households participated in the auctions and that the eligible households bid for the relevant product after understanding the product features, requirements, and the auction rules (see Figure 3).

1. **Screening:** FSG and T/WASH screened potential households to ensure they were a part of the target market, i.e., rural homeowners who use unimproved toilets or practice OD, and collected information to identify their wealth quintile to ensure adequate sub-samples of relatively less affluent households.

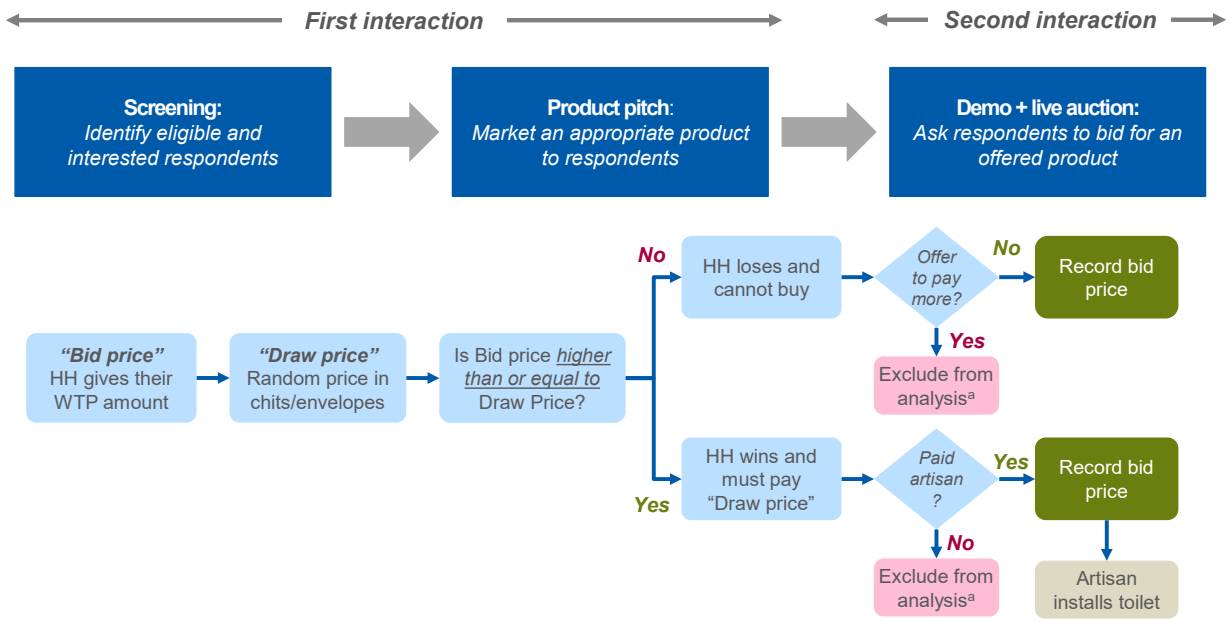
2. **Product pitch:** Each selected target household was pitched only one of the two product options to ensure their WTP was not based on a relative evaluation of the two available products. The decision on which product to pitch was based on the household's existing sanitation status. Households practicing OD were only pitched the new toilet, while households with unimproved toilets were asked to *choose the category of product—upgrade or new*—they desired (without receiving information on any product features or prices) and then pitched the relevant product. The pitch involved explaining the problems with OD or unimproved toilets and key product features, including visuals, based on the sales script and tools developed by T/WASH. The team also confirmed that households were willing to meet certain toilet installation prerequisites upon winning the auction, e.g., households practicing OD and those with unimproved toilets who opted for a new toilet would have to ensure they had a four-meter-deep pit before installation. Households not willing to meet these prerequisites were dropped. Willing households were informed of the auction rules including the need to prepare to pay a non-refundable deposit in the event they won the auction, and their consent to participate was confirmed.

3. **Demo and live auction:** To ensure households understood the auction rules, enumerators conducted a demo auction with a bar of soap prior to conducting the actual auction. Households were then asked to bid for the selected product, and their bid was recorded as their WTP irrespective of the auction result, with two exceptions. First, winning households were required to make a non-refundable deposit equivalent to the price of a SaTo pan (ETB 450) or the draw price, whichever was lower. If a household refused (or was unable) to pay the deposit, their bid was disregarded as not being reflective of their actual WTP. Similarly, if a losing household offered to revise their bid upward, their bid was disregarded. Winning households who agreed to pay the deposit were connected to a T/WASH mason to complete the transaction and schedule the toilet installation.

In the D2D survey the three stages were split across two household interactions. Screening and product pitches were carried out as part of the **screening interview**, while the **demo and live auctions** were conducted three to five days later, giving households time to consider their bids and arrange the necessary funds.

Of the 1,332 households that were available for the second D2D interaction (i.e., demo and live auctions), only two percent refused to participate or dropped out prior to the demo auction. Another one percent either declined to participate after completing the demo or were unwilling to meet the installation prerequisites.

Figure 3: WTP Study and Auction Process



Notes: a. Indicates respondent's bid value is not their 'true' willingness to pay or respondent has not understood the auction rules. Data recorded but not considered for analysis.

In seeking fairness in the auction process and validity of WTP values generated, FSG and T/WASH introduced the following features into the study design:

- **Ensuring informed participation:** The team explained the auction rules twice: once during the screening interviews and again just before conducting the auction. Households also participated in a demonstration auction where they bid for a bar of soap, which was gifted irrespective of the outcome as gratitude for their time and

participation. Following the demonstration, participants were asked "rapid-fire" questions to confirm their understanding. Lastly, the team sought consent from households at all stages—explanation, demonstration, and rapid-fire questions.

- **Minimizing gaming of the auction:** FSG and T/WASH positioned the auction as a market promotion (similar to a "*lucky draw*") to help explain the concept and to avoid respondents intending to influence current or future market prices by bidding small amounts. Additionally, households were informed that they had only one chance to bid for a toilet product. The team also illustrated the importance of bidding the maximum amount they were willing to pay through two scenarios. First, the team demonstrated how bidding very high amounts to force a win was not beneficial, as they might win at a draw price higher than their WTP. Second, the team showed that bidding too low in the hope of getting a significant discount could lead to losing the auction and missing the opportunity to buy the toilet at the draw price they were willing to pay. These messages were emphasized during both demo and live auctions.
- **Seeking fair outcomes:** The team set the maximum draw price at ETB 50 (USD 0.9) below the unrevealed market price so that winners would never pay more than the market price. The minimum draw price was set at ETB 50 and draw prices rose in increments of ETB 50. Households were also asked to bid in increments of ETB 50, ensuring greater precision in results. Upon completion of the auction, the team revealed all draw price chits to reassure households of the fairness of the auction.

2.1.5 SAMPLING APPROACH

FSG set a sample size of 1,200 completed auctions to cover the three study regions of Ethiopia. The total sample was allocated proportional to population across study regions and then further allocated to households on the basis of wealth quintile with the aim to oversample households from the two lowest wealth quintiles (the Bottom 40 percent) who were of most interest for targeted subsidies and MBS interventions to improve affordability (Table 2).

Table 2: Sampling plan for auctions by region and wealth quintile

Region	Target population[a]	Sample	Lowest	Second	Middle	Fourth	Highest
Actual distribution[b]		-	17.1%	20.1%	20.4%	20.8%	21.5%
Oromia	4,984,161	**740**	*207*	*243*	*142*	*74*	*74*
Somali	589,128	**87**	*68*	*9*	*4*	*2*	*4*
SNNPR	2,512,892	**373**	*102*	*123*	*72*	*38*	*38*
Total *(adjusted distribution[c])*	**8,086,181**	**1,200**	***31%***	***31%***	***18%***	***10%***	***10%***

Notes: a. Target population refers to the total number of homeowners without improved sanitation; b. Actual distribution refers to the distribution of households by wealth quintile in all study regions combined as per DHS-19; c. Adjusted distribution refers to the distribution of households by wealth quintile in the sampling plan after oversampling households from the two lowest wealth quintiles (i.e., the Bottom 40 percent).

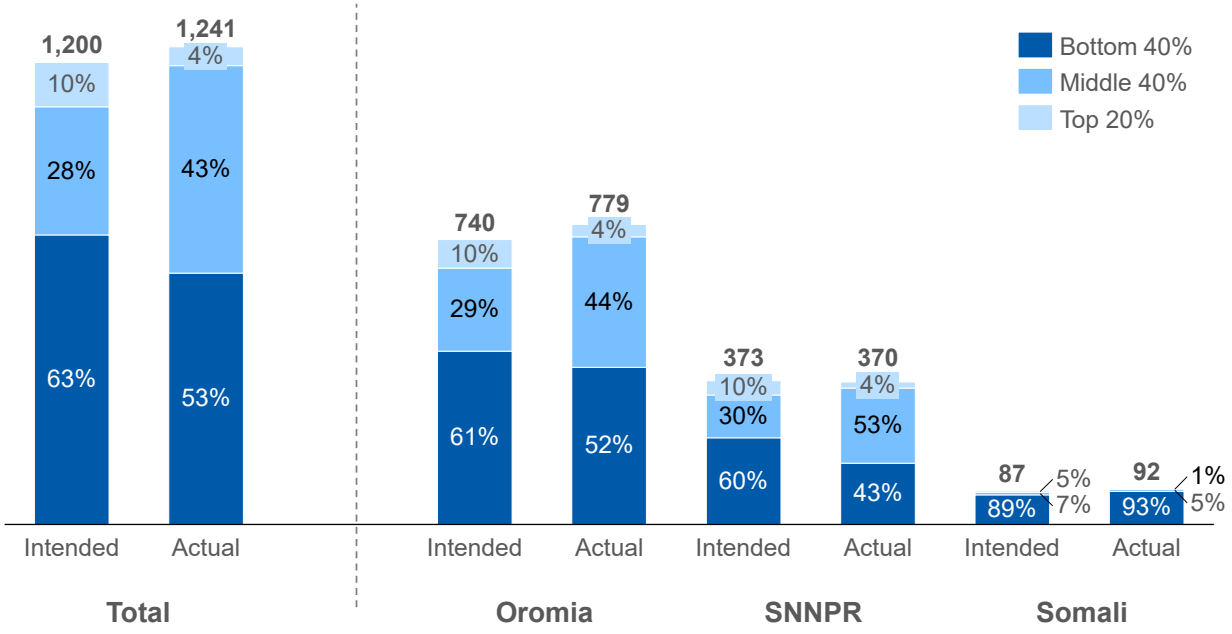
To obtain the intended sample, FSG and T/WASH followed four steps:

1. Within the *research woredas*, T/WASH liaised with local health extension workers (HEWs) to identify kebeles (the research kebeles) that were: (i) representative of the woreda they were from; and (ii) sufficiently close to markets where toilet construction materials were available.
2. Within *research kebeles*, enumerators conducted *screening interviews* following the '*random-walk*' methodology. Starting from a central location (e.g., local government office), enumerators traveled in different directions, each choosing every fourth household on the left side of the path and turning left at every intersection.
3. In *woredas with a low share of households from the Bottom 40 percent* (based on the screening data), enumerators worked with HEWs to identify pockets within the research kebeles where relatively less affluent households resided[9] and conducted additional screening interviews.
4. On completing all screening interviews in a woreda, enumerators classified households into three wealth groups. Then, randomly selected households from each wealth quintile for the auctions.

