End-Term Assessment

Report

EU-UNICEF ENHANCING SKILLED DELIVERY IN ETHIOPIA (ESDE) PROJECT

August 2018

European Union

FDRE Ministry of Health

unicef

This end-term assessment report was commissioned by UNICEF Ethiopia, and was prepared by **DAB Development Research and Training plc**.

Acknowledgments

This end-term assessment wouldn’t have been successful without the invaluable support we received from others. Firstly, DAB-DRT would like to acknowledge the continuous support from staff in the UNICEF country office, including Vincenzo Vinci, Dr. Yayeh Negash, Mr. Agazi Ameha, Mr. Yejimmawork Ayalew and Martha Kibur for guiding us from the beginning up to the end of the assessment. The supervision of UNICEF local staff in regions covered by the assessment is also appreciated.

We would also like to express our gratitude to government offices at different levels, including Federal Ministry of Health, for providing us with support letters and continuous supervision for the security of our field staff in view of the national emergency proclamation. Moreover, DAB-DRT would like to acknowledge the efforts of our hard-working consulting team members and administrative staff for their commitment beyond office hours for the successful accomplishment of the end-term assessment. It is a pleasure to work with you all and we appreciate your commitment. We would also like to thank our field supervisors and both qualitative and quantitative data collectors.

Finally, we are grateful to household members, discussion participants and key informants in different positions for sharing the information we needed and for devoting their scarce time.

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Acronyms

ANC	Antenatal Care
BEmONC	Basic Emergency Obstetric and Neonatal Care
CBNC	Community-Based Newborn Care
CEmONC	Comprehensive Emergency Obstetric and Neonatal Care
CSA	Central Statistical Agency
CSPro	Census and Survey Processing System
EA	Enumeration Area
EDHS	Ethiopia Demographic and Health Survey
EPHI	Ethiopian Public Health Institute
EmONC	Emergency Obstetric and Neonatal Care
EMwA	Ethiopian Midwives Association
ENC	Essential Newborn Care
EPS	Ethiopian Paediatrics Society
ESDE	Enhancing Skilled Delivery in Ethiopia
ESPA+	Ethiopia Service Provision Assessment Plus
EU	European Union
FGD	Focus Group Discussion
FMoFED	Federal Ministry of Finance and Economic Development
FMoH	Federal Ministry of Health
GoE	Government of Ethiopia
HDA	Health Development Army
HEW	Health Extension Worker
HSDP	Health Sector Development Programme
HSS	Health System Strengthening
HSTP	Health Sector Transformation Plan
iCCM	Integrated Community Case Management
IMPAC	Integrated Management of Pregnancy and Childbirth
IPs	Implementing Partners
KII	Key Informant Interview
MDG PF	Millennium Development Goal Pooled Fund
MDGs	Millennium Development Goals
MNCH	Maternal, Neonatal and Child Health
MNH	Maternal and Neonatal Health
NBC	Newborn Corner

NGOs	Non-Governmental Organizations
NICUs	Neonatal Intensive Care Units
NMR	Neonatal Mortality Rate
PMTCT	Prevention of Mother-to-Child Transmission
PNC	Postnatal Care
PPS	Probability Proportional to Size
PSU	Primary Sampling Unit
RBoFED	Regional Bureau of Finance and Economic Development
RHB	Regional Health Bureau
SDG PF	Sustainable Development Goal Pooled Fund
SERC	Scientific and Ethical Review Committee
SNNP	Southern Nations, Nationalities and Peoples'
SNNPR	Southern Nations, Nationalities and Peoples' Region
SPSS	Statistical Package for Social Sciences
SSU	Secondary Sampling Unit
TBA	Traditional Birth Attendant
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Executive Summary

Background

The European Union (EU) Delegation to Ethiopia funded Enhancing Skilled Delivery in Ethiopia (ESDE) with €40.2 million over four years, from 14 February 2014 to 13 February 2018, with the aim of improving maternal and neonatal health (MNH) by enhancing access to and utilization of high-quality health services by mothers and newborns. The project had national coverage, with the following components: health system strengthening (HSS), basic emergency obstetric and neonatal care (BEmONC), neonatal intensive care units (NICUs), newborn corner (NBC) and demand creation. Community-based newborn care (CBNC) was implemented in three zones in Oromia and two zones in Southern Nations, Nationalities and Peoples' Region (SNNPR). The project supported direct service delivery of maternal and child health services by providing health institutions with essential maternal and newborn medical equipment and supplies, and human resources capacity-building. Community mobilization and demand generation interventions were designed to enhance the utilization of services. This evaluation was commissioned to assess the relevance, effectiveness, efficiency, sustainability, and added value of the ESDE project in improving national maternal, neonatal and child health (MNCH) care.

Evaluation objectives

The overall objective of the evaluation was to assess the added value of the ESDE project in improving MNCH nationally, drawing lessons and documenting the project's relevance, effectiveness, efficiency and sustainability.

The specific objectives of the evaluation were to:

1. Assess the relevance of the project vis-à-vis the country context and priority
2. Assess the contribution of the project in improving national MNH
3. Identify the key health system strengthening contributions of the project to ensure the sustainability of high-quality MNH services.

Methods

The evaluation employed a cross-sectional study design to generate project end-line data. The survey covered 54 *woredas* (19 urban and 35 rural) across the nine regional states and two city administrations of Ethiopia.

Both quantitative and qualitative data were collected from primary and secondary sources. Through a household survey, quantitative data were collected by conducting interviews with 2,760 (72.5 per cent from rural and 27.5 per cent from urban areas) women of reproductive age (15 to 49 years). The sample size was calculated considering estimated prevalence rate (P) 50 per cent, design effect of 2.5 and relative margin of error of 0.12 at a 95 per cent confidence level. A multi-stage cluster sampling method was used to select the study subjects using the Central Statistical Agency's (CSA) enumeration areas (EAs) as primary sampling units (PSUs) and households as secondary sampling units (SSUs). Qualitative data were collected through key informant interviews (KIIs) and focus group discussions (FGDs). KIIs were conducted with key informants, including donors, implementing partners (IPs), and representatives from government offices at federal, regional, *woreda* and *kebele* level (total of 103 KIIs). A total of 57 FGDs were conducted with women of reproductive age, adult men, health development armies (HDAs), and health care providers (hospitals, health centres and *woreda* health office managers). Health facility assessments were conducted in 13 hospitals, 54 health centres and 83 health posts. Secondary data were collected through a desk review of project documents and research reports on MNCH.

Quantitative data from the household surveys and health facility assessments were analysed using Statistical Package for Social Sciences (SPSS) software, version 22 for Windows. Qualitative data from KIIs and FGDs were coded using NVivo software version 10 for Windows and analysed using a thematic analysis technique.

The limitation of this end-line evaluation is that there was no baseline assessment conducted during the launch of the project. Benchmarks for the baseline were taken from the EDHS 2011, Mini Ethiopian Demographic and Health Survey (EDHS) 2014, Ethiopia Service Provision Assessment Plus (ESPA+) 2014, and EDHS 2016 for comparison.

Results

Relevance

The ESDE project was designed and implemented to improve antenatal care (ANC), skilled delivery and postnatal care (PNC) services, as well as emergency obstetric and neonatal care (EmONC), in line with the key priority interventions identified in Ethiopia's 2014 Accelerated Action Plan for Reducing Maternal Mortality. The project interventions were aligned with the county's Health Sector Development Programme (HSDP) in which MNH is among the main targets. The interventions are also aligned with international frameworks such as the Millennium Development Goals 4 and 5 (MDGs 4 and 5).

Effectiveness and contribution

Project targets relating to the utilization of key MNH services, including at least one ANC visit among pregnant women, delivery by skilled provider and PNC within two days after birth, were achieved. Home delivery has dropped substantially in rural areas. However, there are disparities in the utilization of ANC, institutional delivery and PNC services among regions and by educational status of women. The project strengthened the capacity of health facilities through the supply of EmONC and newborn care equipment, supplies, commodities, and the training of health care providers.

ANC: The project achieved its target of increasing the proportion of pregnant women attending at least one ANC visit to 86 per cent by the end of the project period. In this survey, 87.1 per cent of women (urban 91.8 per cent, rural 85.3 per cent) attended at least one ANC visit during their recent pregnancy. The proportion of women who attend at least one ANC visit has increased from 58.6 per cent in the 2014 Mini EDHS and 62.9 per cent in EDHS 2016. Two-thirds (67.7 per cent) of women received ANC from a skilled provider,[1] increasing from 41.2 per cent in the 2014 Mini EDHS and 49.1 per cent in the 2016 EDHS. The increase in ANC from skilled providers is more notable in rural areas – increasing from 34.8 per cent in 2014 and 43.2 per cent in 2016 to 61.8 per cent in this survey. Remarkable progress was made in the proportion of women attending their first ANC visit during the first trimester, which increased from 17.5 per cent in 2014 to 61.1 per cent in this assessment. More than half (56.3 per cent) of women attend at least four ANC visits, compared to 32.1 per cent in the 2014 Mini EDHS.

Delivery services: 75.3 per cent of the most recent births were assisted by skilled providers, an achievement higher than the project's target of 62 per cent, and showing a substantial increase from 15.4 per cent in the 2014 Mini EDHS and from 25.9 per cent in EDHS 2016. A remarkable increase was seen in the proportion of women who gave birth at health facilities, from 16.4 per cent in 2014 and 26.2 per cent in 2016 to 77.4 per cent in this survey. Home delivery was reduced from 82.6 per cent in 2014 to 22.6 per cent currently, with a more notable reduction in rural areas – from 88.9 per cent in the 2014 Mini EDHS to 24.3 per cent in this survey. Informants who participated in FGDs and KIIs said that the

[1] For comparison purpose, only doctors, nurses, midwives and health officers are considered as skilled providers.

education efforts of health extension workers (HEWs) and the HDA had improved support from husbands and family members, and a better quality of service at health facilities contributed to facilitating delivery at the health facility.

PNC: One-quarter (25.3 per cent) women received PNC within 48 hours after birth, doubling from 13.2 per cent in 2014. The proportion of women who received postnatal visits in the first two days after birth has increased from 16.6 per cent in the EDHS 2016 to 25.3 per cent at the end of the project.

Contribution to HSDP financing gaps: UNICEF transferred €21.21 million to the Millennium Development Goal Performance Fund (MDG PF) in three instalments.

Availability of equipment at health facilities: Among the surveyed health facilities (13 hospitals, 54 health centres and 83 health posts), all hospitals and 78 per cent of health centres have a delivery bed, and 92 per cent of hospitals and 96 per cent of health centres have an examination couch. With some exceptions, most health facilities (at least 92 per cent of hospitals and health centres surveyed) have essential equipment to provide basic and comprehensive EmONC services (BEmONC and CEmONC). Interviewed health care providers also reported that the availability of equipment for EmONC services at health facilities, especially delivery beds, has improved. The ESDE project distributed BEmONC equipment to 970 health facilities (including 55 hospitals). Operating theatres for obstetric surgery were installed in 55 hospitals. The project also distributed NBC equipment sets to 350 health centres. However, informants at health facilities reported that there are still shortages of some equipment, such as delivery sets, autoclaves and heaters, and some incidences of non-functionality due to limited maintenance and poor quality, which were noted as a main challenge in MNH service delivery.

Training: The project planned to train 1,000 health workers in BEmONC and managed to train 1,424 midwives, clinical nurses and medical doctors (142 per cent of the plan). During the project period, 1,000 nurses and midwives were trained in essential newborn care (ENC) and 250 health workers were trained in advanced newborn care, meeting the project target. These trainings contributed to the increased availability of trained providers at health facilities. According to the 2014 ESPA+ survey, only 29 per cent of primary hospitals and 26 per cent of health centres had at least one staff member trained in the Integrated Management of Pregnancy and Childbirth (IMPAC)/BEmONC/CEmONC. Most surveyed health facilities in this evaluation had at least one staff member trained in BEmONC who provided ANC (71 per cent of hospitals and 87 per cent of health centres) and PNC (85 per cent of hospitals and 89 per cent of health centres) services. Similarly, 86 per cent hospitals and 76 per cent of health centres have staff trained in ENC, while only 19 per cent of interviewed providers at primary hospitals and 17 per cent at health centres in the 2014 ESPA+ survey had received training related to delivery and/or newborn care. The project trained 5,087 HEWs in CBNC, exceeding the target by 1.7 per cent, and provided them with essential supplies and drugs to enable them to provide the combined CBNC and integrated Community Case Management (iCCM) service as per national standards.

Demand creation: The majority (91.1 per cent) of women have heard about ANC, and 61.7 per cent of them have heard about PNC. The ESDE project played its part in increasing access to information in remote and rural areas of the country by distributing 10,000 multi-powered solar-operated radios to health posts. However, there are disparities in access to information across regions. Women in Afar and Somali regions have relatively limited access to information about ANC. Access to information about PNC is poor in Somali, Gambella and Afar regions. In these regions, less than half of the respondents have ever heard about PNC. The ESDE project supported demand creation by documenting and disseminating HDA best practices related to MNH for scale-up. The project planned to

document and disseminate five HDA best practices and managed to document three best practices in two regions (two practices for Tigray and one for Oromia).

Support to the National EmONC Assessment: UNICEF, through the ESDE project, has provided financial and technical support to the 2016 Ethiopia EmONC Assessment. The assessment was a national cross-sectional census conducted at 4,385 public and private health facilities to generate data on the availability, coverage, quality, utilization and key determinants of EmONC services.