Not all screened households were eligible to participate in the auctions, and not all screened eligible households were available to participate in the auctions. FSG completed 1,702 screening interviews to obtain a sufficiently large pool of households for the auctions. From the screened households, the team conducted 1,241 complete auctions (269 for upgrades and 972 for new toilets) after data cleaning, exceeding the intended target of 1,200. The regional distribution of sampled households was largely in line with the sampling plan. However, the wealth-quintile distributions, overall and by region, were not met (see Figure 4) due to difficulties in locating households from the Bottom 40 percent. Additionally, when mapping key demographic and income characteristics of the sampled households against national datasets, the team found that the sampled households differed from the general population regarding the gender of the household head (the sample data had a larger proportion of female-headed households) and ownership of certain assets (e.g., the sample data had lower table and chair ownership).

[9] HEWs located areas where relatively less affluent households lived by identifying areas where households were enrolled in poverty alleviation programs (e.g., the Productive Safety Net Programme [PSNP]), where houses were unelectrified, and where houses were made of non-durable materials.

Figure 4: Intended vs. Actual Completed Auctions by Region and Wealth Quintile



To estimate WTP results representative of rural Ethiopia, FSG weighted the dataset to the DHS-19 on region, wealth quintile group, and gender of head of household. After weighting, the team found that the household characteristics of the weighted sample were largely similar to those of rural households in national datasets. The few differences that existed were unlikely to impact sanitation behavior. See Annex II for a comparison of the weighted sample with the general population as per national datasets.

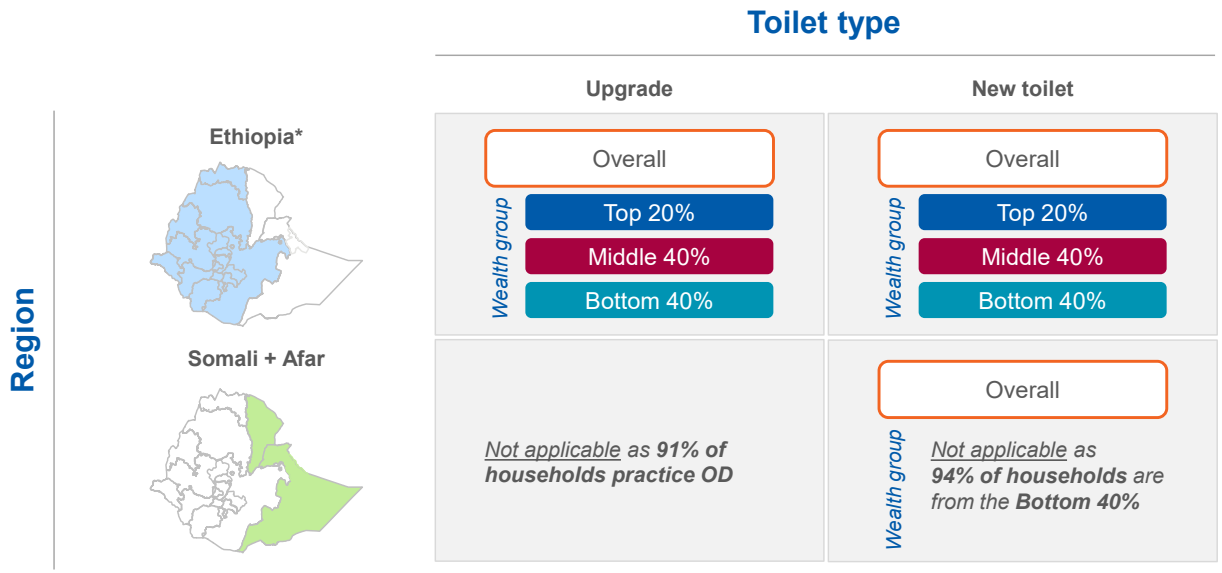
2.1.6 ANALYSIS FRAME

FSG and T/WASH developed three separate demand curves due to the presence of distinct markets based on:

1. **Product:** As the upgrade and the new toilet have different use cases and market prices, the team created separate demand curves for the two product categories.
2. **Region:** The market context in Somali is distinct from that of the other study regions, with regard to customer profile (e.g., most households in Somali are pastoralist) and the cost of materials and labor (both of which are higher in Somali). The weighted data from Somali is used to represent rural areas in Somali and Afar regions (henceforth referred to as **"Somali + Afar"**), while the weighted data from Oromia and SNNPR is used to represent the rest of rural Ethiopia (henceforth referred to as **"Ethiopia*"**).

Creating product-wise demand curves for Ethiopia* and Somali + Afar should result in four separate demand curves. However, FSG did not analyze the WTP for upgrades in Somali + Afar as 91 percent of households in these regions practice OD and the respondent sample for upgrades was negligible (n=2). Additionally, while FSG disaggregated the two demand curves for Ethiopia* by wealth quintile group, the team did not undertake a similar analysis for Somali + Afar as 94 percent of households are from the Bottom 40 percent (see Figure 5).

Figure 5: WTP Study Analysis Frame



For each demand curve, the team determined the median WTP of households and the percentage of households willing to pay the market price or higher. The mean WTP was not considered as the study data contains outliers, which skews the mean value.

2.2 STUDY LIMITATIONS

The WTP study has certain limitations, which should be kept in mind when considering the applicability of the findings.

- **Sample households may not be representative of all target households:** The logistical requirements of the study (e.g., proximity to markets and T/WASH) necessitated purposive selection of research regions, woredas, and kebeles. Further, within research kebeles, purposive sampling of households was used in instances where households from the Bottom 40 percent were underrepresented. As the study sample was not randomly selected, it may not be representative of all target households. However, this is mitigated by three factors. First, the research regions account for 71 percent of all target households. Second, while identifying research woredas close to markets may have resulted in selection of relatively more affluent areas, targeting households from the Bottom 40 percent within those woredas should have limited potential bias. Third, on weighting the sample to national datasets, FSG found that the characteristics of sample households closely matched those of the target population.
- **Asking households to make an uninformed product category choice may have impacted WTP values:** Based on expert consultations, the team elected to ask participants to make an uninformed choice between bidding for an upgrade or a new toilet. Explaining the features of both products pre-bid may have led to a different distribution of households that bid on upgrades vs. new toilets, and therefore different WTP values. Therefore, asking households to make an uninformed product choice is a study limitation. However, explaining product features pre-bid could have resulted in respondents stating WTP values relative to the alternative product, instead of basing

their WTP on the extent to which a given product meets their needs and preferences. Further, it would not have been possible to determine which households provided relative WTP bids, and which based WTP on the perceived value, thereby making WTP values incomparable. The team elected to proceed with the limitations arising from uninformed product category choice over the limitation arising from relative bids.

- **A lack of awareness of actual market prices may have impacted WTP values:** Households were not informed of the market price of the auctioned products, or of the minimum or maximum draw price. Price awareness could have influenced households to bid lower/higher than they did; e.g., by anchoring households to the market price. However, the study findings suggest that the decision not to reveal price information did not pose a challenge. For instance, more than half the target households from Somali that chose to bid for the new toilet bid 1-2.6 times the market price—a trend that is unlikely to have been observed with price anchoring. Further, even if WTP bids measured were lower than the actual maximum WTP of households in Ethiopia*, due to a lack of anchoring, the findings can be viewed as a conservative WTP values. Additionally, price is likely one factor among several that households are likely to have considered to arrive at their bid price. Other factors that may have impacted households' WTP values include their estimate of materials and labor costs, prior experience of toilet construction, their ability to pay, and the relative priority they accord to sanitation.

- **Household liquidity may have impacted participation and WTP values:** The study included a three-to-five-day gap between screening and auction interviews to allow households to consider their bid, consult family and friends, and arrange funds for the non-refundable deposit. The duration of the gap may have affected a household's ability to arrange funds for toilet purchase and their WTP. For instance, if a longer gap had been provided between the screening and auction, households may have had additional time to arrange funds and, therefore, bid higher. A tradeoff of a longer gap, however, is the possibly lower interest in participation.

- **Missing data may have affected wealth quintile classifications:** FSG used the EquityTool[10] 2018, which is based on DHS-19, to classify study households into one of five quintiles. Due to ambiguity in DHS definitions, FSG was concerned that data for certain variables (e.g., access to electricity, table and chair ownership) may not have been accurate. To resolve this, the team conducted a follow-up phone survey to reassess access to electricity, the only variable of concern that had a significant impact on wealth quintile classifications. As not all households could be reached, the team used statistical approaches to impute the value of the missing data. The team is confident that the resulting wealth quintile classifications are a close approximation to DHS-19 classifications. The team tested the imputation approach with a subsample drawn from households for whom data was available and obtained results similar to the actual wealth quintile statuses of these households. Further, any classification differences were within one wealth quintile group (e.g., quintile three households classified as quintile four and vice versa). As the team combined adjacent wealth quintiles to form three groups—

[10] The EquityTool was created by a panel of experts, including representatives from USAID, Population Services International, Marie Stopes International, Results for Development, BoardBranch, and Metrics for Management. Source: https://www.equitytool.org/.

Bottom 40 percent, Middle 40 percent, and Top 20 percent—for analysis, these differences are unlikely to significantly impact findings.

- **Ambiguity in the definition of improved pit latrines may have affected the baseline sanitation coverage used in this study:** as per the WHO/UNICEF JMP the principal difference between improved and unimproved pit latrines is the presence of a 'slab'. For the D2D survey, we only classified intact slabs made from concrete as improved. For the DHS-19 data, we considered the category 'pit latrine with slab' as unimproved, assuming that many of those may not be made from concrete and that most of them could still be further improved by e.g. retrofitting a SATO pan. Due to this assumption, 3 percent of the households for Ethiopia* and 1 percent for Somali + Afar were classified as unimproved instead of improved. Therefore, the current basic sanitation coverage presented in Figure 12 and 13 may be slightly higher. Nonetheless, the findings drawn from this analysis are not affected. It should also be noted that DHS-19 data about sanitation facilities are usually determined without observation and are therefore subject to uncertainties due to misclassification.

2.3 APPROACH TO ESTIMATING CHANGE IN SANITATION COVERAGE

The FSG team used the findings of the WTP study to provide high-level estimates of the potential increase in basic sanitation coverage as a result of: (i) sale of toilets under current market conditions (e.g., existing products and business models) and current market prices; and (ii) GoE subsidies. These estimates were developed to help the GoE and implementing partners think through potentially effective approaches and choices to reach universal improved sanitation targets. The estimates are based on potential improvements in the sanitation status of target households only. As the WTP of non-target households (i.e., tenants or households with shared toilets) was not estimated, their sanitation status as well as that of households with improved sanitation is assumed to remain constant.

Within target households, the maximum possible increase in basic sanitation through these two approaches was estimated based on the number of households willing to pay market prices for basic sanitation products, and the number of households eligible for subsidies as per GoE's National Sanitation Subsidy Protocol (NSSP); see Box 2).[11]

[11] To assess the maximum potential increase in basic sanitation coverage, the team assumed that all households that are willing to pay current market prices and all households eligible for a subsidy will gain access to a basic sanitation facility.

Box 2: NSSP Guidelines for Sanitation Subsidy Provision

The NSSP identifies three key criteria for the provision of subsidies to rural and urban households:

- **Where?** Only in woredas that have achieved basic sanitation coverage of 50 percent or higher.
- **For whom?** Households that are unable to afford sanitation products, e.g., those exempted from paying the community-based health insurance (CBHI) contribution, those enrolled in the Productive Safety Net Programme [PSNP], or those formally exempted from agricultural taxes.
- **How much?** Up to 80 percent of the total toilet cost.

I**n exceptional cases, these criteria are relaxed** (e.g., in pastoralist areas like Somali and Afar), with all households being eligible for subsidies of up to 100 percent of the total toilet cost.

The NSSP expected that on average 10 to 20 percent of the Ethiopian households would be eligible to receive sanitation subsidies based on these guidelines.