Efficiency

According to the financial report of the project, the project spent 89 per cent of the allocated budget on direct programme costs. This shows that the project was efficient in spending a minimal proportion of the budget on indirect expenses, even covering all regional states and city administrations of the country. The designing and planning of the project was conducted with the participation of the Federal Ministry of Health (FMoH), EU, UNICEF and other partner organizations, ensuring that project activities were complementary to other interventions. The project developed a functional implementation structure, from federal to grass-root level, by creating a successful partnership with government and professional associations at multiple levels. Doing this enabled the project to effectively implement its activities by efficiently utilizing the existing government structure and human resource from its implementing partners. Some external factors, notably political instability in the country, resulted in a delay in implementing the project. As a result, although the project was initially planned to be completed on 13 November 2016, the project period was extended to 12 February 2018.

Sustainability

The project strengthened the overall health system of the country through direct financial support to the MDG PF, which enhanced the capacity of the FMoH to provide MNH services in a sustainable way. The high commitment of the Government of Ethiopia (GoE) to MNH as a priority area increases the prospect of sustainability.

The improved capacity of health facilities – from procurement of equipment and training of health workers by the ESDE project – and increased demand for MNH services among women, were identified as positive factors for the sustainable provision and utilization of ANC, skilled delivery and PNC services.

Although the project improved the availability of equipment for the sustainable provision of MNH services, the non-functionality of equipment and lack of periodic maintenance remains a challenge for sustainability. A lack of a continuous supply of drugs, due to a poor logistics system, was also reported as a major challenge for sustainable service provision. Various trainings provided by the ESDE project enhanced the capacity of health facilities to provide sustainable, high-quality MNH services, although a high turnover of trained health care providers was reported as a challenge.

Gender, equity and humanitarian principles

By design, the project specifically targeted women as direct beneficiaries and contributed to the realization of gender equity by benefiting both male and female neonates. Females predominantly benefited from capacity building interventions, since almost all HEWs and the majority of HDAs and nurses/midwives are female. The project interventions were designed and implemented towards improving equitable access to health services for women and children in both in rural and urban areas across all regional states and city administrations of the country. In addition to reducing maternal and neonatal mortality, the project was designed towards the realization of the basic right to life of women and the right of children to survival.

Table 1: Summary of project achievements by indicators

Indicators	Baseline EDHS (2011)	Target	End-line EU-ESDE
Specific objective: To increase access to and utilization of high-quality maternal and newborn health services			
Pregnant women attending at least one ANC visit	43%	86%	87.1%
Deliveries attended by a skilled birth provider	10%	62%	77.8%
Newborns receive postnatal visits in the first two days after birth	6.7%	25%	25.3%
Result 1: HSDP financing gaps reduced and implementation supported through contribution to the MDG PF			
Timely disbursement of fund to MDG PF, as defined in the JFA	n/a	€21,210,000	€21,210,000
Result 2: Targeted health facilities are strengthened, equipped and ready to provide maternal and newborn health services			
Procurement and distribution of EmONC equipment, supplies, commodities	n/a	555	970
Printing and distribution of EmONC protocols and job aids to maternity wards	n/a	5,000	2,000
Procurement of sets of newborn care equipment	n/a	360 sets	350 sets
Training and mentoring nurses and midwives in newborn care (ENC and NICU)	n/a	1,250	1,250
Procurement of operating theatre equipment for obstetric surgery in hospitals	n/a	55	55
Training, mentoring and supervision of nurses and midwives in BEmONC	n/a	1,000	1,424
Training and equipping HEWs in CBNC	n/a	5,000	5,087
Equipping primary hospitals and high-client-load health centres with autoclaves (sterilizers)	n/a	0	104
Result 3: Demand for and use of maternal health services is enhanced			
Document and disseminate HDA good practices	n/a	5	3
Procurement and distribution of multi-powered radios for health posts	n/a	10,000	10,000

Recommendations

- The findings of this evaluation showed substantial increases in the utilization of MNH services, indicating the effectiveness of the project approaches and strategies in addressing both the demand and supply sides, and strengthening the capacity of health facilities, as well as the overall country health system. Hence, there is a need to replicate the approaches and strategies in future similar programmes.
- Given the relatively low level of service utilization in regions such as Afar and Somali, the study recommends similar projects should provide special support to these regions.
- Both the 2016 EDHS and this survey showed a declining trend in PNC service utilization in urban areas. Hence, before designing similar projects, there is a need to undertake qualitative studies to identify the factors behind the reduction in service utilization.
- Community-level demand creation activities should focus on addressing factors associated with home delivery such as the belief that institutional delivery is not important or customary.

- Learning from lessons on the positive roles of HEWs, HDAs, husbands and other family members play in increasing demand for and use of MNH services, especially their role in reducing home delivery. Similar interventions should work to further strengthen these grass-root assets.
- Similar projects should strengthen the local capacity for long-term monitoring and supervision by involving *woreda* health offices in mentoring and supervision activities.
- Addressing the challenge related to non-functionality of equipment by establishing a system at national (FMOH) level for procurement of high-quality and through strengthening local capacity (zonal, or preferably *woreda* level) for the maintenance of equipment by establishing maintenance teams.
- Supporting the health system from the federal to *woreda* level, including improving the overall logistics system, to ensure sustainable, effective distribution of supplies and drugs.

Lessons learned

Lesson 1: The ambulance service provided to pregnant women plays crucial role in increasing the utilization of institutional/skilled delivery. However, ambulances only provide a service to transport pregnant women to health facilities and the lack of a service to transport women back home after delivery can discourage them from using institutional delivery.

Lesson 2: ANC attendance is a gateway for the use of institutional delivery, as women who attend ANC services are likely to give birth at health facilities and consequently attend PNC services.

Lesson 3: Improving the quality of services at health facilities also needs to address non-discrimination of users. Some community members complained that there are instances where health workers do not give an equal level of care to clients from rural and urban areas.

1. Introduction and background

1.1. Introduction

In 2015, the global maternal mortality ratio was 216 per 100,000 live births, with an estimated 303,000 maternal deaths each year [1]. Most maternal deaths occur in low- and middle-income countries. Sub-Saharan Africa bears the greatest burden, accounting for 66 per cent (201,000) of global maternal deaths [1]. In 2011, an estimated 2.9 million babies died in the first four weeks of life (the neonatal period) [2]. Almost all (99 per cent) neonatal deaths occur in low- and middle-income countries, with about two-thirds (1.2 million) occurring in the African and southeast Asian regions of WHO [3].

Ethiopia has made substantial progress in improving the health of its population by achieving most of the health-related Millennium Development Goals (MDGs) [4]. The country is heralded as an excellent example of a low-income country that, despite limited resources, has attained MDGs with sustained political will and a commitment to innovative policies, strategies and programmes [5]. However, maternal and neonatal deaths remain very high in Ethiopia. The 2016 Ethiopia Demographic and Health Survey (EDHS) estimates that the maternal mortality ratio (MMR) was 412 per 100,000 live births and the neonatal mortality rate (NMR) was 29 deaths per 1,000 live births. These figures reveal impressive gains in reducing maternal deaths since 2000, when the estimated MMR was 871 per 100,000 live births and NMR was 49 deaths per 1,000 live births [6]. Although Ethiopia has witnessed a significant decline in under-5 and neonatal mortality, the relative proportion of under-5 deaths that occur during the first 28 days of life is increasing. Neonatal deaths accounted for 30 per cent and 43 per cent of under-5 deaths in the 2000 and 2016 EDHS, respectively [6,7].

Antenatal care (ANC) attendance in Ethiopia has significantly improved over the past 16 years. Findings from the 2016 EDHS show that 62 per cent of women aged 15 to 49 in Ethiopia received ANC from a skilled provider, a substantial improvement from 27 per cent in 2000 and 34 per cent in 2011. However, only 32 per cent of women attended the recommended frequency of at least four ANC visits [6]. Despite the slight progress made in ANC utilization, skilled delivery in Ethiopia is still far below any acceptable standard. The majority of women (73 per cent in 2016) give birth at home. Although the proportion of women who attended institutional deliveries increased between 2000 and 2011, the proportion remains low, at 26 per cent in 2016 [6]. The utilization of postnatal care (PNC) services is even lower. In 2016, the proportion of women and newborns who received a postnatal check within the first two days of birth was 17 per cent and 13 per cent, respectively [6].

The utilization of maternal and neonatal health (MNH) services is unevenly distributed, and aggregated indicators hide striking inequalities across rural and urban areas, and across other population sub-groups. The pervasive inequity among Ethiopia's population, particularly between the poorest and the richest, remains a major health sector challenge [8].

Rural women and women in the lowest wealth quintile are at a greater disadvantage in receiving ANC services at health facilities. According to the recent EDHS survey, 90 per cent of urban women receive ANC services from a skilled provider, while the proportion is 58 per cent for rural women. Similarly, 85 per cent of women in the highest wealth quintile receive ANC from a skilled provider, compared with only 48 per cent of women in the lowest quintile. EDHS 2016 found that ANC service utilization from a skilled provider increases

with the mother's level of education. Women with no education are less likely to use ANC (53 per cent) services, compared with women with above secondary-level education (98 per cent) [6].

Maternal education, household wealth, birth order, antenatal service utilization, and exposure to mass media are important factors that determine the accessibility of women to delivery care services in Ethiopia. Women with secondary and higher education, and women from the wealthiest households, are most likely to utilize delivery care services at health institutions [9]. According to EDHS 2016, only 16 per cent of women with no education use skilled attendants at birth, compared with 92 per cent among women above secondary-level education. Seventy per cent of births in the highest wealth quintile are assisted by skilled providers, while the proportion is just 11 per cent among those in the lowest quintile [6]. Attending four or more antenatal visits is a significant predictor of institutional delivery. Only 8 per cent of women who do not attend any ANC visit give birth in a health facility, while 56 per cent of those who attend more than four ANC visits do [6].

Institutional delivery increases the likelihood of attending PNC services. The proportion of women who receive a postnatal health check within two days of delivery is 42 per cent among women who deliver in a health facility, compared with only 2 per cent among those who deliver elsewhere [6]. Hence, ANC services serve as a gateway to the use of other maternal health care services, such as institutional delivery. Rural women are less likely to receive a postnatal check-up from a skilled provider within two days (13 per cent) than urban women (45 per cent) [6].

Reaching rural and uneducated women through tailored interventions is of paramount importance to improving the utilization of maternal health care services, including delivery care. Improving the socioeconomic status of women through alternative income-generating activities and employment opportunities can also improve maternal health care utilization.

1.2. Country and project context

In 2013, a financing agreement was signed between the Federal Democratic Republic of Ethiopia and the European Union (EU) to launch a new maternal, newborn and child health (MNCH) initiative called 'Enhancing Skilled Delivery in Ethiopia (ESDE)', to support the Government of Ethiopia (GoE) in achieving its Health Sector Development Programme (HSDP) IV targets. Under the framework of the UN Financial and Administrative Framework Agreement (FAFA), UNICEF was delegated to administer the management of ESDE, on behalf of the EU, with a budget of €40.2 million.

The ESDE project was developed in collaboration with Federal Ministry of Health (FMoH), Federal Ministry of Finance and Economic Development (FMoFED), UNICEF and the EU Delegation to Ethiopia. The main objective of the project was to enhance MNH by improving access to and the utilization of high-quality health services by mothers and newborns. Given the low level of skilled delivery service in Ethiopia, ESDE has been assisting various health institutions by providing the required inputs to enhance skilled delivery nationally. The project was initially planned to be completed in three years (14 February 2014 to 13 November 2016). However, for several reasons – including civil unrest in the country – the project was delayed and extended at no cost. The project was finally concluded on 12 February 2018.

The ESDE project commenced while Ethiopia had already started implementing the fourth round of the HSDP, which was implemented between 2010/11 and 2014/15 and aligned with the global Millennium Development Goal (MDG) targets. In addition to the MDG targets of reducing child mortality to 68/1,000 live births and the MMR to 267/100,000 live births,

HSDP IV had also set other ambitious targets for 2015, including increasing the availability of basic emergency obstetric and neonatal care (BEmONC) and comprehensive emergency obstetric and neonatal care (CEmONC) to 100 per cent at health centres and hospitals across the country; increasing skilled birth attendance to 62 per cent of total deliveries; and universal access to ANC and PNC for mothers and neonates.

Through different programme components, the ESDE project supported direct service delivery of evidence-based, high-impact interventions that have been proven to reduce maternal and child mortality. ESDE also supported the health system through other modalities, including the procurement of essential maternal and newborn medical equipment and supplies, human resources capacity-building, community mobilization and demand generation towards facilitating service delivery and creating a sustainable health system. As such, the ESDE project had the components of health system strengthening (HSS) and direct health service improvement. Funding for broader HSS was channelled through the Millennium Development Goals Pooled Fund (MDG PF) mechanism of the FMoH, while UNICEF managed funds for direct service delivery.

The ESDE project is one of a kind for UNICEF and the GoE, in terms of both geographical scope – covering all regional states and city administrations – and comprehensiveness, as the interventions were designed to address both the demand and supply sides, as well as strengthen the overall health system of the country. The ESDE project is in line with UNICEF program priorities in Ethiopia. UNICEF Ethiopia is one of the key partners supporting the Government of Ethiopia for the realization of the rights of children and women by improving access to health care services. In this aspect, the project addresses the core priorities of UNICEF Ethiopia in supporting the Government of Ethiopia to strengthen maternal, newborn and child health services.

The project had national coverage of the components for HSS, BEmONC, neonatal intensive care units (NICUs), newborn corner (NBC) and demand creation. Community-based newborn care (CBNC) was implemented in three zones in Oromia and two zones in Southern Nations, Nationalities and Peoples' Region (SNNPR).

1.3. Theory of change

The theory of change for the ESDE project, constructed from the project log frame, is illustrated in Figure 1. The chain of activities and results for reaching the intended goal are presented. At the bottom of the figure are the activities/interventions carried out by the project, such as equipment and supply support to health facilities, training of health care providers, support for demand creation activities and direct financial support to the government. Above the activities are the immediate results expected to be produced from the interventions, including: increased demand for the use of maternal health services, improved capacity of health facilities to provide MNH services, and reduced financial gaps for implementation of the HSDP by the GoE. The immediate outputs then translate to the medium- and long-term outcomes of increased access to and utilization of high-quality MNH services. Finally, at the top of the figure, is the impact the project aims to contribute to – improving MNH.

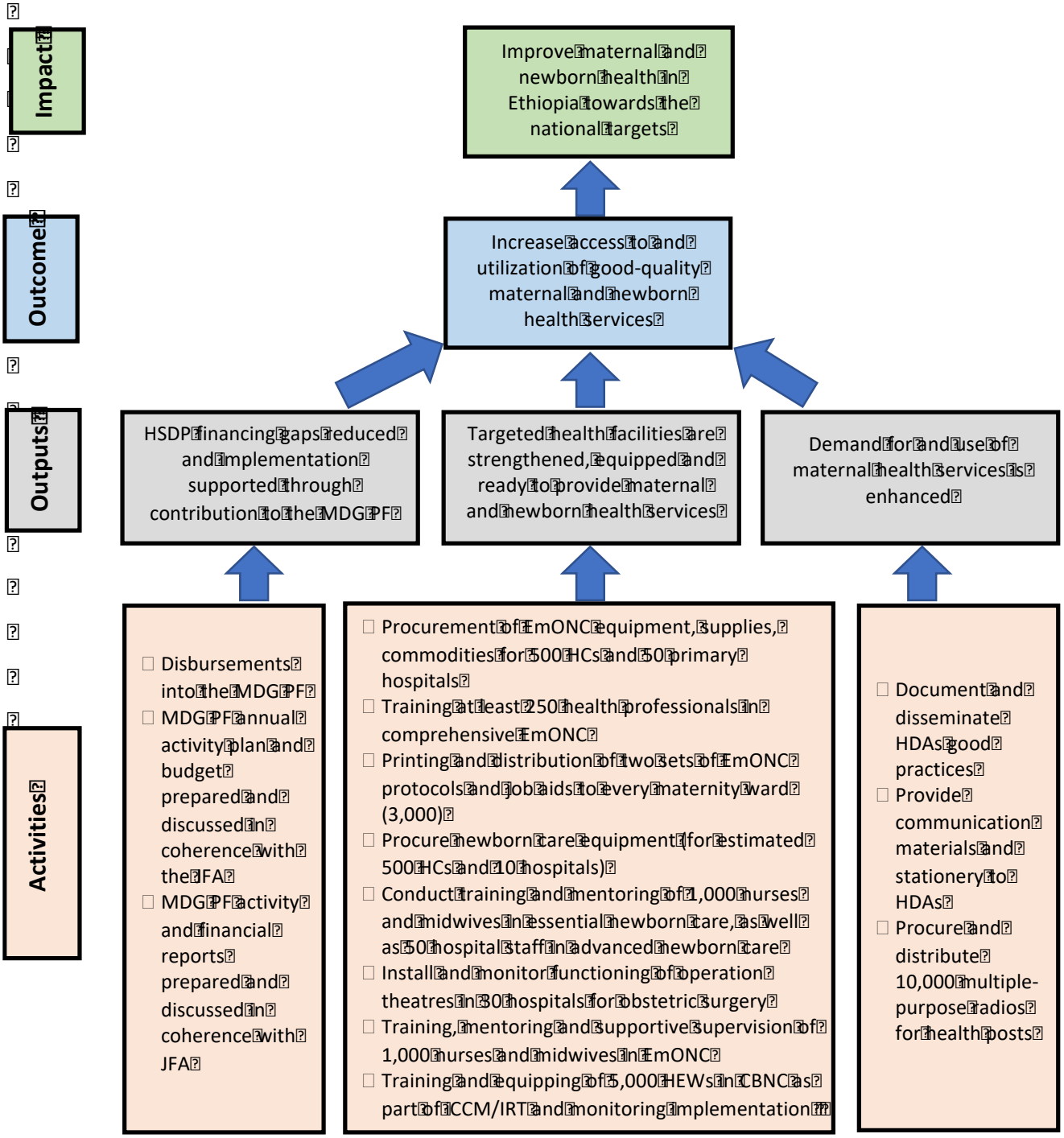

Figure 1: ESDE project theory of change

1.4. Evaluation purpose, scope, and questions

Evaluation Purpose

The overall objective of this evaluation is to assess, draw lessons and document the relevance, effectiveness, efficiency, sustainability, and added value of the ESDE project in the improvement of the national MNCH. The federal ministry of health (FMOH) of Ethiopia, EU and UNICEF are the primary owners of the research. The findings of the assessment will be used to primarily inform the national MNCH program in particular and the overall health system in general. The findings will also be shared to the global health community so

that the lessons will be used in nations of similar set up. The specific objectives of the evaluation are to:

- ✓ Assess the relevance of the project vis-à-vis the country context and priority
- ✓ Asses the contributions of the project in improving the national MNH
- ✓ Identify the key HSS component contributions of the project to ensure sustainability of high-quality MNH services.
- ✓ Assess the efficiency of the project in terms results produced vis-à-vis costs incurred
- ✓ Identify the project added value in the improvement of the national MNCH

Evaluation Scope

This evaluation focused on examining the following:

1. Implementation strategy and priority interventions in view of the health system strengthening;
2. Results achieved including the improvement in health seeking behaviour
3. Challenges, risks and mitigation measures put in place
4. Partnership among the major stakeholders and implementing partners that contributed to achieve results
5. Exit and sustainability strategies.

Evaluation Questions

This evaluation employs the widely-used framework which assesses donor-funded projects against the criteria of relevance, effectiveness, efficiency and contribution, sustainability, and cross-cutting issues on gender, equity and humanitarian principles. The evaluation focuses on the following questions:

Relevance

- To what extent were the objectives of the ESDE project fitting to the needs identified nationally at the time of the beginning of the project?
- To what extent were the ESDE project interventions aligned with the GoE's MNH priorities and strategies?
- How relevant were the objectives and activities of the ESDE project in addressing MNH service needs in Ethiopia?

Effectiveness and contribution

- To what extent was the ESDE project effective in delivering planned results?
- Has the cause and effects link been ensured between inputs and activities, and outputs, outcomes, and impacts of the project intervention?
- How effective were the intervention modalities (e.g., training, equipping facilities) used in the implementation of the project?
- What is the level of the ESDE project's contribution to the overall progress to enhanced skill delivery in the country?
- To what extent did the project add benefits to what would have resulted from the GoE's and/or other development partners' interventions only?

Efficiency

- How far do the actual or expected results (outputs and outcomes) justify the costs incurred?
- What was the extent of internal coherency among project components/implementing partners' (IPs') strategies and any significant overlap and duplication of project

activities with other similar interventions funded nationally and/or by other donors which could otherwise result in unnecessary wastage of resources?
- To what extent were the inputs identified realistic, appropriate and adequate to achieve the results?
- What were the factors which contributed to the project's efficiency?

Sustainability

- What is the likelihood of sustainability of project output, outcomes, and benefits after completion of the project?
- How effective are the mechanisms established to maintain equipment and service provision so that sustainable utilization for reasonable periods is ensured?
- What are the important issues that require particular attention to improve the likelihood of sustainability of outcomes?
- To what extent are capacities strengthened at the individual, institutional and system level?

Gender, equity and humanitarian principles

- To what extent has the project contributed towards the realization of gender equality?
- To what extent was the criteria of 'equity' considered when UNICEF targeted its resources?
- To what extent is UNICEF perceived to be neutral in its humanitarian action by different stakeholders (e.g., affected communities, parties to the conflict, other humanitarian actors)?
- To what extent has UNICEF and its partners reached all groups in need, given the available resources?

1.5. Organization of the report

The report is presented in six sections. Section one presents a summary literature review on MNCH, background information about the ESDE project, and an outline of the purpose and scope of the evaluation. Section two deals with the evaluation methodology, including the data collection methods, sample size and sampling procedure, data analysis techniques, and limitations of the evaluation. The findings of the evaluation are presented in Section three, which is divided into sub-sections, in line with the evaluation criteria. Sections four and five present conclusions and recommendations based on findings of the evaluation. Finally, Section six present the lessons learned.

2. Methodology

2.1. Evaluation design

The evaluation employed a cross-sectional study design with a mix of quantitative and qualitative research methods to generate the required project end-line data. The evaluation was conducted in the nine regional states and two city administrations of Ethiopia. The relevance of the project was assessed by examining the extent to which the objectives of the project addressed the needs identified nationally and to what level the interventions were realistic, appropriate and adequate to achieve the results. In evaluating effectiveness, a thorough assessment was conducted to learn how much the project has progressed in achieving the stated objectives by examining the extent to which the programme achieved its targeted outputs and identifying changes produced by the project. To evaluate the efficiency of the project, internal coherence among the project components and with other similar interventions funded nationally and/or by other donors was assessed, and the factors contributing to its efficiency identified. The mechanisms established, and the extent to which the project strengthened capacities at the individual, institutional and system level for sustainable services provision and utilization, were assessed. Finally, the likelihood of sustainability was evaluated by identifying factors that could affect the project outcomes, outputs and benefits.

2.2. Data collection methods

Primary data were collected by conducting household surveys, key informant interviews (KIIs), focus group discussions (FGDs) and health facility assessments. Quantitative data from the household survey and health facility assessment were collected using tablet computers. Data from primary sources were supported by secondary data and information obtained from EU-UNICEF, EDHS, partner organizations, and relevant government sector offices. Details of the data collection methods are described below.

a) Household survey

A household survey was the primary data collection method to assess the utilization of MNH services and identify barriers to access to such services. The sample size for this survey was determined using the following formula and by considering the following assumptions:

$$n = z_{\frac{a}{2}}\{deft^2[(\frac{1}{1-p})/e^2]/[\,R_i\ x\ R_h\ x\ d]\}$$

Where,

- p is the estimated prevalence rate (proportion) of 50 per cent
- deft is the estimated design effect of 2.5 *(since we use a multi-stage cluster sampling design)*
- d is the number of individuals per household of 0.69 *(average number of children under 5 years old per household – from the 2007 census)*
- R_i is individual response rate of 94 per cent *(overall women's response rate from EDHS 2016)*
- R_h is household response rate of 97 per cent *(household response rate from EDHS 2016)*
- e is relative margin of error of 0.12
- $z_{\frac{a}{2}}$ is z-score value at 95 per cent confidence level, assuming the population distribution is normal.

Based on the above assumptions, the sample size was calculated as:

$n = 1.96\{2.5^2[(\frac{1}{0.5})/0.12^2]/[0.94\ x\ 0.97\ x\ 0.69]\}$ = 2,760

Sampling procedure

A multi-stage cluster sampling method was used to select the study subjects. The primary sampling units (PSUs) were the Central Statistical Agency's (CSA) enumeration areas (EAs); households were the secondary sampling units (SSUs). Since the survey aimed at providing estimates of key indicators for the country as a whole, for urban and rural areas separately, and for each of the nine regions and the two city administrations, each region was stratified into urban and rural areas, yielding 21 sampling strata (11 urban and 10 rural strata). The total sample EAs was distributed to urban and rural areas using a power allocation technique, that is, between proportional allocation (based on the proportion of EAs in urban and rural areas) and equal size allocation. Similarly, the distribution of EAs across regions was done using a power allocation technique by considering probability proportional to the EA size and with independent selection in each sampling stratum (rural and urban).

Nationally, the survey covered 54 *woredas* (19 urban and 35 rural). The number of *woredas* to be included in the survey was decided in line with the number of calculated sample EAs and households found in each region and city administration. It also considered meeting statistically reliable estimates by ensuring the sample EAs were drawn from diverse geographic locations. A simple random sampling method was used to select sample *woredas* from each region. The calculated number of EAs (clusters) was allocated to the selected *woredas* within each region using the probability proportional to size (PPS) technique based on their population size, separately for urban and rural. The list of study woredas with their sample sizes is included in Appendix 3.

Although the sampling procedure used EAs as PSUs, it was not practically feasible for the selection of households at field level, as the CSA does not provide cartographic maps. Hence, EAs were used for the sampling procedure, while *kebeles* were used as the actual sampling units for the selection of households. Accordingly, on average two *kebeles* were selected and included per *woreda* (based on the allocated number of EAs). Within each *woreda*, the allocated number of *kebeles* was selected using a simple random sampling method.

In each selected *kebele*, a household listing operation was carried out to identify women of reproductive age (15 to 49 years) who had given birth in the past four years using registers of health extension workers (HEWs). The resulting list of households served as a sampling frame for the selection of households. Then, on average, 20 to 30 households were randomly selected per *kebele* through a simple random sampling technique (using a random number generator application uploaded onto tablet computers). In each selected household, face-to-face interviews were conducted with women of reproductive age who had given birth in the past four years. For this evaluation, 2,760 women of reproductive age were included in the household survey (72.5 per cent from rural and 27.5 per cent from urban areas). Table 2 presents household respondents by age, educational status, and residence.