However, the coverage share contributed by each approach was difficult to estimate. If subsidies and MBS interventions are introduced in tandem (which often is the case), some households that are otherwise willing and able to pay for a toilet could avail a subsidy, while some subsidy-eligible households may purchase a full-cost toilet from the market (e.g., due to lack of awareness of the subsidies). To separate the potential impact of each approach, the FSG team assumed that the two approaches would be staggered, with MBS interventions preceding subsidies. The approach is to ease calculation only and is not an endorsement of a sequencing MBS and subsidies; however, it is a cost-effective approach that maximizes coverage at a lower public sector subsidy cost. How the team estimated the potential increase in basic sanitation coverage is detailed below.

- **Coverage increases through MBS interventions:** FSG estimated the possible coverage increase through MBS interventions based on household WTP. As WTP for the toilet upgrade product differed from WTP for the new toilet product, the team first estimated the share of the target market that would opt for an upgrade vs. a new toilet. Initially, the team assumed a split between upgrades and new toilets based on the WTP study finding that most households (77%) opted to bid for new toilets. However, contrary to the study findings, T/WASH's marketing experience shows that most households (68%) opt for upgrades (see Section 3.1.4). Therefore, the FSG team developed two scenarios, one based on the study data and the other on TWASH's experience. In both scenarios, the team used the relevant demand curves to determine the number of households within each group that were willing to pay current market prices for the respective products. The result was added to the number of rural households who already have access to basic sanitation and divided by the total number of rural households (target and non-target) to arrive at the revised basic sanitation coverage figure. In both cases, the team assumed that all households willing to pay market prices would gain access to basic sanitation.
- **Coverage increases through subsidies:** In estimating coverage increase through subsidies, FSG did not apply the woreda eligibility criteria (see Box 2), as most rural woredas are unlikely to have 50 percent coverage, even after MBS interventions. To determine the number of eligible households, the team used DHS-19 data on the

percentage of target households enrolled in the PSNP as a proxy for households that cannot afford sanitation products. Though the DHS-19 also had data on households enrolled in the community-based health insurance (CBHI) program, the team used PSNP data as, a larger share of households were enrolled in PSNP than in CBHI and most households enrolled in CBHI were also enrolled in PSNP. DHS-19 did not have data on the number of households exempt from paying agricultural taxes. Lastly, the team assumed that the 80 percent subsidy would cover the entire cost of the auctioned products once labor and materials provided by the household were accounted for in the cost of the toilet. The team assumed that all eligible households would gain access to basic sanitation using the subsidy, and that none of them would have purchased a toilet from the market without a subsidy, under MBS alone.

3.0 KEY FINDINGS

The WTP study revealed that most rural households in Ethiopia are not willing to pay more than 40–50 percent of the current market price for a basic sanitation product (upgrade or new toilet). However, the price elasticity of demand for these products is highest at prices under ETB 3,000 (USD 54), with relatively small price reductions resulting in significant increases in the share of households willing to pay a particular price. At prices higher than ETB 3,000 (USD 54), demand is low and relatively inelastic. Households in Somali + Afar are the exception, with more than half the households in these regions willing to pay the market price or more for a new toilet. However, Somali + Afar account for only 7 percent of the target market in Ethiopia.

The key findings from the study are summarized in Box 3 and detailed by geography in Section 3.1(Ethiopia*) and Section 3.2 (Somali + Afar).

Box 3: Summary of Key Findings from the WTP Study

3.1 Ethiopia*

- *Finding 1: As much as three-quarters of households appeared unwilling to pay the market price for basic sanitation.*
- *Finding 2: Despite WTP increasing with affluence, even the top 20 percent of households by wealth are largely unwilling to pay the market price.*
- *Finding 3: Households quoting a higher estimated market price were more likely to be willing to pay the actual market price, especially for upgrades.*
- *Finding 4: Most households with unimproved toilets expressed desire new toilets, but may opt to improve their existing toilets when informed of the benefits and relatively lower cost of upgrade products.*

3.2 Somali + Afar

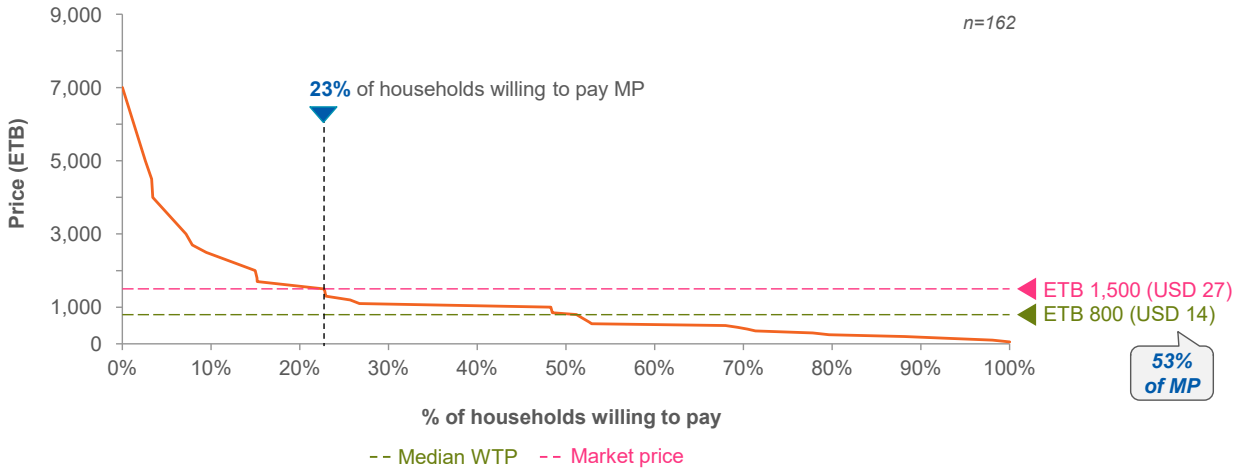
- *Finding 5: Over half of the households are willing to pay the market price for basic sanitation.*

3.1 ETHIOPIA*

3.1.1 FINDING 1: AS MUCH AS THREE-QUARTERS OF HOUSEHOLDS APPEARED UNWILLING TO PAY THE MARKET PRICE FOR BASIC SANITATION

The **median WTP bid of households choosing an upgrade** was ETB 800 (USD 14), which was 53 percent of the market price (see Figure 6). The percentage of households willing to pay for an upgrade reduced marginally between ETB 800 and ETB 1,000 (USD 18), but dropped significantly thereafter, with only 27 percent of households willing to pay ETB 1,100 (USD 20) for an upgrade. Fewer than one in four households (23 percent) bidding on an upgrade were willing to pay the market price of ETB 1,500 (USD 27).

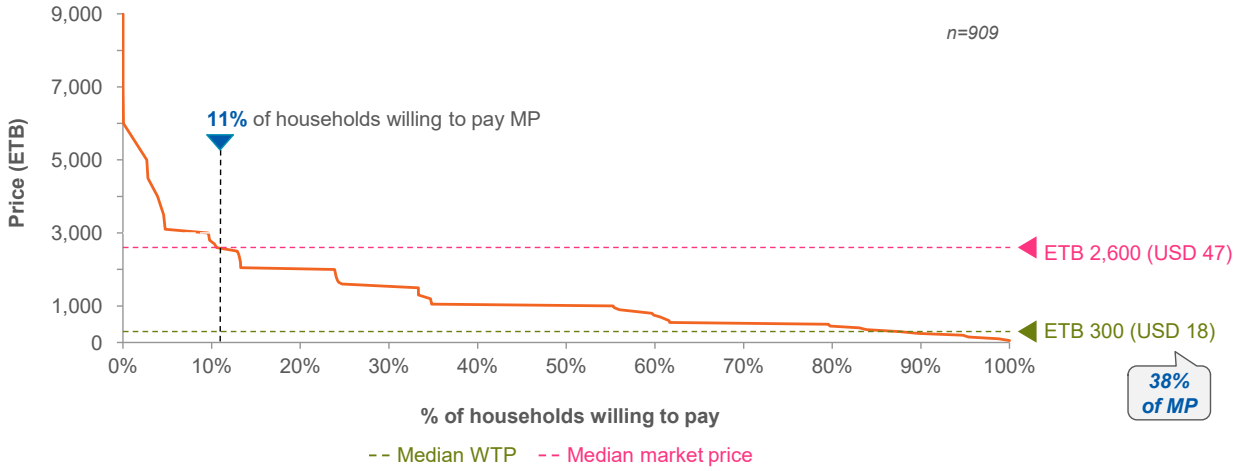
Figure 6: Demand Curve for Upgrades in Ethiopia* (all regions except Somali + Afar)



Notes: a. For upgrades, the 95% confidence interval (CI) for the median WTP is [601, 999]; b. Data was weighted to DHS-19 on region, wealth quintile, and gender of household head; 3. ETB 1 = USD 0.018 (as of April 16 2024).

Similarly, the **median WTP of households choosing a new toilet** was ETB 1,000, less than half the market price of ETB 2,600 (USD 47). The percentage of households willing to pay for a new toilet fell sharply beyond this point, with just over a third of households willing to pay ETB 1,100 and only one in 10 households (11%) willing to pay the market price (see Figure 7).

Figure 7: Demand Curve for New Toilets in Ethiopia* (all regions except Somali + Afar)



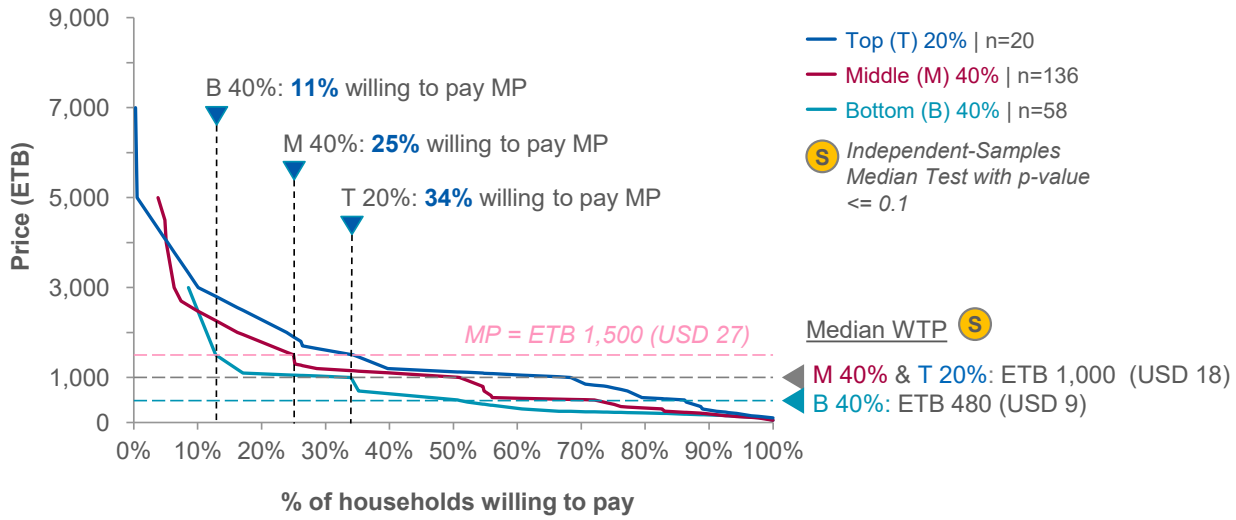
Notes: a. For new toilets, the 95% confidence interval (CI) for the median WTP is [913, 1087]; b. Data was weighted to DHS-19 on region, wealth quintile, and gender of household head; c. ETB 1 = USD 0.018 (as of April 16 2024).