Table 2: Number/proportion of households sampled by background characteristics of respondents

Background characteristics	Number of households	Per cent
Age		
15–19	98	3.6
20–24	546	19.8
25–29	813	29.5
30–34	701	25.4
35–39	436	15.8
40–44	144	5.2
45–49	22	0.8
Educational status		
No formal education	55	3.4
Primary school (Grades 1 to 8)	404	63.6
High school (Grades 9 to 10)	389	23.9
Preparatory	38	2.3
Technical and vocational education and training	46	2.8
Higher education	65	4.0
Residence		
Urban	760	27.5
Rural	2,000	72.5
Total	**2,760**	**100**

b) Key informant interviews

We collected qualitative information about the relevance, achievement, efficiency and likelihood of the sustainability of project outputs and outcomes by undertaking KIIs with donors, implementing partners (IPs), and government offices at federal, regional, *woreda* and *kebele* level. We also undertook KIIs with health workers at hospitals and health centres, and with HEWs. Accordingly, 103 key informants were interviewed across the nine regional states and two city administrations. The table below shows the type of informants and the number of KIIs conducted for this evaluation. The number of KIIs reached was lower than planned due to challenges identifying key informants with knowledge of the project during the fieldwork. This is because of the high turnover of professionals in the health sector with direct knowledge about the project before project phase-out. However, the 103 key informants reached at different levels was enough to get the qualitative data required for the evaluation.

Table 3: Type of key informants and number of key informant interviews conducted

Type of informants	No. of key informant interviews
Federal level (FMoH, FMoFED)	2
Regional level (RHB, RBoFED)	18
IPs (Save the Children, The Last 10 Kilometers Project (L10K), Ethiopian Midwives Association, Ethiopian Paediatrics Society)	6
EU	1
Sub Saharan Africa Research and Training Center	1
Woreda level (*woreda* health offices)	21
Hospital level (health professionals)	13

Health centre level (health professionals)	22
Health post (HEWs)	19
Total	**103**

c) Focus group discussions

We conducted FGDs with community members and frontline health care providers to collect qualitative data from diverse groups of participants. Separate FGDs were conducted with women of reproductive age, adult men, and representatives from health development armies (HDAs) and health care providers (hospitals and health centres, including *woreda* health office managers). Groups of 8 to 12 people participated per FGD and a total of 57 FGDs were conducted for this evaluation. The number of FGDs conducted during the fieldwork was relatively lower than planned. This was due to difficulties in bringing participants together, for the following reasons: first, in some sample *woredas*, participants inquired about fees as a reward, which is unethical for the study; second, in some remote areas, bringing participants together in groups was quite a challenge, due to the sparse nature of settlements. However, the number of FGDs conducted was sufficient to get the diversity of data expected for the study, and did not affect the overall results of the study.

Table 4: Type of informants and number of FGDs conducted

Type of group	No. of FGDs	Remark
Women of reproductive age	18	Selected from 18 *woredas*
Health development armies (HDAs)	10	Selected from 10 *woredas*
Adult men	10	Selected from 10 *woredas*
Health care providers and *woreda* health office managers	19	Selected from 19 *woredas*
Total	**57**	

d) Health facility assessments

We carried out health facility assessments at selected hospitals, health centres and health posts to generate data at health facility level about the availability of resources for providing basic and CEmONC services. The assessment was carried out through direct observation, reviews of records and face-to-face interviews with health facility managers. Accordingly, health facility assessments were conducted in 13 hospitals, 54 health centres and 83 health posts across the nine regional states and two city administrations. The number of facility assessments reached was lower than had been planned. Finding health posts in the selected sample urban *woredas* and the two city administrations was challenging due to their limited presence in urban areas. There were also some problems finding hospitals in the selected sample *woredas*; in such cases, other nearby hospitals in neighbouring *woredas* were selected. The assessed facilities are believed to show the overall picture of the project.

e) Desk review of secondary data sources

A desk review of relevant documents was conducted to collect secondary data in line with the objectives of the evaluation. Project documents and relevant national documents and research reports about MNCH were reviewed to supplement and strengthen the data collected from primary sources. Since a baseline survey was not conducted for the project, data from the Mini EDHS 2014, EDHS 2016 and the 2014 Ethiopia Service Provision

Assessment Plus (ESPA+) survey served as a proxy for comparison of the evaluation findings. A list of the documents reviewed is included in Appendix 4.

2.3. Data collection tools

The data collection tools were prepared by considering the ESDE project indicators and evaluation questions. The draft tools were reviewed by UNICEF and revised based on the comments provided. All data collection tools were prepared in English, translated into local languages, and then pre-tested before data collection. The following data collection tools were used:

- a structured questionnaire for the household survey (uploaded on smart phones, and using Census and Survey Processing System (CSPro) software)
- interview guides for KIIs (guides were tailored to the informant type)
- interview guides for FGDs (guides were tailored to the group type)
- health facility assessment checklist (uploaded on smart phones, and using CSPro software).

2.4. Data collection

Ten teams consisting of 10 supervisors, 34 enumerators and 10 qualitative data collectors were deployed to collect primary data across the nine regional states and two city administrations. Each team had a team leader, enumerators (for the household survey), and moderators/note takers (for qualitative data). Individuals experienced in collecting data in similar surveys and fluent in the local languages were selected, and a five-day training course was given for the teams before deployment to the field. The training had both theoretical and practical sessions, and covered: objectives of the survey, sampling methods, basic concepts of the quantitative and qualitative data collection methods, use of tablets for data collection, terminologies, and ethical principles. The training included a briefing on the data collection tools (for each question) to enable data collectors to comprehend the type of data to be collected and understand each question clearly. A dedicated field manager coordinated the overall field logistics arrangements during data collection. The survey teams were equipped with Android tablets with a translated version of the questionnaire in CSPro, reserve batteries, recharging cables, power banks, voice recorders (for recording of KIIs and FGDs) and paper versions of the questionnaires as a back-up.

2.5. Data management and analysis

The study team transferred data collected on tablets to hard drives on a regular basis. The team leaders reviewed each administered questionnaire for completeness and consistency on a daily basis. Upon completion of data collection, data from the tablets (including the household survey and health facility assessment) were exported to Statistical Package for Social Sciences (SPSS) software and checked for missing values, inconsistencies and out-of-range figures. SPSS version 22 for Windows was used for quantitative data analysis. Descriptive statistics, including frequencies, proportions and means, were computed and the findings were presented in tables and graphs. Data analysis was conducted, disaggregating by residence (urban and rural), regional states/city administrations and other variables.

All KIIs and FGDs were audio recorded and the recordings were transcribed/translated to English. A codebook was prepared for summarizing qualitative data based on thematic areas, in line with the evaluation objectives, and the data were coded using NVivo software

version 10 for Windows. The analysis of qualitative data was conducted using a thematic technique.

The data analysis involved triangulation of data collected from various sources and methods to answer the evaluation questions in line with the project indicators. Overall, the analysis was conducted in such a way as to ensure that the data were analysed, interpreted and presented clearly and fully, and the findings made easily understandable for readers.

2.6. Quality assurance

The quality of the evaluation was maintained at all stages, including planning, data collection, data management, interpretation, and write-up. Experienced supervisors and data collectors were trained for five days prior to the pilot test. Data collection tools (translated to local language and encoded to tablets, with appropriate skip patterns to flag up off-range values and errors), which were developed in consultation with the client, were tested in the pilot. During data collection, every team member was connected using a cellular data connection with their supervisors; in turn, supervisors were connected to the DAB centre. Each data collector transferred data to their supervisor daily, and supervisors undertook a field review and editing of the data prior to submission to the DAB data centre. Similar data checking was undertaken by the data manager at the DAB data centre upon receipt of the data from supervisors.

A designated data manager was assigned for the day-to-day coordination of field data collection. The principal investigator closely followed and monitored supervisors and data collectors. On a daily basis, supervisors reviewed and checked each completed questionnaire. Supervisors also checked recordings of discussions and interviews to ascertain if relevant information was gathered. Before analysis, the data were coded, edited and cleaned by an experienced qualitative researcher.

The data analysis was conducted by an experienced statistician and the principal investigator using SPSS version 22 for Windows. Recordings of qualitative data from KIIs and FGDs were transcribed/translated into English. A verbatim transcription method was applied to ensure ideas were grasped fully. For qualitative data, a thematic analysis technique was employed using NVivo 7 software.

2.7. Ethical considerations

The study followed standard ethical procedures. The Ethiopian Public Health Institute (EPHI) Scientific and Ethical Review Committee (SERC) provided ethical approval for the study. Training was given to data collectors on research ethical standards and procedures, including informed consent, the privacy of study participants and confidentiality. Study participants were informed of the purpose of the study and how the results would be used. They were clearly informed about their right to refuse to take part, terminate the interview/discussion at any point or decline answering any question. Oral consent was obtained from all study participants before interviews using consent scripts. Interviews were conducted in private settings. Generally, the evaluation team undertook the study keeping in mind the fundamental ethical principles of respect for humans, beneficence, and justice. DAB-DRT strictly followed UNICEF's rules on data privacy, not sharing any information from the study to third parties, and keeping all information gathered by the study strictly secure.

2.8. Limitations of the evaluation

- Although EAs were used as PSUs for the sampling procedure, *kebeles* were used as the actual sampling unit for selection of households, as cartographic maps were not made available from the CSA.
- Scientifically sound procedures were employed to ensure a representative sample of households was included from each regional state (using power allocation methods). However, due to the fact that the overall sample size was small for a country-wide survey, the sample size for regions with small population sizes is still relatively small. There was no baseline assessment for the project, so the Mini EDHS 2014 and the 2014 ESPA+ survey were used as proxy baselines and data from EDHS 2016 as a proxy mid-term for comparison purposes. This may have limitations of comparability, as the methods and sample sizes used are different, and the sources of data used for benchmarking had different timelines than the project.
- Data collection was delayed due to the long process of getting ethical clearance.

3. Findings

The findings of this evaluation are presented in five sub-sections, in line with the evaluation criteria of relevance, effectiveness and contribution, efficiency, sustainability, and gender, equity and humanitarian principles. Analysis of the project effectiveness in achieving the intended results is presented in four sub-sections; (1) access to and utilization of high-quality MNH services; (2) contribution to HSDP financing gaps; (3) MNH services and availability of equipment and supplies at health facilities; and (4) demand creation, access to information and knowledge about MNCH services.

3.1. Relevance

The ESDE project aimed to improve the poor MNH outcomes in Ethiopia. Although Ethiopia has made progress in reducing maternal and child mortality, they remain among the highest in the world. Results from the 2016 EDHS survey show pregnancy-related mortality ratio in Ethiopia at 412 deaths per 100,000 live births and the under-5 mortality rate at 67 deaths per 1,000 live births. The 2016 EDHS survey also shows that, although childhood mortality has declined substantially since 2000, there has not been a significant change in neonatal mortality [6]. Hence, the ESDE project was relevant to the country's health sector priorities.

The ESDE project interventions are aligned with the key priority interventions identified in the country's accelerated action plan for reducing maternal mortality. The accelerated action plan for reducing maternal mortality was developed in 2014, identifying seven key priority interventions based on identified bottlenecks affecting MNCH services. The identified solutions are: (1) enhancing skilled birth attendance, (2) improving EmONC, (3) improving ANC (4), enhancing family planning services, (5) promoting maternal health education, awareness and advocacy, (6) improving human resource capacity and materials and equipment, and (7) strengthening infrastructure and partnership. The ESDE project addressed key challenges identified in the plan and the project measures are designed in line with the recommended key priority interventions. In this respect, the project was designed and implemented to improve ANC, skilled delivery and PNC services, and improving EmONC services by training of health care providers and strengthening the capacity of health facilities through the provision of equipment and essential supplies.

The project design, interventions and strategies are harmonized with the country's HSDP. HSDP IV targeted to reduce maternal mortality ratio from 590 per 100,000 live births at baseline to 267, and under-5 mortality rate from 101 per 1,000 live births to 68 by the end of the project period [10]. The project interventions are also aligned with international frameworks such as the Millennium Development Goals 4 and 5 (MDGs 4 and 5).

By strengthening health systems, the project targeted both the demand and supply sides to increase access to and utilization of high-quality MNH services by mothers and newborns. It did so by implementing appropriate interventions to achieve the project objectives that have proven to be effective in improving access to and utilization of MNH services.

On the supply side, the project was designed and implemented to strengthen the capacity of health facilities to deliver high-quality MNH services by equipping health centres and first-line referral hospitals with equipment, supplies, and commodities, and by providing training to health workers. According to interviewed health care providers, the provision of equipment and supplies, and training given to health workers by the project, improved the provision of high-quality EmONC services. The interventions also included strengthening the overall health system through a financial contribution to the MDG PF to reduce HSDP financial gaps.

On the demand side, the project aimed to increase health-seeking behaviour and the utilization of MNH services by supporting community-based health promotion activities and strengthening the referral system at the grass-root level. In this respect, the project supported grass-root demand creation for MNH services through the documentation and dissemination of HDA good practices and training of HEWs. Community members who participated in FGDs acknowledged the positive role HDAs played in creating demand and improving the use of MNH services by providing health education, registering pregnant women, and encouraging/referring them to health facilities for ANC and delivery services.

3.2. Effectiveness and contribution

3.2.1. Access to and utilization of high-quality MNH services

A. ANTENATAL CARE COVERAGE AND CONTENT

ANC coverage: The project achieved its target of increasing the proportion of pregnant women attending at least one ANC visit from 43 per cent in 2011 (EDHS) towards the HSDP goal of 86 per cent by the end of the project period. Findings from the household survey showed that 87.1 per cent of women (urban 91.8 per cent, rural 85.3 per cent) attended at least one ANC visit during their recent pregnancy. This compares favourably to the 2014 Mini EDHS and 2016 EDHS results, in which 58.6 per cent women in 2014 and 62.9 per cent in 2016 attended at least one ANC visit.

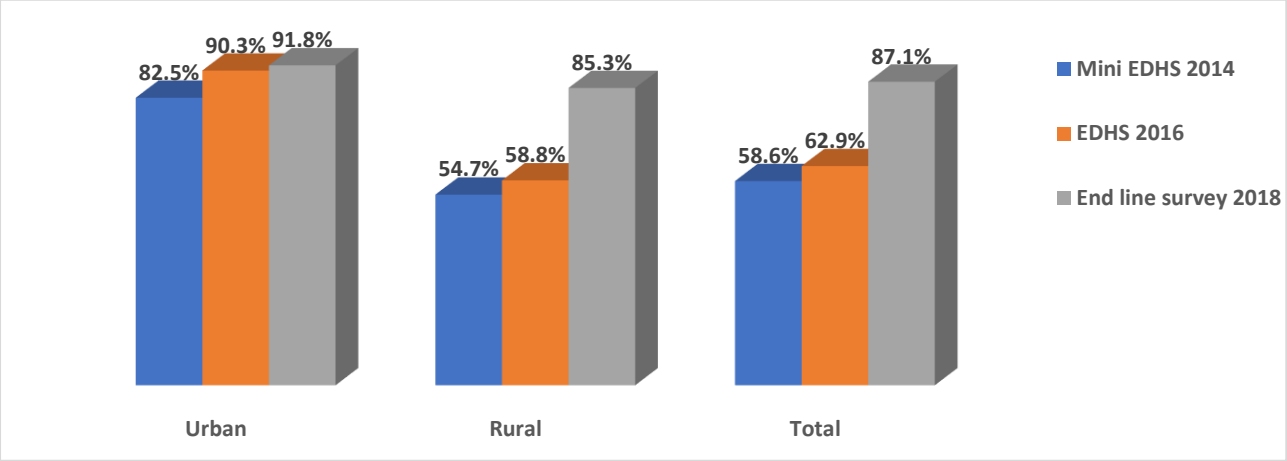

Figure 2: Proportion of women who attended at least one ANC visit, at Mini EDHS 2014, EDHS 2016 and end-line ESDE survey

The proportion of pregnant women who attended at least one ANC visit during their recent pregnancy was highest among women aged 30 to 34 years (88.3 per cent), followed by women aged 25 to 29 years (87.7 per cent) and 20 to 24 years (85.7 per cent). Nearly 82 per cent of adolescent girls between 15 and 19 years had at least one ANC visit.

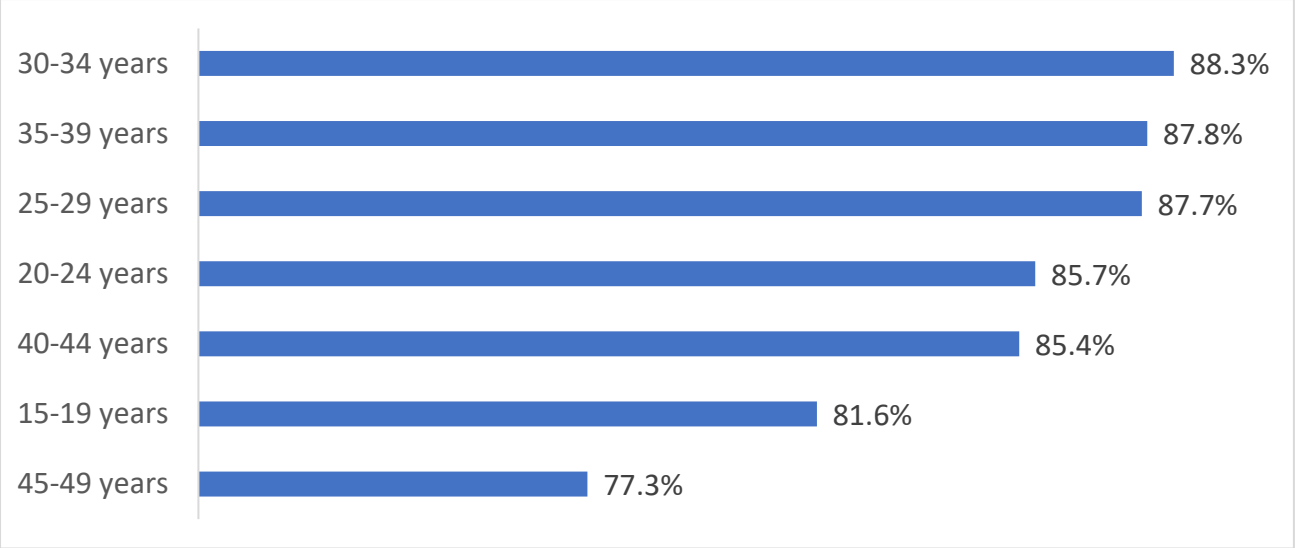

Figure 3: Proportion of women, by age, who attended at least one ANC visit, at end-line ESDE survey

The figure below presents the proportion of pregnant women who attended at least one ANC visit by regional states and city administrations. As shown in the figure, the proportion was lowest in Afar (61.3 per cent) and Somali regions (68.2 per cent).

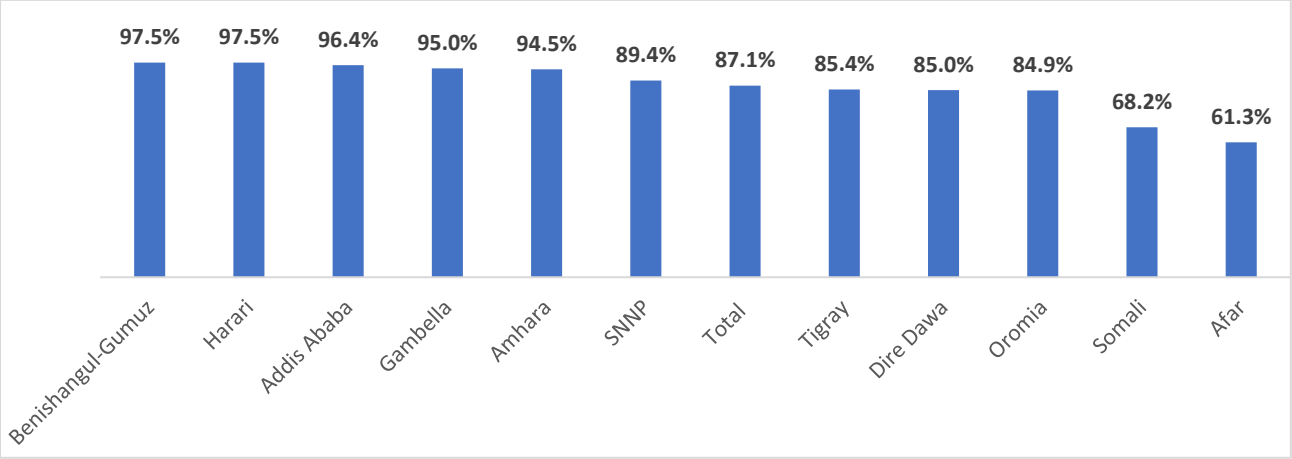

Figure 4: Proportion of women, by region, who attended at least one ANC visit, at end-line ESDE survey

ANC from a skilled provider: Two-thirds (67.7 per cent) of the women surveyed received ANC from a skilled provider (61.6 per cent from a nurse/midwife and 6.1 per cent from a doctor). Another 19.4 per cent of women received ANC from HEWs. This survey finding shows an increase in ANC from a skilled provider from 41.2 per cent in the 2014 Mini EDHS and 49.1 per cent in the 2016 EDHS.[2] The increase is more notable in rural areas, in which 34.8 per cent of women in 2014 and 43.2 per cent in 2016 received ANC from skilled providers, compared to 61.8 per cent in this survey.

[2] For comparison purposes, only doctors, nurses, midwives and health officers are considered as skilled providers.

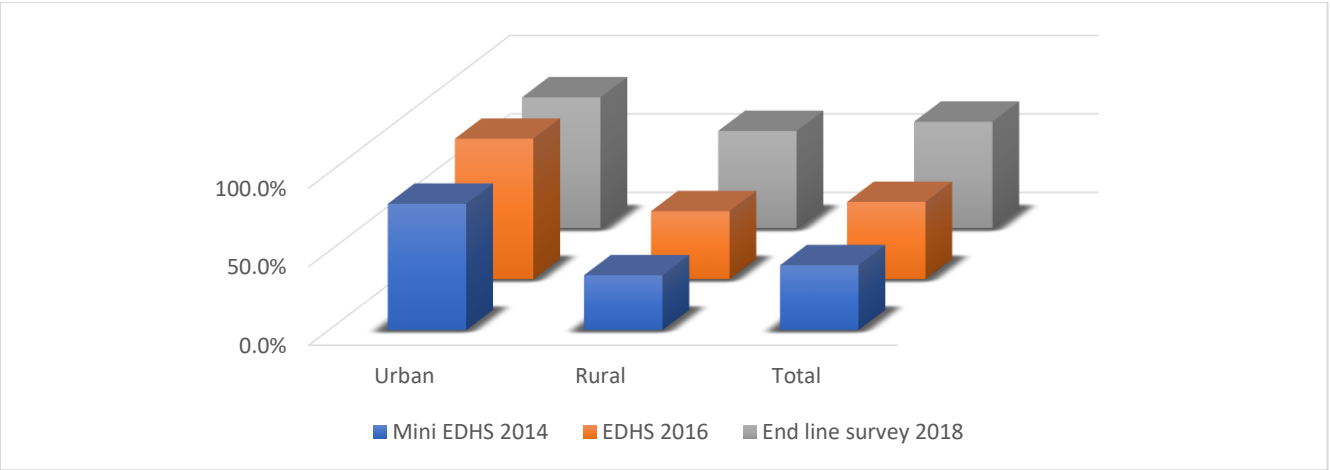

Figure 5: Proportion of women who received ANC from a skilled provider, at Mini EDHS 2014, EDHS 2016 and end-line ESDE survey

Across the regions, ANC from a skilled provider was lowest in Oromia (53 per cent), followed by Somali (53.6 per cent), Afar (57.5 per cent) and SNNP (59.2 per cent) regions.

Table 5: Proportion of women who received ANC by type of ANC provider and background characteristics of respondents, at end-line ESDE survey

Background characteristics	Doctor	Nurse/ midwife	HEW	Trad. birth attendant	Other	No ANC	Number of women
Residence							
Urban	10.3	72.9	8.6	0.1	0.0	8.2	760
Rural	4.5	57.3	23.5	0.0	0.1	14.7	2,000
Region							
Tigray	15.0	67.7	2.7	0.0	0.0	14.6	260
Afar	0.0	57.5	3.8	0.0	0.0	38.8	80
Amhara	1.3	83.2	10.0	0.0	0.0	5.5	600
Oromia	2.2	50.8	31.7	0.0	0.1	15.1	760
SNNP	5.6	53.6	30.2	0.0	0.0	10.6	500
Benishangul-Gumuz	7.5	56.3	33.8	0.0	0.0	2.5	80
Somali	3.6	50.0	14.5	0.0	0.0	31.8	220
Gambella	0.0	87.5	7.5	0.0	0.0	5.0	40
Harari	25.0	67.5	5.0	0.0	0.0	2.5	40
Addis Ababa	35.7	57.9	2.9	0.0	0.0	3.6	140
Dire Dawa	2.5	67.5	12.5	2.5	0.0	15.0	40
Mother's education							
No education	3.5	52.4	24.2	0.1	0.0	19.7	1,130
Informal education	1.8	70.9	16.4	0.0	0.0	10.9	55
Primary	5.8	64.1	20.7	0.0	0.1	9.3	1,037
Secondary	9.3	75.6	8.5	0.0	0.0	6.7	389
More than secondary	20.1	73.8	2.7	0.0	0.0	3.4	149
Total	**6.1**	**61.6**	**19.4**	**0.0**	**0.0**	**12.9**	**2,760**

Timing and number of ANC visits: The World Health Organization (WHO) recommends pregnant women to attend their first ANC visit before the fourth month of pregnancy. This evaluation showed remarkable progress in women attending the first ANC visit during the first trimester. Six women in every 10 (61.1 per cent) attend their first ANC visit before the

fourth month of pregnancy (urban 66.4 per cent, rural 59 per cent), increasing considerably from 17.5 per cent in the 2014 EDHS and 20.4 per cent in the 2016 EDHS. Slightly more than half (56.3 per cent) of women attended at least four ANC visits. The proportion of women who made at least four ANC visits has almost doubled since the 2014 Mini EDHS (32.1 per cent) and 2016 EDHS (31.8 per cent). As shown in the table below, a marked improvement is recorded in the proportion of women attending four or more ANC visits in rural areas compared with findings from the 2014 Mini EDHS and 2016 EDHS, while the proportion in urban areas remains almost stagnant. However, the achievement was below the HSTP target of 85 per cent by 2017/18.