3.1.2 FINDING 2: DESPITE WTP INCREASING WITH AFFLUENCE, EVEN THE TOP 20 PERCENT OF HOUSEHOLDS BY WEALTH ARE LARGELY UNWILLING TO PAY THE MARKET PRICE

On disaggregating WTP by wealth quintile group, the team found that the median **WTP for upgrades** increased with affluence. As seen in Figure 8, the median WTP of the Bottom 40 percent (ETB 480 [USD9]) is less than half that of the Middle 40 percent and Top 20 percent (both ETB 1,000 [USD 18]). However, despite this trend, most households across wealth groups

were not willing to pay the market price for improved toilet products. This is reflected in the fact that only a third of households in the Top 20 percent were willing to pay the market price for upgrades.

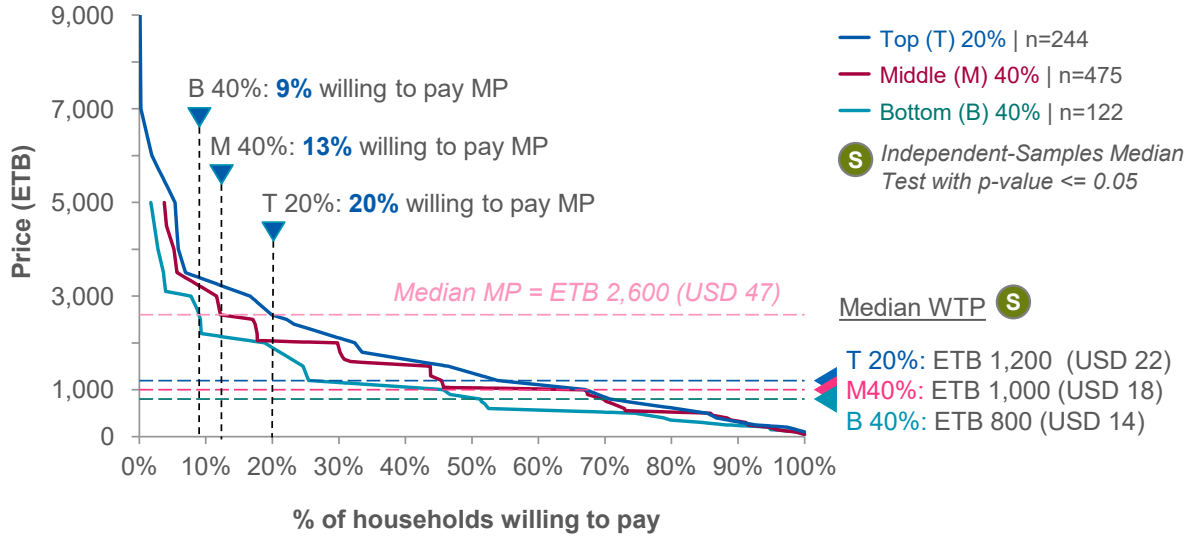
Figure 8: Willingness to Pay for Upgrade by Income Segment in Ethiopia* (all regions except Somali + Afar)



Notes: a. A p-value <=0.1 indicates moderate statistical significance, meaning it is possible to assert with a confidence level of at least 90 percent that differences by wealth group observed in the median WTP of sample households are likely to apply to the population as a whole; b. Data weighted to DHS-19 on region and gender of household head, but not wealth quintile; c. ETB 1 = USD 0.018 (as of April 16 2024).

The trend was similar for newt toilets. While median **WTP for new toilets** also increased with affluence—median WTP of the Bottom 40 percent (ETB 800 [USD 14]) was two-thirds that of the Top 20 percent (ETB 1,200 [USD 22])—only a fifth of households in the Top 20 percent were willing to pay the market price for a new toilet (Figure 9).

Figure 9: Willingness to Pay for New Toilet by Income Segment in Ethiopia* (all regions except Somali + Afar)



Notes: a. A p-value <=0.05 indicates high statistical significance, meaning it is possible to assert with a confidence level of at least 95 percent that differences by wealth group observed in the median WTP of sample households are likely to apply to the population as a whole; b. Data weighted to DHS-19 on region and gender of household head, but not wealth quintile; c. ETB 1 = USD 0.018 (as of April 16 2024).

3.1.3 FINDING 3: HOUSEHOLDS QUOTING A HIGHER ASSUMED MARKET PRICE WERE MORE LIKELY TO BE WILLING TO PAY THE ACTUAL MARKET PRICE, ESPECIALLY FOR UPGRADES

The team did not inform participating households of the market price of the products they bid on to avoid anchoring their WTP to market prices (see Section 2.2). However, at the end of each auction, the respondent was asked to estimate the market price of the product they bid on, i.e., the *"assumed market price"*. The team found that a household's WTP was positively correlated with their assumed market price. While the correlation was statistically significant for all three wealth groups, it was strongest for the more affluent (for Top 20 percent and Middle 40 percent, $p<0.01$ for the upgrade and the new toilet). The positive correlation was weaker among the less affluent households (for Bottom 40 percent, $p<0.05$ for the upgrade and 0.01 for the new toilet)[12] indicating that such households may be constrained by their ability to pay, irrespective of their assumed market price.

Further, households whose assumed market price was equal to or higher than the actual market price were more likely to have a WTP bid equal to or exceeding the actual market price (see Table 3 for upgrades and Table 4 for new products). This is particularly notable for upgrades amongst more affluent households (Middle 40 percent and Top 20 percent).

[12] The team estimated correlation between bid price and assumed market price using Spearman's rank correlation test (1-tailed).

Table 3: Difference in Percentage of Households Willing to Pay the Market Price (MP) for Upgrades Based on Assumed Market Price in Ethiopia* (all regions except Somali + Afar)

Wealth Quintile Group	Percent Households with WTP >= MP	
	Assumed market price less than true MP	*Assumed market price equal to MP or higher*
Bottom 40 percent	0%	17%
Middle 40 percent	4%	34%
Top 20 percent	2%	45%

Table 4: Difference in Percentage of Households Willing to Pay the Market Price for New Toilets Based on Assumed Market Price in Ethiopia* (all regions except Somali + Afar)

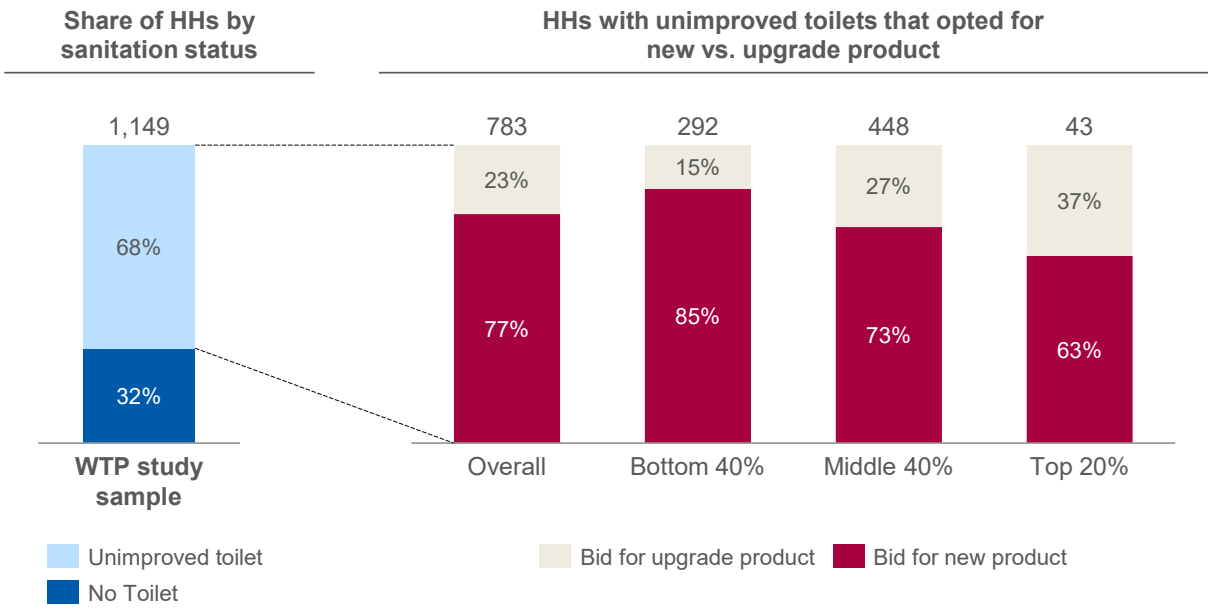
Wealth Quintile Group	Percent Households with WTP >= MP	
	Assumed market price less than true MP	*Assumed market price equal to MP or higher*
Bottom 40 percent	5%	13%
Middle 40 percent	5%	20%
Top 20 percent	9%	27%

Though the share of households willing to pay the market price is higher for households that assumed the market price to be equal to or higher than it is, most such households were still unwilling to pay the market price.

3.1.4 FINDING 4: MOST HOUSEHOLDS WITH UNIMPROVED TOILETS DESIRE NEW TOILETS, BUT MAY OPT TO IMPROVE THEIR EXISTING TOILETS WHEN INFORMED OF THE BENEFITS AND RELATIVELY LOWER COST OF UPGRADE PRODUCTS

Sixty-eight percent of the study households from Ethiopia* had unimproved toilets, and the team asked them to make a product category choice without explaining either of the products, i.e., "*Would you like to upgrade your existing toilet or construct a new one that would involve digging a new pit*?". Over three-fourths of these households (77%) chose to bid for the new toilet instead of the upgrade (see Figure 10). This occurred across all wealth groups, with the preference for new toilets the highest among the least affluent households—85 percent of households from the Bottom 40 percent chose to bid for a new toilet.

Figure 10: Preference for New Toilets Among Households with Unimproved Toilets



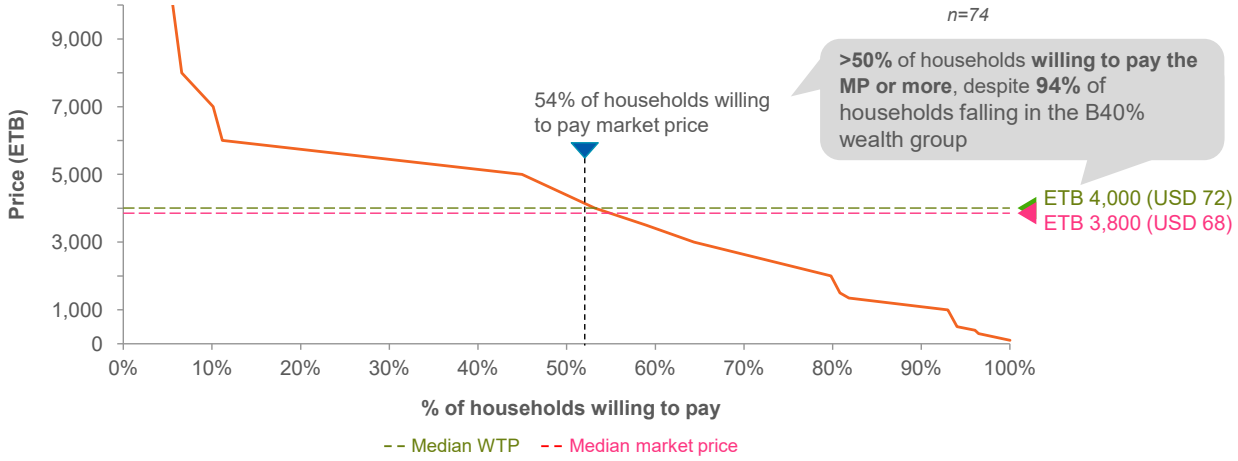
However, an evaluation of the T/WASH activity showed that more than two-thirds of households (68%) were willing to improve existing toilets rather than build new ones (USAID, 2023). T/WASH attributes this to their sales approach wherein households are informed of the relative merits and prices of both the new toilet and the upgrade ***before*** making a product choice. T/WASH believes that households (across wealth quintiles) have a general desire for new products, irrespective of the quality of their existing toilet. However, once households realize they can improve their toilet at a significantly lower cost, avoiding the need to dig a new pit, they opt for an upgrade. In the WTP study, the team deliberately chose not to share toilet product features until ***after*** households made a category choice. Therefore, it is likely that some of the households who bid for a new toilet would be willing to upgrade their existing toilet instead if fully informed of the product options and prices. As the upgrade and new products have different demand curves, the team considered two product preference scenarios when estimating change in sanitation coverage—one based on the WTP study findings (23 percent upgrade, 77 percent new toilet), the other based on T/WASH data (68 percent upgrade, 32 new toilet); see Section 2.3).