Table 6: Timing of first ANC visit and number of ANC visits, at Mini EDHS 2014, EDHS 2016 and end-line ESDE survey

	Mini EDHS 2014 %			EDHS 2016 %			End-line survey 2018 %		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Timing of first ANC visit									
No ANC	17.5	45.3	41.4	9.7	41.2	37.1	8.2	14.8	12.9
<4 months	38.5	14.0	17.5	44.1	17.0	20.4	66.4	59.0	61.1
≥ 4 months	44.0	40.7	41.1	46.2	41.8	42.5	25.4	26.3	26.0
Number of ANC visits									
0	17.5	45.3	41.4	9.7	41.2	37.1	8.3	14.7	12.9
1	0.3	5.5	4.7	3.2	4.6	4.4	2.6	1.9	2.1
2–3	15.5	22.3	21.3	23.9	26.8	26.4	25.9	29.7	28.7
4 or more	65.7	26.5	32.1	62.7	27.3	31.8	63.2	53.8	56.3

Components of ANC: Among those women who attended ANC at least once during their recent pregnancy, 89.9 per cent reported that their weight was taken during each ANC visit (urban 93.7 per cent, rural 88.3 per cent). The majority (84.2 per cent) of women had their blood pressure measured at least once (urban 84.4 per cent, rural 84.1 per cent). Two-thirds (66.9 per cent) reported that their urine sample was taken (urban 74.9 per cent, rural 63.7 per cent), and 67.1 per cent said a blood sample was taken (urban 71.6 per cent, rural 65.3 per cent) at least once in any of their ANC visits. Among those women who attended at least one ANC visit during their recent pregnancy, 82.2 per cent (urban 78.2 per cent, rural 83.9 per cent) reported receiving at least one dose of tetanus vaccine.

B. DELIVERY SERVICES

Skilled assistance during delivery: The project envisaged to increase the proportion of deliveries attended by a skilled provider from the baseline of 10 per cent in 2011 to 62 per cent by the end of the project. The achievement in this regard was more than the target, with 75.3 per cent of recent births being assisted by skilled providers (65.2 per cent by a nurse/midwife and 10.1 per cent by a doctor). This achievement nearly meets the HSTP target to increase deliveries attended by skilled health personnel to 78 per cent by 2017/18. The proportion of deliveries attended by a skilled provider has notably increased from 15.4 per cent in 2014 and 25.9 per cent in 2016.

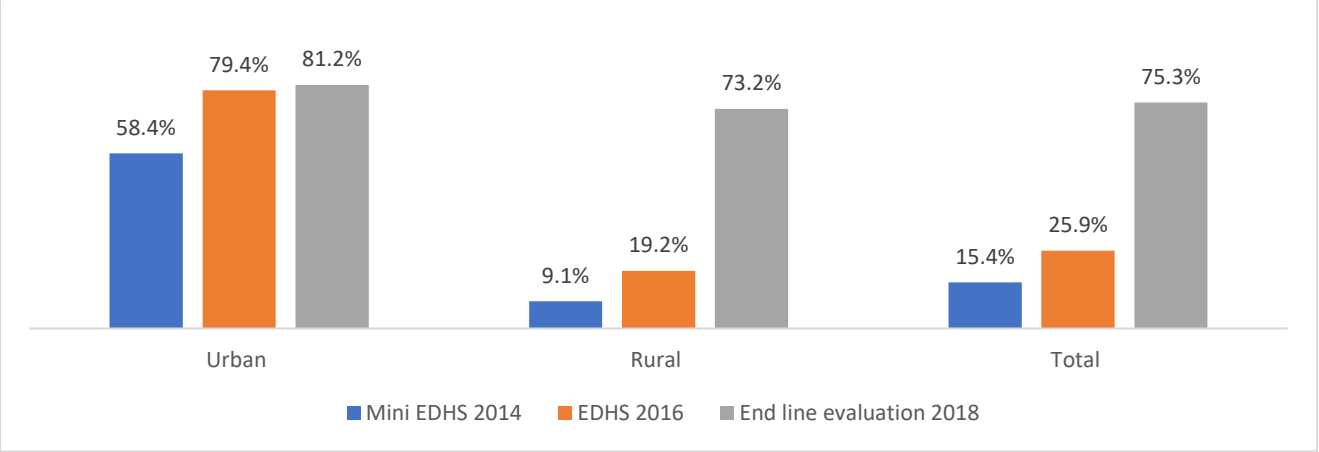

Figure 6: Proportion of women whose recent births were assisted by a skilled provider, at Mini EDHS 2014, EDHS 2016 and end-line ESDE survey

Across the regions, deliveries assisted by a skilled provider were the lowest in Somali (47.3 per cent), Benishangul-Gumuz (48.8 per cent) and Afar (60 per cent). Delivery with skilled attendants increases according to women's level of education. Nearly all (96 per cent) women with an education level of more than secondary school were assisted by skilled providers, while the proportion was 61.9 per cent among those with no education.

Table 7: Proportion of providers used by women for their last birth by type of provider and background characteristics of respondents, at end-line ESDE survey

Background characteristics	Doctor	Nurse/ midwife	Health ext. worker	Trad. birth attendant	Relative/ friend	No one assisted	Other	No. of women
Residence								
Urban	16.6	64.6	1.1	6.4	9.2	2.1	0.0	760
Rural	7.7	65.5	3.0	10.1	11.2	2.5	0.2	2,000
Region								
Tigray	15.0	78.8	0.0	0.0	5.4	0.8	0.0	260
Afar	0.0	60.0	0.0	8.8	31.3	0.0	0.0	80
Amhara	7.3	74.7	1.7	3.7	12.3	0.3	0.0	600
Oromia	6.7	54.3	3.4	11.1	17.8	6.3	0.4	760
SNNP	8.2	81.0	2.0	4.2	3.6	1.0	0.0	500
Benishangul-Gumuz	0.0	48.8	15.0	3.8	26.3	6.3	0.0	80
Somali	9.1	38.2	1.4	49.5	1.4	0.5	0.0	220
Gambella	5.0	80.0	5.0	2.5	7.5	0.0	0.0	40
Harari	20.0	72.5	0.0	2.5	2.5	2.5	0.0	40
Addis Ababa	49.3	48.6	0.7	0.7	0.0	0.7	0.0	140
Dire Dawa	15.0	72.5	10.0	2.5	0.0	0.0	0.0	40
Mother's education								
No education	5.5	56.4	3.6	14.6	16.5	3.2	0.3	1,130
Informal education	16.4	52.7	0.0	21.8	5.5	3.6	0.0	55
Primary	10.2	71.7	2.0	6.0	7.9	2.1	0.0	1,037
Secondary	14.9	75.1	1.0	2.6	5.4	1.0	0.0	389
More than secondary	30.2	65.8	1.3	0.7	1.3	0.7	0.0	149
Total	**10.1**	**65.2**	**2.5**	**9.1**	**10.7**	**2.4**	**0.1**	**2,760**

Institutional deliveries: In the end-line survey, 77.4 per cent of women gave birth at a health facility, a remarkable increase from 16.4 per cent in the 2014 Mini EDHS and 26.2 per cent in the EDHS 2016.

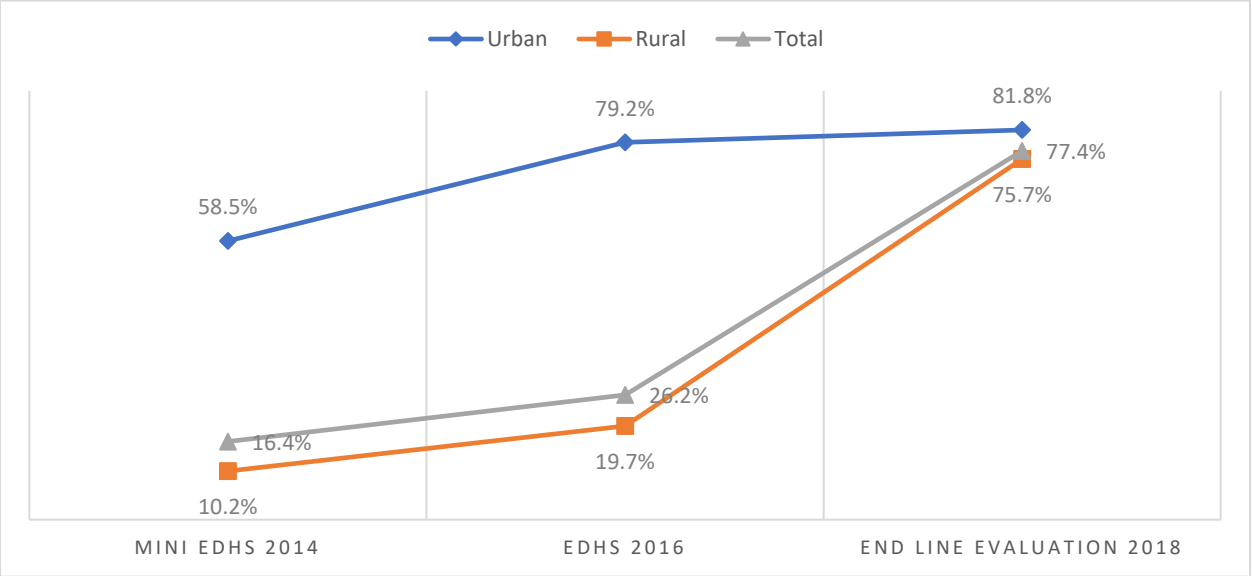

Figure 7: Proportion of births delivered at a health facility, at Mini EDHS 2014, EDHS 2016 and end-line ESDE survey

According to key informants at *woreda* health offices, health facilities and to community members who participated in FGDs, institutional delivery has increased over time. Thanks to the education provided to women by HEWs and HDAs, women are more aware of the importance of institutional delivery, resulting in more women choosing to deliver in a health facility. Here, the project played its part by increasing access to information through the distribution of radios to health posts.

> "*Two years ago, [the amount of] skilled delivery attendance in our [health] institution was not more than 30 per month. But, in the past two years, because of the great work done by HEWs, HDAs and health professionals, up to 70 women attend skilled delivery per month.*" [FGD, health care providers, Benishangul-Gumuz Region]

Improved support from husbands and family members was mentioned by informants as a contributing factor for the increase in the utilization of institutional delivery. According to informants, in the past, it was not common for a husband to accompany his wife for ANC and delivery. The practice, however, is now changing. Some informants also said that currently traditional birth attendants (TBAs) are supportive of institutional delivery and played their part in improving the utilization.

> "*The trend indicates that skilled delivery attendance is improving. Even TBAs have become supportive of skilled delivery. They [TBAs] send those pregnant women [to health facilities] for the service. The local community is also providing support in bringing pregnant women who are in labour using a traditional ambulance [a bed carried by people], in case an ambulance is not available.*" [KII, Midwife, Oromia Region]

Women who previously had bad experiences of complications during home deliveries tend to deliver at health facilities. "*I delivered at the health centre because I faced bleeding problems during my second birth*", said a woman in Shinile *Woreda*, Somali Region. In

Amhara Region, a few women who participated in FGDs reported that they delivered at health facilities because they would be subject to a fine if they gave birth at home, a practice that would have potentially negative consequences for sustainable service utilization. One woman in Awabel *Woreda*, Amhara Region, for example, explained her experience as follows:

> "*I came to the health institution for a check-up on Thursday and they [health professionals] said your time of delivery has not reached and they let me return home. On Friday, I delivered at my workplace, but they asked me to pay 500 Birr for delivering at home.*"

Improved quality of service due to better availability of equipment and trained health care providers, and the availability of maternity waiting homes/rooms and food service for mothers while they stay at health facilities, were also reported as factors contributing to the increased utilization of institutional delivery.

Home deliveries: The proportion of births delivered at home has reduced from 82.6 per cent in 2014 to 22.6 per cent in this survey. The reduction of home delivery is especially notable in rural areas, where the proportion reduced from 88.9 per cent in the 2014 Mini EDHS to 24.3 per cent in this survey. However, there are disparities across regions, with the proportion of home delivery ranging from 2.1 per cent in Addis Ababa to 50.9 per cent in Somali Region. As shown in the table below, home delivery is more common in Somali, Afar, Benishangul-Gumuz and Oromia regions. Older women are more likely to give birth at home, in which 50 per cent of women aged 45 to 49 delivered at home, compared with 20.4 per cent among women aged 15 to 19 years and 19.6 per cent among women aged 20 to 24 years.

Table 8: Place of delivery for the recent birth by background characteristics of respondents, at end-line ESDE survey

Background characteristics	Home	Govt. hospital	Govt. health centre	Govt. health post	Private hospital/clinic	Other private	No. of women
Residence							
Urban	18.2	26.3	48.5	1.4	5.3	0.3	760
Rural	24.3	16.6	53.5	4.1	1.3	0.2	2,000
Region							
Tigray	6.5	30.8	59.2	3.5	0.0	0.0	260
Afar	43.8	0.0	51.3	5.0	0.0	0.0	80
Amhara	16.3	16.3	63.5	2.3	0.7	0.8	600
Oromia	35.8	12.8	46.8	2.8	1.7	0.1	760
SNNP	9.6	31.8	55.4	2.0	1.0	0.2	500
Benishangul-Gumuz	36.3	1.3	37.5	25.0	0.0	0.0	80
Somali	50.9	10.9	30.0	3.6	4.5	0.0	220
Gambella	12.5	20.0	52.5	12.5	2.5	0.0	40
Harari	7.5	42.5	42.5	0.0	7.5	0.0	40
Addis Ababa	2.1	27.9	49.3	0.7	20.0	0.0	140
Dire Dawa	5.0	20.0	65.0	7.5	2.5	0.0	40
Age							
15-19	20.4	20.4	55.1	3.1	1.0	0.0	98
20-24	19.6	19.0	57.3	2.7	0.9	0.4	546
25-29	20.8	19.2	53.4	3.7	2.6	0.4	813
30-34	23.7	17.8	51.9	3.7	2.6	0.3	701
35-39	25.2	21.1	46.8	3.0	3.9	0.0	436
40-44	28.5	22.2	43.8	4.2	1.4	0.0	144
45-49	50.0	9.1	27.3	9.1	4.5	0.0	22

Background characteristics	Home	Govt. hospital	Govt. health centre	Govt. health post	Private hospital/clinic	Other private	No. of women
Mother's education							
No education	34.9	10.8	48.5	4.6	1.1	0.2	1,130
Informal education	29.1	16.4	45.5	1.8	3.6	3.6	55
Primary	16.3	21.9	57.0	3.1	1.4	0.3	1,037
Secondary	10.0	30.3	53.2	2.1	4.4	0.0	389
More than secondary	4.0	36.9	45.0	1.3	12.8	0.0	149
Total	**22.6**	**19.2**	**52.1**	**3.4**	**2.4**	**0.3**	**2,760**

As shown in the table above, highly educated mothers are less likely to deliver at home. Only 4 per cent of women who have above secondary-level education gave birth at home, compared with 34.9 per cent among women with no education. Here, some community members who participated in FGDs complained that some health care providers do not provide equal care for all. One woman in Awabel *Woreda*, Amhara Region explained: "*The health professionals provide service for educated people first. This should be improved, and they should see patients from different settings, i.e., from rural and urban, equally.*"

Table 9 below shows reasons for home delivery. The lack of transportation is the main reason for not giving birth at a health facility, cited by 23.2 per cent of those women who delivered at home. Another 22.4 per cent said they delivered at home due to fast labour. This could be related to a lack of ANC attendance, as those who do not attend ANC may not know the approximate delivery date. More than half (56.3 per cent) of women who did not attend ANC gave birth at home compared with 17.6 per cent among those who attended at least one ANC session. KII and FGD participants also reported the long distance to health facilities and transportation problems as reasons for home delivery. Community members who participated in FGDs noted that the ambulance service for labouring mothers is better than in the past. There are other transportation alternatives, such as a Bajaj (three-wheel vehicle) and motorbikes, but the service charge for such transport is high and often unaffordable for families. Hence, women who live in remote areas without road access do not have a means of transportation. Community members also noted that, at times, ambulances do not reach pregnant women in time, so there is no option but to deliver at home if the labour is fast. Some community members also said that ambulances provide a service from home to health facility only, forcing women to walk home after delivery, which discourages them from delivering at health facilities.

Beliefs associated with culture, tradition and religion, negligence and resistance to change among the community were also reported as reasons for home delivery by KII and FGD participants. From the quantitative data, 13 per cent of women who gave birth at home believe that institutional delivery is not necessary and 12.8 per cent of them said they delivered at home because it is just customary to do so.

Table 9: Reasons for giving birth at home, at end-line ESDE survey

Reasons	Urban		Rural		Total	
	Count	Per cent	Count	Per cent	Count	Per cent
Too far/no transport	29	21.0	116	23.9	145	23.2
Too fast labour/it happened suddenly	30	21.7	110	22.6	140	22.4
Not necessary	19	13.8	62	12.8	81	13.0
Not customary	14	10.1	66	13.6	80	12.8

Reasons	Urban		Rural		Total	
	Count	Per cent	Count	Per cent	Count	Per cent
Husband/family do not allow	7	5.1	34	7.0	41	6.6
Facility not open	9	6.5	27	5.6	36	5.8
Transport cost too much for me	12	8.7	20	4.1	32	5.1
Other costs too much for me	5	3.6	11	2.3	16	2.6
There is no privacy in the health institutions	0	0.0	11	2.3	11	1.8
Don't trust facility/poor-quality service	2	1.4	6	1.2	8	1.3
No female provider at facility	1	0.7	2	0.4	3	0.5
Total	**138**	**100.0**	**486**	**100.0**	**624**	**100.0**

C. POSTNATAL CARE

PNC in the first two days after birth: The project achieved its target of increasing the proportion of newborns receiving postnatal visits in the first two days after birth, from 6.7 per cent in 2011 towards the HSDP goal of 25 per cent by the end of the project. As shown in the figure below, 25.3 per cent of women reported that they received PNC for themselves and their newborn within 48 hours after birth, double the proportion in the 2014 Mini EDHS of 13.2 per cent. As shown in the figure below, PNC attendance within 48 hours after birth showed a declining trend.

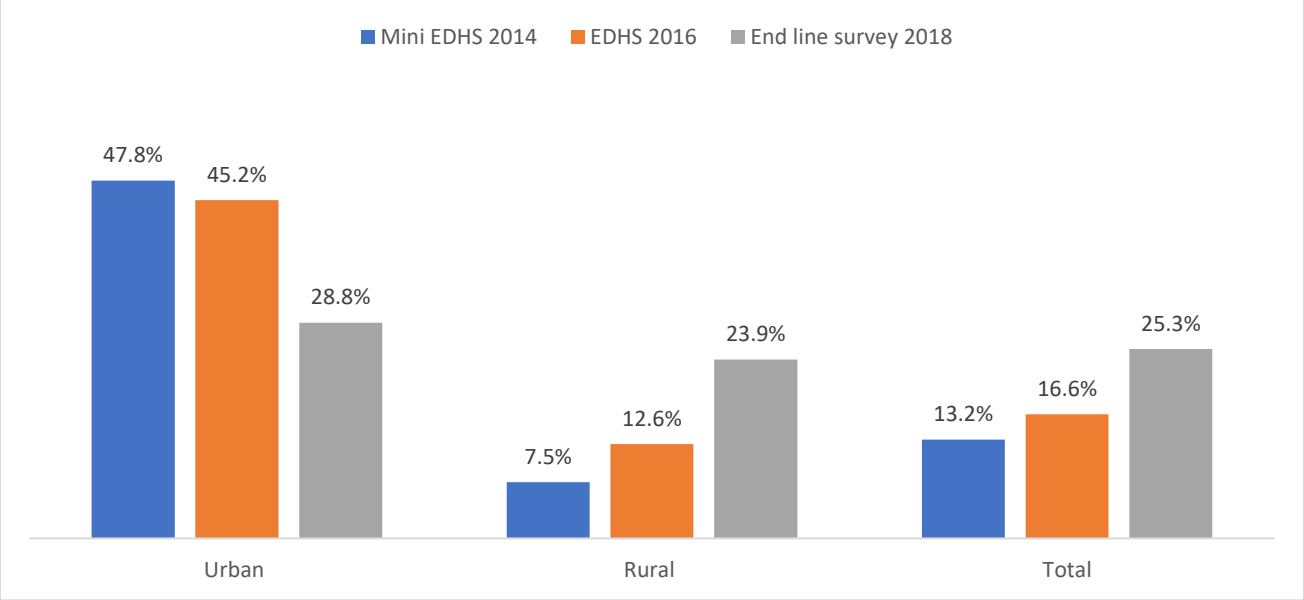

Figure 8: Proportion of women who received PNC within 48 hours after birth, at Mini EDHS 2014, EDHS 2016 and end-line ESDE survey

Women who gave birth at health facilities are more likely to receive PNC within two days after birth (30.9 per cent), compared with those delivering elsewhere (6.2 per cent). There are regional differences in the proportion of women who receive PNC within two days after birth, with the Somali Region registering the lowest proportion (8.6 per cent).

Table 10: Proportion of women who received PNC within 48 hours after birth by background characteristics of respondents, at end-line ESDE survey

Background characteristics	Within 48 hours	Within 72 hours	Within 1 week	Within 4 weeks	Within 6 weeks	Do not remember	No PNC	Number of women
Residence								
Urban	28.8	4.6	9.6	4.9	17.1	2.0	33.0	760
Rural	23.9	1.8	2.1	6.1	20.6	2.2	43.4	2,000
Region								
Tigray	18.8	2.3	8.8	4.2	1.5	6.9	57.3	260
Afar	17.5	0.0	2.5	5.0	1.3	15.0	58.8	80
Amhara	29.7	2.7	2.3	6.3	32.3	0.2	26.5	600
Oromia	27.8	1.1	2.2	5.8	18.0	0.4	44.7	760
SNNP	17.2	1.8	1.4	4.0	30.6	1.6	43.4	500
Benishangul-Gumuz	33.8	3.8	2.5	18.8	21.3	0.0	20.0	80
Somali	8.6	3.2	3.2	3.2	5.9	6.8	69.1	220
Gambella	55.0	5.0	0.0	0.0	7.5	0.0	32.5	40
Harari	35.0	0.0	2.5	12.5	20.0	2.5	27.5	40
Addis Ababa	42.9	13.6	27.9	9.3	2.9	0.7	2.9	140
Dire Dawa	42.5	0.0	7.5	5.0	17.5	0.0	27.5	40
Place of delivery								
Health facility	30.9	2.9	4.9	5.4	19.6	2.3	34.0	2,129
Elsewhere	6.2	1.4	1.7	6.8	19.7	1.6	62.6	631
Mother's education								
No education	20.8	1.9	2.6	6.3	18.9	3.3	46.3	1,130
Informal education	32.7	1.8	1.8	5.5	16.4	3.6	38.2	55
Primary	25.8	2.1	4.1	5.4	21.6	1.4	39.5	1,037
Secondary	30.8	4.1	7.2	5.4	18.3	1.0	33.2	389
More than secondary	37.6	6.7	9.4	5.4	15.4	1.3	24.2	149
Total	**25.3**	**2.5**	**4.2**	**5.8**	**19.6**	**2.1**	**40.5**	**2,760**

Among those women who gave birth at a health facility, 31 per cent stayed at the facility for less than 6 hours, 17.6 per cent for 6 to 11 hours, and 12.8 per cent for 12 to 23 hours. A quarter (24.9 per cent) of women stayed for between one and two days at a health facility after birth, and 12.2 per cent stayed for three days or more.

PNC coverage: Overall, 59.5 per cent of women received PNC at least once during their recent pregnancy, lower than the HSTP's target of 93 per cent coverage by 2017/18. Slightly more than half (54.5 per cent) of women received PNC at health facilities and 5 per cent received it at home. One-third (33.1 per cent) of women received PNC at government health centres, followed by health posts (11.6 per cent) and government hospitals (8.2 per cent).

Table 11: Place of postnatal care for the recent birth by background characteristics of respondents, at end-line ESDE survey

Background characteristics	Home	Govt. hospital	Govt. health centre	Govt. health post	Other public	Private hospital/clinic	Other private	No PNC
Residence								
Urban	3.8	13.7	38.4	7.0	0.0	3.9	0.1	33.0
Rural	5.5	6.2	31.1	13.3	0.1	0.5	0.1	43.4
Region								
Tigray	8.5	12.7	17.7	3.8	0.0	0.0	0.0	57.3
Afar	0.0	0.0	32.5	8.8	0.0	0.0	0.0	58.8
Amhara	7.3	7.3	46.8	11.3	0.2	0.3	0.2	26.5
Oromia	2.1	6.1	32.5	13.8	0.0	0.8	0.0	44.7
SNNP	7.6	7.8	26.0	14.8	0.0	0.4	0.0	43.4
Benishangul-Gumuz	18.8	1.3	28.8	31.3	0.0	0.0	0.0	20.0
Somali	0.9	7.3	12.3	8.2	0.0	2.3	0.0	69.1
Gambella	0.0	17.5	37.5	10.0	0.0	2.5	0.0	32.5
Harari	0.0	20.0	42.5	2.5	0.0	7.5	0.0	27.5
Addis Ababa	0.7	21.4	56.4	2.9	0.0	15.0	0.7	2.9
Dire Dawa	0.0	7.5	57.5	7.5	0.0	0.0	0.0	27.5
Place of delivery								
Health facility	5.0	10.1	39.5	9.5	0.0	1.8	0.1	34.0
Elsewhere	5.1	1.9	11.6	18.5	0.0	0.3	0.0	62.6
Mother's education								
No education	4.9	5.0	28.1	15.0	0.0	0.6	0.1	46.3
Informal education	0.0	5.5	45.5	10.9	0.0	0.0	0.0	38.2
Primary	5.2	8.2	35.6	10.5	0.1	0.9	0.0	39.5
Secondary	6.2	13.6	36.5	7.7	0.0	2.6	0.3	33.2
More than secondary	3.4	20.1	40.3	2.7	0.0	9.4	0.0	24.2
Total	**5.0**	**8.2**	**33.1**	**11.6**	**0.0**	**1.4**	**0.1**	**40.5**

3.2.2. Contribution to HSDP financing gaps

The MDG PF is managed by the FMoH with contributions from various development partners, including the EU, UNICEF, Department for International Development (DFID), World Bank, Embassy of the Kingdom of Netherlands, Ireland, the Italian Agency for Development Cooperation, Spain, UNFPA, and WHO. As part of the project, EU and UNICEF made an agreement to transfer €21.21 million to MDG PF in three instalments.