3.2 SOMALI + AFAR

3.2.1 FINDING 5: OVER HALF OF THE HOUSEHOLDS ARE WILLING TO PAY THE MARKET PRICE FOR BASIC SANITATION

In Somali + Afar, most target households (94 percent) are in the Bottom 40 percent, and market prices are significantly higher (+46 percent) than in other regions. However, we estimated that 54 percent of households in Somali + Afar would be willing to pay the market price for the new toilet (see Figure 11). In fact, the median WTP of households (ETB 4,000 [USD 72]) is marginally higher than the market price (ETB 3,800 [USD 68]). Further, even if the market price were to rise to ETB 5,000 (USD 90), the results indicate that as many as 45 percent of households would be willing to pay for the new toilet.

Figure 11: Demand Curve for New Toilets in Somali + Afar



Notes: a. For new toilets, the 95% confidence interval (CI) for the median WTP is [3104, 4496]; b. Data weighted to DHS-19 wealth quintile and gender of household head; c. ETB 1 = USD 0.018 (as of April 16 2024).

Based on inputs from the T/WASH team and the USAID Mission in Ethiopia, the team hypothesizes that four factors may help explain these findings:

1. **Preference for well-built improved toilets:** While most households in Somali + Afar practice OD, the T/WASH team found that those that do build toilets tend to build improved toilets with superstructures made of permanent materials (e.g., brick and cement). Households that cannot afford to build such toilets prefer not to own a toilet over owning a self-constructed unimproved toilet (Simeneh, Demirew, & Mariam, 2021).
2. **Knowledge of general material and labor prices:** Construction materials (e.g., cement) and labor cost more in Somali + Afar compared to other regions. As these inputs are used in all types of construction (not just toilets), households are likely to have some knowledge of their prices. Therefore, it is possible that households used this knowledge to estimate the cost of a new toilet.
3. **Underestimation of household wealth:** Most households in Somali are pastoralists, whose wealth (e.g., livestock ownership) is underrepresented in conventional wealth quintile measures and, therefore, underestimated. These households can, arguably, sell livestock to fund a new toilet.
4. **Ability to access financing:** Many households in these regions are engaged in trade and, as a result, may have access to finance, likely informal from their networks. These households might be able to leverage these channels to secure a loan to build a toilet.[13]

As nearly all households in Somali + Afar are from the Bottom 40 percent, FSG could not analyze the link between WTP and affluence. Further, within the Bottom 40 percent, there was no correlation between a household's assumed market price and their WTP market price for basic sanitation.

[13] Personal communication [Mequanent Fentie] USAID/Ethiopia Mission, June 13, 2024.

4.0 HIGH-LEVEL IMPLICATIONS AND RECOMMENDATIONS

This section presents several high-level implications in line with the wider objectives of the study. The team estimated the maximum potential increase in basic sanitation coverage from combining the study results with two approaches: (i) sale of toilets (upgrades or new) under current market conditions to households willing to pay market prices; and (ii) applying the NSSP (see Section 2.3).

In estimating the potential impact of subsidies, FSG assumed that Somali + Afar would be exempt from the NSSP woreda and household eligibility criteria as they are pastoralist regions. Additionally, the team did not apply the NSSP woreda eligibility criteria to the Ethiopia* estimates. The team's approach to estimating coverage increase is detailed out in Section 2.3.

The study findings have important implications for donors and implementers funding, designing, and implementing MBS interventions and for the GoE's efforts to deploy sanitation subsidies. The major implications for Ethiopia* and Somali + Afar are discussed in Sections 4.1 and 4.2, respectively. The team presents key high-level recommendations for MBS donors/implementers and the GoE in Section 4.3.

4.1 IMPLICATIONS FOR ETHIOPIA*

4.1.1 IMPLICATION 1: RELYING ON CURRENT MARKET CONDITIONS AND THE NSSP WILL HAVE LIMITED IMPACT ON INCREASING BASIC SANITATION COVERAGE

Together, sale of toilet products under current market conditions and prices (i.e., at *"full cost"*) and provision of subsidies as outlined in the NSSP might add 23-25 percentage points to basic sanitation coverage in Ethiopia*. Currently, only 4 percent of rural households in Ethiopia* have access to basic sanitation (Figure 12). FSG estimates that households willing to pay full cost can add another 11-14 percentage points to basic sanitation coverage, but require interventions that

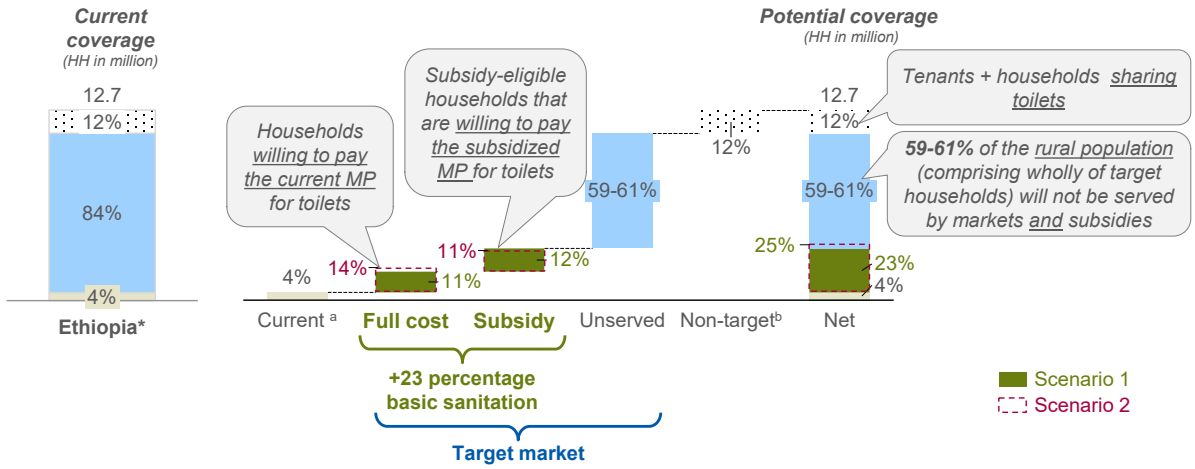
- Ensure households willing to pay the full cost of toilets are aware of available sanitation products (i.e., sanitation marketing); and
- Strengthen sanitation supply chains to deliver these products.

The lower end of the coverage increase range (11%) through interventions assumes product preferences are based on the WTP study findings; i.e., most (77 percent) target households with unimproved toilets desire the more expensive new toilet product ("*Scenario 1*"). Subsidies could at best contribute an additional 12-percentage point increase in coverage. The upper end of the coverage increase range (14%) assumes product preferences based on T/WASH data; i.e., most (68 percent) target households with unimproved toilets desire the cheaper upgrade product ("*Scenario 2*"). Subsidies could contribute an additional 11-percentage point increase in coverage. The drop is due to some subsidy-eligible households being willing to pay the market price for upgrades. In both scenarios, the impact of subsidies is low as most households are ineligible for subsidies as per the NSSP criteria (see Section 4.1.3).

The estimated increase in basic sanitation coverage does not consider non-target households (i.e., tenants and households sharing toilets), which comprise 12 percent of all households in Ethiopia*. While some non-target households may attain basic sanitation by purchasing toilets

from markets or availing subsidies, for the purpose of this assessment, it is assumed coverage among non-target households remains constant.

Figure 12: Potential Change in Basic Sanitation Coverage Through MBS and Subsidies in Ethiopia*



Source: FSG calculations

Notes: a. Current basic sanitation coverage based on DHS-19 micro-data, adjusted for Ethiopia and excluding non-target households as well as pit latrines with slabs (refer to Section 2.2); b. Non-target households are those not included in the WTP study sample, i.e., tenants and households sharing toilets. While some non-target households may attain basic sanitation by purchasing toilets from markets or availing subsidies, for the purpose of this assessment, it is assumed coverage among non-target households remains constant.*

4.1.2 IMPLICATION 2: MBS INTERVENTIONS FOCUSED ON RAISING PRICE AWARENESS, PROMOTING UPGRADES, AND LOWERING PRICES COULD HELP INCREASE COVERAGE AMONG UNSERVED HOUSEHOLDS

The estimated increase in coverage is based on current market conditions (e.g., existing toilet products, prevalent business models) that determine the current market prices. The market, therefore, requires additional MBS interventions targeted at households unwilling or unable to pay current market prices to increase basic sanitation coverage. Based on the findings in Section 3, FSG identified two MBS strategies with potential for impact.

1. **Increasing price awareness:** Increasing price awareness could help increase basic sanitation coverage in two ways. First, household WTP is positively correlated with the assumed market price—i.e., the household's estimate of the toilet's market price. This correlation is particularly strong among households in the Middle 40 percent and Top 20 percent, and possibly among some households in the Bottom 40 percent (Section 3.1.3). This suggests that if households who underestimate the market price are made aware of the actual price, they may become willing to pay the full market price. Second, T/WASH's experience shows that awareness of the relative price of toilet products can encourage households with unimproved toilets to choose more affordable upgrades, rather than delaying investments until they can afford new toilets. Therefore, interventions focused on *actively publicizing product prices* could unlock more demand than indicated by the demand curves in this study (see Table 3 and Table 4), especially among relatively affluent households.

2. **Reducing market prices:** Reducing the price of toilet products prior to the introduction of subsidies can unlock the demand of households whose WTP is lower than current market prices. For instance, if MBS interventions can lower prices by 25 percent (e.g., by reducing the quantity of hardware materials, like cement, needed to construct an improved toilet slab), an additional 5-7 percent of households in Ethiopia* would be willing to pay for basic sanitation.

If these MBS interventions are introduced prior to subsidies, they could help reduce the subsidy burden by reducing the number of households requiring a subsidy and by lowering the amount spent per subsidized toilet. This in turn could allow subsidies to reach a larger number of less affluent households (i.e., the Bottom 40 percent).

4.1.3 IMPLICATION 3: REVISITING SELECT NSSP ELIGIBILITY CRITERIA FOR ETHIOPIA* COULD ENABLE MORE VULNERABLE HOUSEHOLDS TO ACCESS SUBSIDIES, THEREBY INCREASING BASIC SANITATION COVERAGE

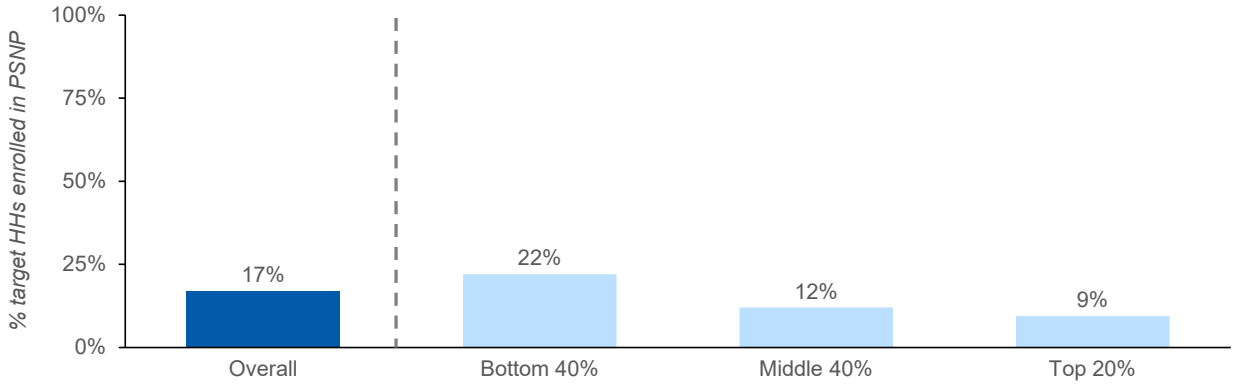
In estimating the possible impact of subsidies, the team assumed subsidies would be introduced after the MBS interventions described in Sections 4.1.1 and considered NSSP household eligibility criteria except the woreda eligibility criteria (at least 50 percent basic coverage before introducing subsidies). Even after all target households that are willing to pay market prices gain access to basic sanitation, basic sanitation coverage would be only 15-18 percent of all rural households, which is far below the 50 percent threshold (see Figure 12—MBS interventions would add only 11-14 percentage points to the existing 4 percent coverage). As a result, most rural woredas would likely not qualify for subsidies if the current woreda eligibility criterion were applied.

Under the current guidelines, only a subset of target households is eligible for subsidies. The NSSP stipulates that only households enrolled in existing poverty alleviation programs (e.g., the PSNP) are eligible to receive a sanitation subsidy. Based on data in the DHS-19, 17 percent of all target households were enrolled in PSNP, while only 22 percent of the target households from the Bottom 40 percent were enrolled in PSNP (see Figure 13).[14] As a result, most households from the lowest quintiles, who are arguably the most vulnerable, would not qualify for subsidies by this targeting method.

Households that do qualify under the NSSP can avail of a 100 percent or full subsidy, by accounting for household contribution of labor and materials. A potentially more cost-effective approach may be to link subsidy levels to household WTP, i.e., the subsidy would be the gap between the market price and the average WTP of the wealth group a household belongs to. However, this may result in eligible households with lower-than-average WTP being excluded.

[14] DHS-19 contained information related to two existing poverty alleviation programs: PSNP and community-based health insurance (CBHI). The team used PSNP enrollment as a proxy as a larger share of households were enrolled in PSNP than in CBHI, and most households enrolled in CBHI were also enrolled in PSNP.

Figure 13: Share of Target Households Eligible for Subsidies Based on Enrollment in PSNP



4.2 IMPLICATIONS FOR SOMALI + AFAR

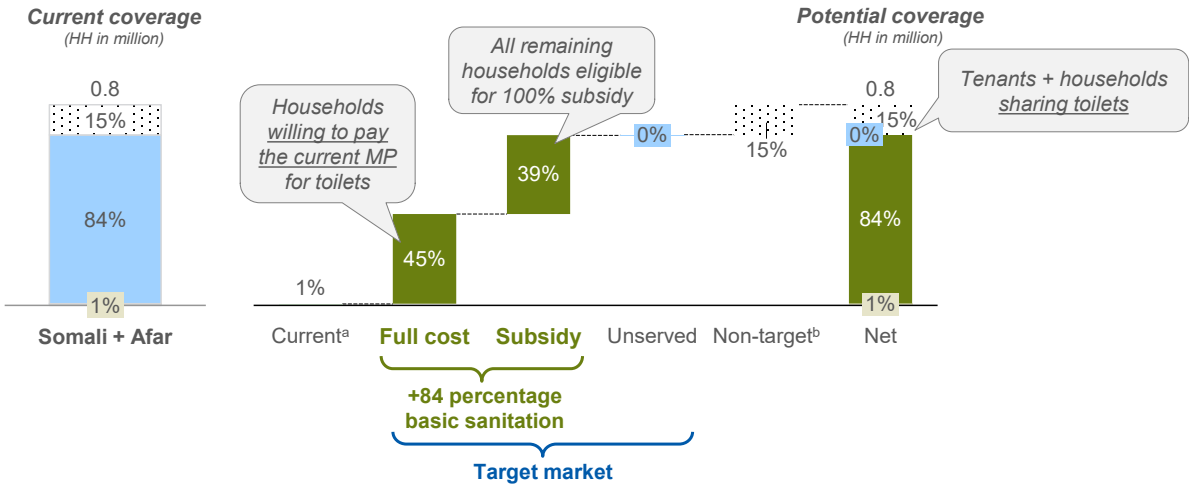
4.2.1 IMPLICATION 4: TOGETHER, CURRENT MARKET CONDITIONS AND THE NSSP COULD HELP ALL TARGET HOUSEHOLDS IN SOMALI + AFAR ACCESS BASIC SANITATION

Currently, only one percent of rural households in Somali + Afar have access to basic sanitation. As over half of all target households were willing to pay current market prices for basic sanitation (Figure 11 above), FSG estimates that households willing to pay full cost can add another 45 percentage points to basic sanitation coverage, but require interventions that

- Ensure availability of high-quality improved toilet products, as evidenced by the preference of households from across wealth groups to invest in well-built improved toilets, or practice OD, rather than to use unimproved toilets (Section 3.2.1);
- Strengthen marketing and supply chains to enable awareness of and access to toilet products across Somali + Afar despite these regions being characterized by sparsely populated areas with a prevalence of pastoralist communities; and
- Generate demand and address potential behavioral or social barriers.

Further, as the NSSP eligibility criteria are relaxed for pastoralist regions (see Box 2), subsidies could potentially add another 39 percent to basic coverage—accounting for the balance of households in the target market (Figure 14).

Figure 14: Potential Change in Basic Sanitation Coverage Through MBS and Subsidies in Somali + Afar



Source: FSG calculations

Notes: a. Current basic sanitation coverage based on DHS-19 micro-data, adjusted for Somali + Afar and excluding non-target households as well as pit latrines with slabs (refer to section 2.2); b. Non-target households are those not included in the WTP study sample, i.e., tenants and households sharing toilets. While some non-target households may attain basic sanitation by purchasing toilets from markets or availing subsidies, for the purpose of this assessment, it is assumed coverage among non-target households remains constant.

While it is possible to cover all target households in Somali + Afar under current market conditions (for those willing to pay full cost) and subsidies, the share of households requiring subsidies (39 percent) is beyond the average eligibility of 10 to 20 percent envisioned in the NSSP. As a result, the cost of subsidies to the government will likely be significant, especially given the high cost of toilets in these regions. Linking subsidy levels to the average WTP of wealth groups (as mentioned in Section 4.1.3) may help reduce subsidy burden.

4.3 RECOMMENDATIONS FOR MBS DONORS/IMPLEMENTERS AND THE GOVERNMENT OF ETHIOPIA

Based on the above findings and implications, the team believes that the GoE and development partners would need different approaches to the two regional groups—Ethiopia* and Somali + Afar—considering the distinct differences between them. While the underlying reasons for these differences need to be understood in greater detail, FSG recommends the following:

- **In Ethiopia*,**
    - **MBS implementers and donors** should focus on ensuring widespread awareness of product features and prices. This is key to unlocking demand among households willing to pay current market prices, those who would be willing to pay a higher amount if they knew the actual market price, and those with unimproved toilets who are unaware of affordable upgrade options. Additionally, implementers should encourage and support product and/or delivery model innovations to lower product prices as the price elasticity of demand for basic sanitation in Ethiopia* is high.

- **The GoE** can consider revisiting the NSSP subsidy eligibility criteria, especially for the Bottom 40 percent, who are likely to be amongst the most vulnerable. Subsidies have significant potential to increase basic coverage among these vulnerable households. However, certain eligibility criteria (e.g., woreda and household eligibility) may need reconsideration in Ethiopia*. The GoE should also consider amplifying marketing and awareness efforts and disseminating product and delivery model innovations. For instance, the GoE could leverage community health workers for sanitation marketing activities. Additionally, the GoE could consider tax exemptions on sanitation products/materials to bring down toilet prices. However, the cost of tax exemptions vis-à-vis subsidies would need to be assessed (see Annex III).

- **In Somali + Afar,** in addition to increasing price awareness,
  - **MBS implementers and donors** should focus on strengthening supply chains to ensure households willing to pay market prices can access high-quality improved toilets, even in areas with dispersed populations.
  - **The GoE** should consider maintaining the current exemptions on the eligibility criteria for sanitation subsidies, while exploring other means to reduce prices to lower the potential subsidy bill.

To conclude, most households in Ethiopia* are unwilling to pay the current market prices for toilets, either new toilets or upgrades. To increase at least basic sanitation coverage, MBS implementers/donors need to explore additional MBS interventions including increasing price awareness, promoting low-cost upgrades, and reducing product prices. In Somali + Afar, where most households are willing to pay market prices, MBS interventions should focus on ensuring access to materials and labor needed to construct toilets. The GoE can support MBS efforts in both Ethiopia* and Somali + Afar while revisiting the NSSP guidelines to ensure those that cannot afford toilets from markets are able to access subsidies.

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ANNEX I: DATA CLEANING

FSG followed a systematic process to clean the study data before analysis. The cleaning focused on removing incomplete or invalid entries, addressing duplicate entries, verifying willingness-to-pay (WTP) values of valid entries, and imputing missing values. The steps taken are summarized below:

1. **Removing incomplete cases:** Auctions might have been incomplete if: (1) participating households opted out mid-way, (2) enumerators determined households were not part of the target households for the study after starting the interview, or (3) there was a technical error causing the data collection tool to crash. Only entries for households that reached the end of the auction were retained, i.e., the auction result was recorded, and it was known if winning households paid the non-refundable deposit.
2. **Removing invalid cases:** An auction was deemed to be invalid if: (1) enumerators did not follow the correct protocol (e.g., they used the draw prices for a new toilet when auctioning an upgrade), or (2) households did not reveal their genuine WTP (i.e., winning households did not pay the non-refundable deposit, or losing households offered to increase their bid value). All such entries were dropped from the analysis. In cases where enumerators did not follow protocol, but the household won, the household still received a toilet if they paid the non-refundable deposit. However, their bid was not considered for analysis.
3. **Addressing duplicate entries:** All screened households were assigned a unique identifier (household ID), and enumerators entered the same identifier on returning for the Becker-DeGroot-Marschak auctions. However, there were instances where the same household ID was assigned to more than one entry in the auction dataset. FSG worked with the research agency to identify genuine auction entries. The team identified two forms of duplication:
    a. Multiple entries for the same household. In this form of duplication, two or more entries had the same respondent name, respondent's spouse name (if married), and location data. This was likely caused due to the data collection tool crashing, necessitating a restart of the interview. As this would have resulted in only one complete entry and one or more incomplete entry, the problem was solved by removing incomplete cases (Step 1).
    b. Multiple unique entries with the same household ID. In this form of duplication, two or more entries had been assigned the same household ID, but were found to have different respondent name, respondent's spouse name, and location data. This was likely due to enumerators entering the incorrect ID either at the time of the auction or during the original screening interview. In such cases, FSG checked the auction entries against the corresponding screening entry. If screening IDs were unique, the auction IDs were updated based on the screening ID. If the screening IDs were also duplicated, the duplicated ID was assigned to the entry with the earliest timestamp, and new IDs were assigned to the remaining households.
4. **Verifying WTP values:** As part of the study design, T/WASH maintained independent records of all auction winners, including the product they bid for, their bid and draw

prices, and the deposit amount paid. These records (called deposit sheets) were intended to (1) enable T/WASH to track households that required product installation, and (2) provide an independent source to verify key data points in datasets submitted by the research agency. On comparing these records, the team found discrepancies in the product auctioned, bid and draw values, and deposit amounts. FSG worked with T/WASH and the research agency to reconcile these differences. This included asking the research agency to audit audio recordings of entries with discrepancies and requesting T/WASH to reconfirm data submitted by their field staff and masons. Through these steps, the team was able to resolve the discrepancies.

5. **Imputing missing values:** FSG used the EquityTool 2018 questions to collect data on household wealth status. However, due to ambiguity in its definition, data collected on electricity access was not consistent for all households. To address this, FSG reached out to the EquityTool team and the Demographic and Health Survey (DHS) methods team to gain clarity on the definition. Following this, FSG conducted a follow-up phone survey to update the data of study households whose electricity status was not clearly known. However, not all such households could be contacted, resulting in missing values. FSG used statistical methods to impute these missing values and ran tests to confirm the imputation was accurate.

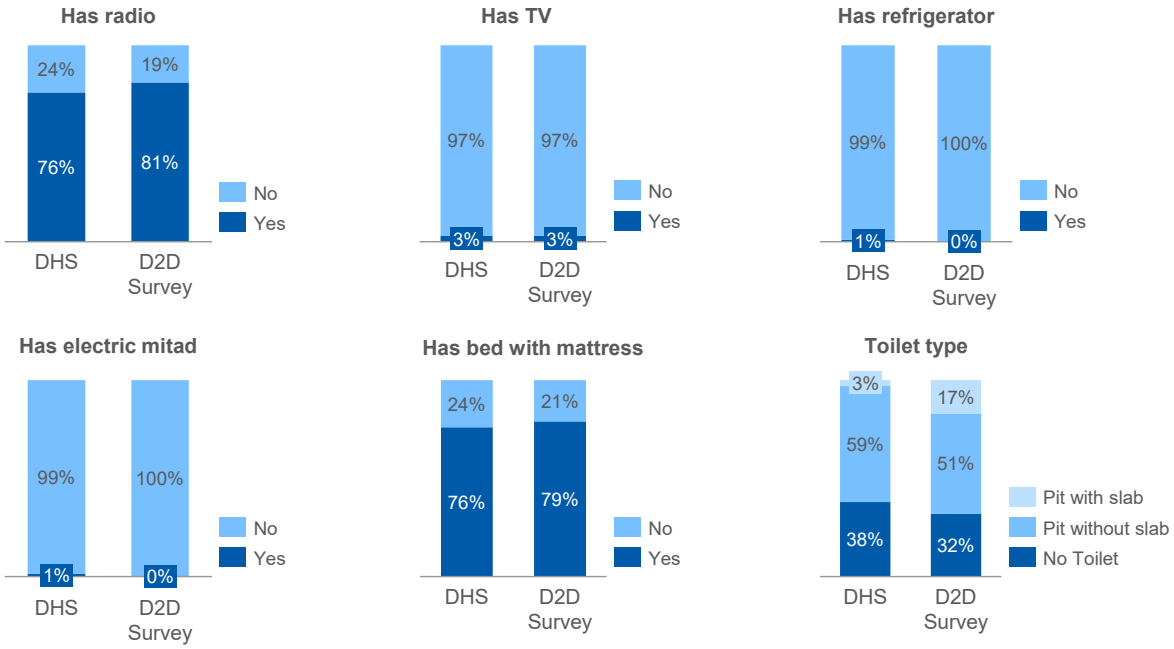
ANNEX II: DATA WEIGHTING

To extrapolate the findings to the national level, FSG weighted the study data to DHS-19 rural household data on key variables, including region, wealth quintile, and gender of household head. After applying the weights, the team compared the weighted survey sample to DHS-19 rural households regarding demographics, asset ownership, and access to services. The team found that data from Oromia and Southern Nations, Nationalities and Peoples Region (SNNPR) was representative of all of rural Ethiopia excluding Somali and Afar regions (henceforth, **Ethiopia***), while data from Somali was representative of Somali and Afar regions (henceforth, **Somali + Afar**). See details below.

COMPARISON OF WEIGHTED SURVEY AND DHS-19 RURAL POPULATIONS FOR ETHIOPIA*

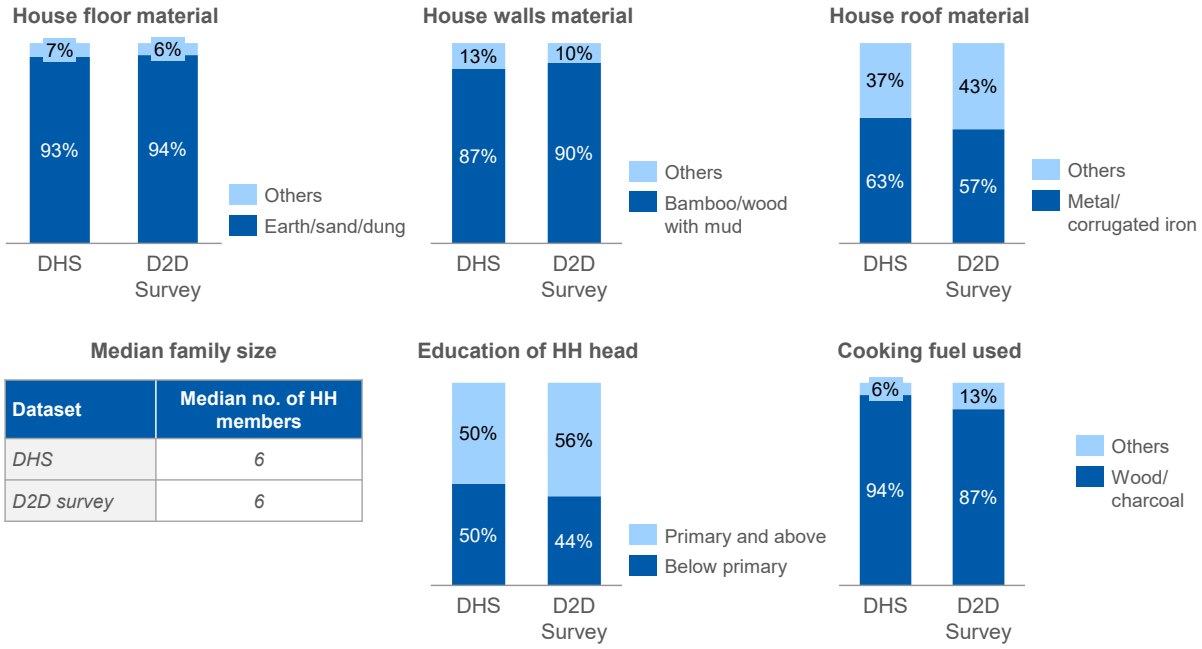
On weighting the Oromia and SNNPR data, FSG found that for most assets included in the EquityTool, the study data matches DHS-19. Further, the percentage of households practicing open defecation in the study data also matches the DHS-19 data (Figure 15). The study data also approximates DHS regarding materials used for house construction and key demographic variables (Figure 16).

Figure 15: Comparison of Weighted Study Data and DHS-19 on Asset Ownership and Toilet Type in Ethiopia*



Notes: 1. Study data weighed to DHS-19 on region, wealth quintile, and gender of household head; 2. Survey data matches DHS with regard to households without toilets. While there are differences in data on pit with slab vs. pit without slab, this is not relevant as the team considered both unimproved toilets in line with Government of Ethiopia definitions.

Figure 16: Comparison of Weighted Study Data and DHS-19 on Materials Used for House Construction and Key Demographic Variables in Ethiopia*



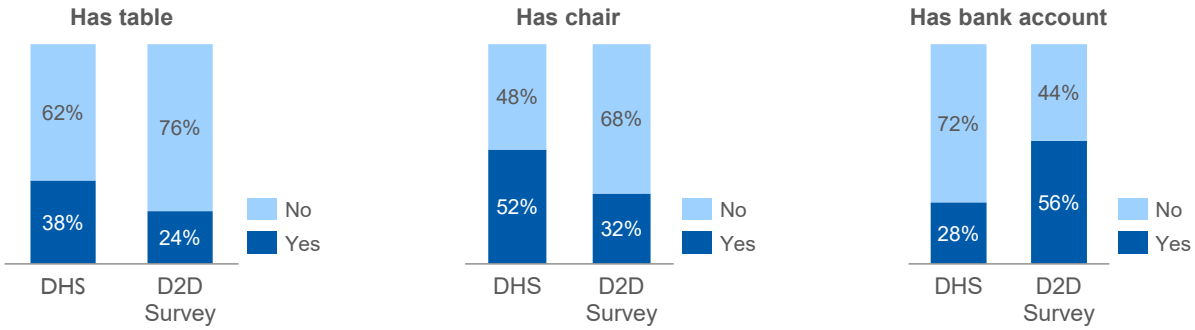
Dataset	Median no. of HH members
DHS	*6*
D2D survey	*6*

Notes: 1. Study data weighed to DHS-19 on region, wealth quintile, and gender of household head.

The study households differ from DHS-19 households regarding three EquityTool variables—table ownership, chair ownership, and access to a bank account (Figure 17). The differences in table and chair ownership are due to FSG instructing enumerators to be stringent when assessing table and chair ownership (e.g., stools/benches were not counted as chairs). DHS does not provide instructions to enumerators, relying purely on household perceptions. However, as table and chair ownership have relatively low impact on the overall wealth quintile classification, FSG does not feel these are meaningful differences.

Differences in access to a bank account might be due to actual increases in access to finance since DHS-19. As per World Bank data, 37 percent of rural Ethiopian households had bank accounts in 2022 (World Bank, n.d.). This figure is likely to be higher for Ethiopia*, as only 5 percent of households in these regions had bank accounts in 2019. While access to a bank account has a relatively higher impact on wealth quintile ownership than table/chair ownership, it is still lower than other variables such as television ownership or access to electricity. As a result, differences in access to a bank account might, at most, result in a one quintile difference in classification, e.g., quintile five households may be classified as quintile four (or vice versa). As FSG combined adjacent wealth quintiles for the analysis (e.g., quintile five and quintile four were analyzed jointly as the Bottom 40 percent), these variations are unlikely to affect the findings.

Figure 17: Differences Between Weighted Study Data and DHS-19 in Ethiopia*

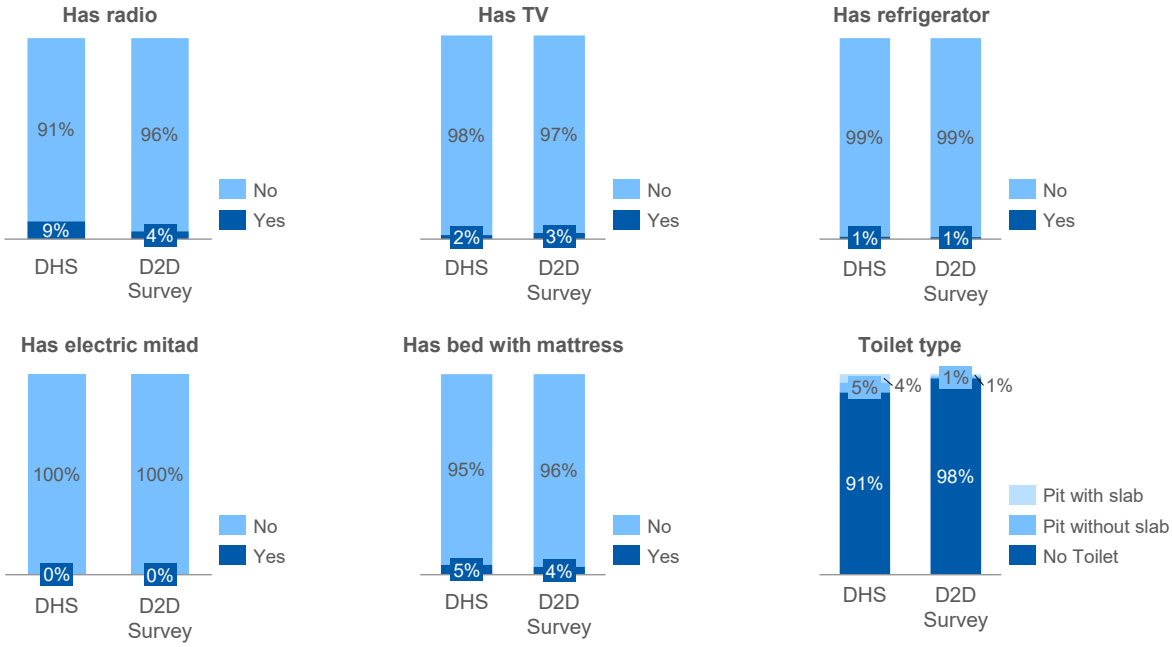


Notes: 1. Study data weighed to DHS-19 on region, wealth quintile, and gender of household head.

COMPARISON OF STUDY AND DHS-19 POPULATIONS FOR SOMALI + AFAR

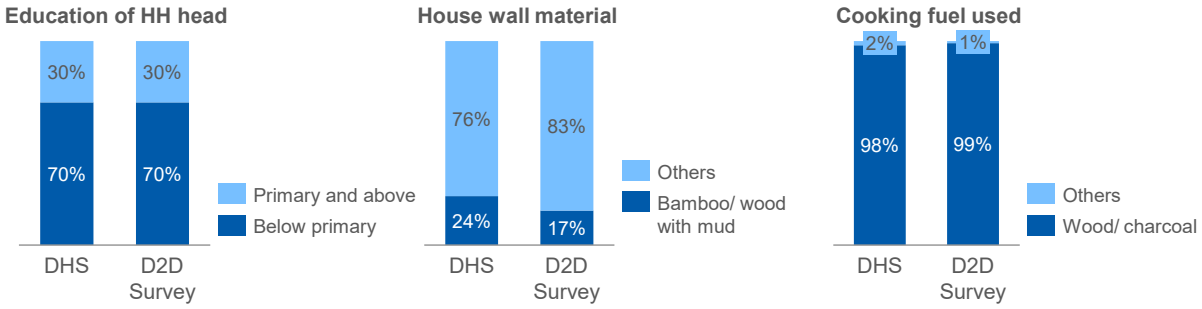
As with Ethiopia*, the weighted Somali data matches DHS-19 on most assets and toilet types (Figure 18), as well as key demographic variables and the material used for house walls (Figure 19).

Figure 18: Comparison of Weighted Study Data and DHS-19 on Asset Ownership and Toilet Type in Somali + Afar



Notes: 1. Study data weighed to DHS-19 on wealth quintile and gender of household head.

Figure 19: Comparison of Weighted Study Data and DHS-19 on Materials Used for House Construction and Key Demographic Variables in Somali + Afar



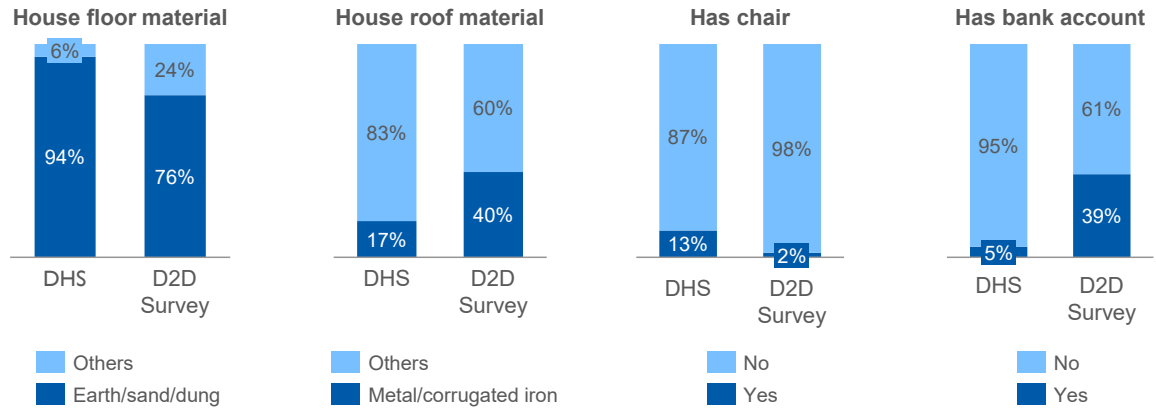
Median family size

Dataset	Median no. of HH members
DHS	*7*
D2D survey	*7*

Notes: 1. Study data weighed to DHS-19 on wealth quintile and gender of household head.

The weighted Somali data does not match DHS-19 on materials used for the house roof and floor, or with chair ownership and access to a bank account (Figure 20). However, while the degree differs, the study data and DHS-19 are still directionally the same, i.e., most households in both datasets still live in homes made with earth/sand/dung floors and corrugated iron roofs, and most still lack access to a chair or a bank account. Further, nearly all study households do not have a toilet, in line with 91 percent of DHS-19 households. Therefore, FSG is confident that the sanitation needs, preferences, and behavior of study households and DHS-19 households are likely to be similar.

Figure 20: Differences Between Weighted Study Data and DHS-19 in Somali + Afar



Notes: 1. Study data weighed to DHS-19 on wealth quintile and gender of household head.

ANNEX III: POTENTIAL IMPACT OF TAX EXEMPTIONS ON BASIC SANITATION COVERAGE IN ETHIOPIA*

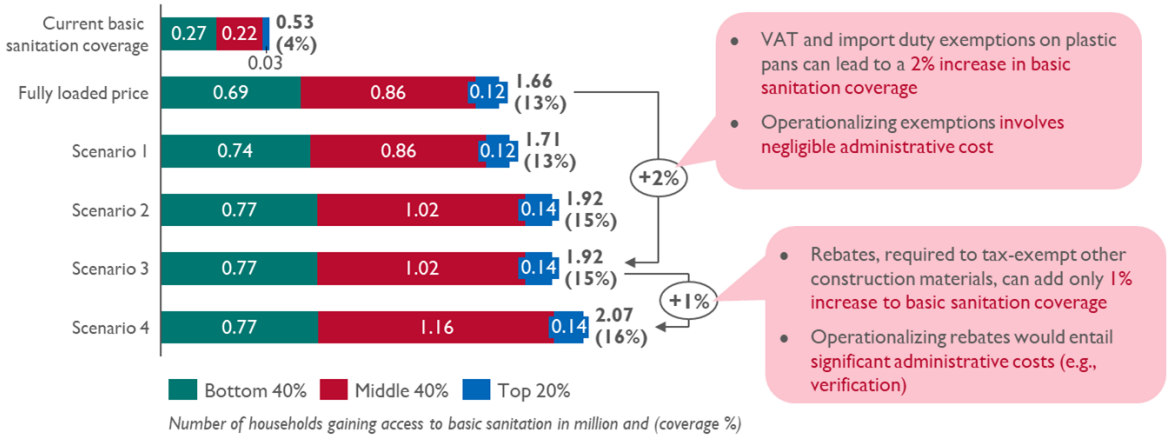
For Ethiopia*, FSG estimated the extent to which import duty and domestic tax exemptions could lower the market prices of sanitation products, and the impact this would have on uptake based on the WTP study demand curves. The team first estimated the "***fully loaded price***" of the upgrade and new toilet, i.e., the market price that includes customs duty, surtax, and value-added tax (VAT) on plastic pans and construction materials. Relaxing import duties and domestic taxes incrementally, the team estimated four scenarios:

1. **Scenario 1:** VAT exempt on plastic pans only; all other duties and taxes are applicable.
2. **Scenario 2:** Import customs duty and surtax are exempt on plastic pans only; VAT on pans and duties and taxes on construction materials are applicable.
3. **Scenario 3:** Import customs duty, surtax, and VAT are exempt on plastic pans only (*Scenario 1 + Scenario 2*).
4. **Scenario 4:** Fully exempt, i.e., import customs duty, surtax, and VAT exempt on plastic pans and construction materials.

The team found that import duty exemptions on toilet pans (Scenario 2) can lead to a 2-percentage point increase in basic sanitation coverage compared to the fully loaded price, with negligible administrative cost to the government. As a donor-funded project, T/WASH is exempt from paying import duties on plastic pans, allowing them to sell sanitation products at the market prices indicated in Scenario 2. However, if the 2-percentage point increase is to be achieved, the GoE may need to make this exemption universal.

Additional import duty and tax exemptions on other construction materials like cement (Scenario 4) would result in just another 1 percent increase in coverage while likely incurring significantly costlier methods of operationalization (e.g., rebates requiring verification at a household level); see Figure 21.

Figure 21: Potential Increase in Basic Sanitation Coverage Through Tax Exemptions in Ethiopia*



Note, the coverage increase from tax exemptions assumes product preferences based on the WTP study data. If product preferences are based on T/WASH data (i.e., most households prefer upgrades), coverage gains would be higher. For example, the difference in coverage

between the fully loaded price and Scenario 2 would be 4 percentage points instead of 2 percentage points; Figure 21 depicts the conservative estimate.

While the increase of 2-4 percentage points may appear low, it represents hundreds of thousands of households. Further, this increase should be seen in the context of the low baseline coverage; i.e., only 4 percent of rural households currently have access to basic satiation. Further research is required to validate these findings and determine the cost-benefit of tax exemptions compared to MBS approaches and direct subsidies.

ANNEX IV: RESEARCH LOCATIONS

Table 5: List of research regions, woredas, and kebeles

Region	Woreda	Kebele
Oromia	Adaba	Bucha Raya
		Haro Hunte
		Lencha Wash
	Adami Tulu	Adensho Gogesa
		Arba
		Desta Abijata
		Harufa Lole
	Dandi	Dano Ejersagibe
		Jawe Buri
		Wamura Sako
	Ejarsa Lafo	Chalalaka Bobe
		Kela Embortu
		Sarawa Debisa
	Ejere	Hiddi
		Talbo
		Tulu Korma
	Hasasa	Hantu
		Huruba Welkite
		Mada Batu
	Ilu	Bili
		Jigdu Meda
		Weserbi Basi
	Kore	Bole Hilinse
		Doda Dayu
		Gofingira Coca
	Sabata	Awash Belo
		Bonde
		Nano Tefki
	Shashemene	Bura Borama
		Faji Gole
		Kore Rogicha
	Walmera	Barfata 1
		Burkusami Gabaa Roobii
		Dhawaf Lafto

Region	Woreda	Kebele
SNNPR	Dara	Gelo Wacho
		Kumato
		Machisho Geter
	Dara Otilcha	Lela Womerera
		Loya
		Shoyecho
	Durame	Azedabo
		Garame
		Jore
	Hadero Zuriya	Ajora
		Mogonja
	Sankura	Barcho
		Getam
		Manzo
	Sodo Zuria	Dalbo Wogene
		Gulgula
		Zala Shasha
	Titechia	Debicha
		Sole Charicho
		Teticha 02
Somali	Kebribeyah	Gilo
		Guyo
	Shabelay	Caracaska
		Shabeelay
		Xaadow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