In line with the joint financing agreement (JFA), the FMoH prepared MDG activity and budget plans at the beginning of every year, and activity and financial reports were prepared quarterly. To improve the financial management of the EU contribution to the MDG PF UNICEF put in place various mitigation measures and supported the FMoH in the proper use of the fund by participating in planning exercises and a joint review of the reports. Support also included strengthening the grant management unit of the FMoH. Following a request from the FMoH in 2015, UNICEF supported the recruitment of 93 finance and grant management technical assistants through the Health Pool Fund. The technical assistants were assigned with the aim of improving financial and grant management, strengthening internal monitoring and control systems, improving timely

reporting, and addressing key recommendations proposed in audits and mitigation strategies.

3.2.3. MNH services and availability of equipment and supplies at health facilities

A. MNH SERVICES AND FACILITIES

All of the surveyed hospitals and health centres, and 86 per cent of health posts, provide ANC services. Delivery services are provided in all health centres and 92 per cent of hospitals. PNC services are provided in all surveyed hospitals, 98 per cent of health centres and 95 per cent of health posts. The proportion of health facilities offering ANC, delivery and PNC services was comparable with the 2014 ESPA+ survey [11]. As shown in the table below, most of the surveyed hospitals and health centres have a dedicated room for ANC and delivery services. Dedicated rooms for PNC services are available in 86 per cent of surveyed hospitals and 65 per cent of health centres. In this survey, all hospitals and 22 per cent of health centres have newborn care resuscitation units (newborn corners); this compares with 76 per cent and 22 per cent, respectively, in the 2014 ESPA+ survey. Designated NICUs are available in 92 per cent of surveyed hospitals.

Table 12: Availability of MNH services at health facilities, at 2014 ESPA+ survey and end-line ESDE survey

Proportion of health facilities…	Hospitals		Health centres	
	ESPA+ survey*	End-line survey	ESPA+ survey	End-line survey
Providing ANC service	94	100.0	99	100.0
Providing delivery service	98	92.3	99	100.0
Providing PNC service	98	100.0	99	98.1
Have dedicated room for ANC	NA	100.0	NA	96.3
Have a waiting area for ANC clients	NA	100.0	NA	90.4
Have dedicated room for delivery	NA	92.3	NA	94.4
Have dedicated room for PNC	NA	85.7	NA	64.8
Have newborn care unit	76	100	55	22

* At primary hospitals only

B. HEALTH FACILITY READINESS TO PROVIDE BASIC AND COMPREHENSIVE EmONC SERVICES

With the aim of improving the capacity of health facilities to provide basic and comprehensive EmONC services, the project equipped health centres and primary hospitals all regions with BEmONC equipment, such as delivery beds. Initially, it was planned to provide six delivery beds per health facility for 500 health centres and 55 hospitals. However, considering the capacity of health centres and in consultation with FMoH and the EU, it was decided to provide three delivery beds per health centre and increase the number of targeted health centres. Accordingly, the project distributed delivery beds to 970 health facilities (including 55 hospitals). Operating theatre equipment for obstetric surgery was installed in 55 hospitals. The installed theatre equipment included operating tables, anaesthesia machines and operating room lights.

Findings from the health facility survey show that 100 per cent of hospitals and 78 per cent of health centres have delivery beds, and 92 per cent of hospitals and 96 per cent of health centres have examination couches. As shown in the table below, except for vacuum

extractors, most surveyed health facilities have essential equipment to provide BEmONC and CEmONC services.

Table 13: Availability of equipment and supplies at health facilities, at end-line ESDE survey

Proportion of health facilities with…	Hospitals	Health centres
Delivery bed	100	77.8
Examination couch	92.3	96.3
Complete delivery set	92.3	94.4
Functional manual vacuum extractor	69.2	64.8
Functional electric vacuum extractor	84.6	33.3
Complete caesarean section set	92.3	9.3
Functional blood pressure apparatus	92.3	88.9
Stethoscope	92.3	92.6
Thermometer	92.3	94.4
Fetoscope	92.3	96.3
Baby weighing scale	92.3	98.1
Filled oxygen cylinder with cylinder carrier	84.6	22.2

Interviewed health care providers also reported that the availability of equipment, especially delivery beds in health facilities for EmONC services, has improved. They acknowledged that the EU-UNICEF project has made a huge contribution to equipping health facilities with essential equipment and supplies, although they complained about delays in the distribution of equipment and materials from region to zone/*woreda*, and then to health facilities. A few health workers also said that some materials, such as steam sterilizers, are not currently in use as there are no skilled personnel to install/assemble them.

Informants at health facilities said that there was a shortage of certain equipment, such as delivery sets, autoclaves and heaters. Interviewed health workers also reported non-functionality of equipment as the main challenge to providing MNH services. However, the issue of non-functionality is not specifically related to equipment provided by the ESDE project, but rather generally about all available equipment at health facilities. Interviewed health workers said that available equipment often does not work due to the limited number of trained maintenance personnel for immediate maintenance in case of non-functionality. Here, a health worker cites the poor quality of some materials as the reason for frequent non-functionality:

> "*Currently we a have problem of equipment like autoclaves and incubators. We have old equipment, and they are not functional. There is no maintenance service for equipment. We have no skilled staff who can maintain the equipment.*" [KII, Midwife, Dibate *Woreda*, Benishangul-Gumuz Region]

Interviewed health workers are also worried that the supply of equipment and drugs may not be steady after the project has been phased-out:

> "*Now are working with previously donated equipment by UNICEF. Currently, we don't have a shortage of equipment, but if the government is going to be the sole provider we will have a huge equipment shortage.*" [KII, *Woreda* health office expert, Fogera *Woreda*, Amhara Region]

The ESDE project attempted to flexibly address the issue of the shortage of equipment at health facilities affecting the provision of MNH services. Hence, following a request from the FMoH, UNICEF procured 104 autoclaves (although this was not originally planned in the project).

The project, in partnership with Sub Saharan Africa Research and Training Center, has provided training to biomedical technicians on the installation and maintenance of equipment. Eighty-two biomedical technicians from health centres were trained in 15 training sessions. An additional 12 technicians/engineers from hospitals were trained on the installation and proper use of hospital medical equipment.

According to WHO, health facilities are considered BEmONC facilities if they provide parenteral antibiotics, oxytocin, anticonvulsants, assisted vaginal delivery, manual removal of placenta, removal of retained products of conception, and neonatal resuscitation over a designated three-month period. Facilities are considered CEmONC facilities if they provide blood transfusion and caesarean delivery on top of the above seven functions.

The table below presents the proportion of health facilities providing BEmONC and CEmONC services in both the 2014 ESPA+ survey and end-line survey. In both surveys, more than 90 per cent of hospitals administered parenteral antibiotics and oxytocin, and performed assisted vaginal delivery and neonatal resuscitation in the past three months before the survey. Except for the removal of retained products of conception in this survey (77 per cent), more than 80 per cent of hospitals in both surveys administered the remaining BEmONC functions. Among the surveyed health centres for this end-line evaluation, 80 per cent administered antibiotics, 83 per cent performed assisted vaginal delivery, and 72 per cent performed removal of retained products of conception in the past three months before the survey. Slightly more than half (57 per cent) of health centres administered oxytocin, which was much lower than the 86 per cent of health centres in the 2014 ESPA+ survey. For five of the functions, the proportion of health centres that administered BEmONC services has reduced compared with the 2014 ESPA+ survey.

Table 14: Proportion of health facilities that administered BEmONC services in the previous three months before the survey, at 2014 ESPA+ survey and end-line ESDE survey

Proportion of health facilities that administered…	Hospitals		Health centres	
	ESPA+ survey*	End-line survey	ESPA+ survey	End-line survey
Antibiotics	92	92.3	66	79.6
Oxytocin	96	92.3	86	55.6
Anticonvulsants	80	84.6	20	40.7
Assisted vaginal delivery	98	92.3	92	83.3
Manual removal of placenta	86	84.6	76	66.7
Removal of retained products of conception	88	76.9	75	72.2
Neonatal resuscitation	94	92.3	80	64.8
Blood transfusion	57	76.9	0	0
Caesarean delivery	73	69.2	1	14.8

* At primary hospitals only

Most interviewed health workers reported that, currently, there is shortage of essential drugs at health facilities. According to the interviewees, the drug supply was better when the ESDE project was active, but the supply has reduced recently. Health workers said that drug demand is increasing steadily due to increased service utilization, but that there is a huge gap in the logistics system and they don't get drugs on time after they are requested. They report facing shortages of vitamin K, ferrous sulfate, magnesium sulfate, tetracycline, magnesium, chlorhexidine and ergometrine. Because of shortages, health facilities have no choice but to refer clients to other health facilities or give them prescriptions to buy drugs from private vendors, resulting in additional expenses for clients.

"*…but shortage of drugs limits the service provision. There is imbalance between demand and supply. The number of people using health service is increasing, while the supply of drugs stays stagnant. As she [another participant] mentioned above, drugs like magnesium are important, but the shortages force us to refer [clients] to primary hospitals.*" [FGD, health care provider, Toke Kutaye *Woreda*, Oromia Region]

Table 15: Availability of drugs at health facilities, at end-line ESDE survey

Number of health facilities with supplies of…	Hospitals	Health centres
Oxytocin	83.3	96.3
Vitamin K injection	83.3	48.1
MgSO4 injection (50%)	83.3	63.0
Any other MgSO4 injection	41.7	33.3
Ergometrine	0.0	40.7
40% or 50% glucose available	84.6	88.9
Methyl ergometrine	16.7	16.7
Chlorhexidine gel	41.7	55.6
Misoprostol	25.0	57.4
Adrenalin	66.7	85.2
Hydrocortisone	66.7	48.1
Diazepam injection	83.3	59.3
Phenobarbital injection	25.0	22.2
Phenytoin	25.0	14.8
Atropine	50.0	35.2
Calcium gluconate	75.0	31.5
BCG vaccine	58.3	83.3
Polio 0 vaccine	58.3	79.6

During the project period, newborn corner (NBC) sets were distributed to 350 health centres, achieving 97 per cent of the plan. Those with no NBC equipment were identified and supplied a set to expand newborn care services at health centre level. Each equipment set has a cot baby radiant warmer system, neonatal resuscitator and neonatal suction device. The table below shows the availability of NBC equipment at hospitals and health centres. All surveyed hospitals have radiant warmers and functional neonatal resuscitation bags, while only 15 per cent of health centres have radiant warmers and 20 per cent have functional neonatal resuscitation bags. Seventy-one per cent of hospitals and 63 per cent of health centres have self-lubricating extractors.

Table 16: Availability of NBC equipment and supplies, at end-line ESDE survey

Proportion of health facilities with…	Hospitals	Health centres
Radiant warmer	100.0	14.8
Functional neonatal resuscitation bag	100.0	20.4
Oxygen bottles	71.4	38.9
Functional room thermometer	71.4	53.7
Functional infant thermometer	71.4	57.4
Mucous extractor, 20ml, serializable and visually cleanable	71.4	63.0
Towels for drying and wrapping the baby	28.6	25.9
Sterile equipment for cutting and tying the cord	100.0	81.5

C. TRAINED HEALTH CARE PROVIDERS

BEmONC training: Findings from the 2014 ESPA+ survey showed that most service providers working at primary hospitals and health centres were not trained on areas relating to MNCH care. The project planned to address this gap by providing training, mentoring and supportive supervision to 1,000 nurses and midwives in BEmONC and managed to train 1,424 midwives, clinical nurses and medical doctors (142 per cent of the plan). Each training session was given over a three-week period based on FMoH national training guidelines. The Ethiopian Midwives Association (EMwA) conducted the training and provided mentoring and post-training follow-ups to trainees through supervision at the health facility level.

According to the 2014 ESPA+ survey, 29 per cent of primary hospitals and 26 per cent of health centres had at least one staff member trained in IMPAC/BEmONC/CEmONC. Findings from this health facility survey showed that the availability of trained health care providers has substantially increased compared with the situation in 2014, indicating the contribution of the project in this respect. Seventy-one per cent of hospitals and 87 per cent of health centres included in the survey have at least one staff member providing ANC services who is trained in BEmONC. Among the surveyed facilities, 85 per cent of hospitals and 89 per cent of health centres have at least one trained staff member providing PNC services.

Interviewed health workers acknowledged that training and post-training mentoring provided by the project were instrumental in improving the quality of services. They reported that the training and post-training follow-ups have improved their knowledge and skills, and given them confidence to provide high-quality MNH services:

> "*The project strengthened the [capacity of] health care providers by giving training on newborn care and BEmONC that fills the knowledge and skill gap. The project made me confident to help neonates and mothers.*" [Midwife, Dessie Zuria *Woreda*, Amhara Region]

Essential newborn care (ENC) training: The project planned to increase the availability of trained health workers for providing ENC, as well as for advanced newborn care at hospital level. In this respect, the project achieved 100 per cent of its plan by providing ENC training to 1,000 nurses and midwives, and advanced newborn care training to 250 health workers. Each ENC training session was held over five days, while the advanced newborn care training was conducted over a four-week period. The training was given in partnership with the Ethiopian Paediatrics Society (EPS), FMoH and the Regional Health Bureaus (RHBs). Because of this intervention, 500 health facilities have at least two trained health care workers, the minimum number as per the national standard to provide ENC services. The advanced newborn care training was given to 250 health workers from 50 hospitals. By providing training on advanced newborn care for approximately five health workers per hospital, the project contributed to the establishment of Level II NICUs at 50 hospitals.

The majority of health facilities included in this survey (86 per cent of hospitals and 76 per cent of health centres) have staff trained in ENC, showing a notable increase from 2014. In the 2014 ESPA+ survey, only 19 per cent of interviewed providers at primary hospitals and 17 per cent at health centres received training related to delivery and/or newborn care during the 24 months preceding the survey.

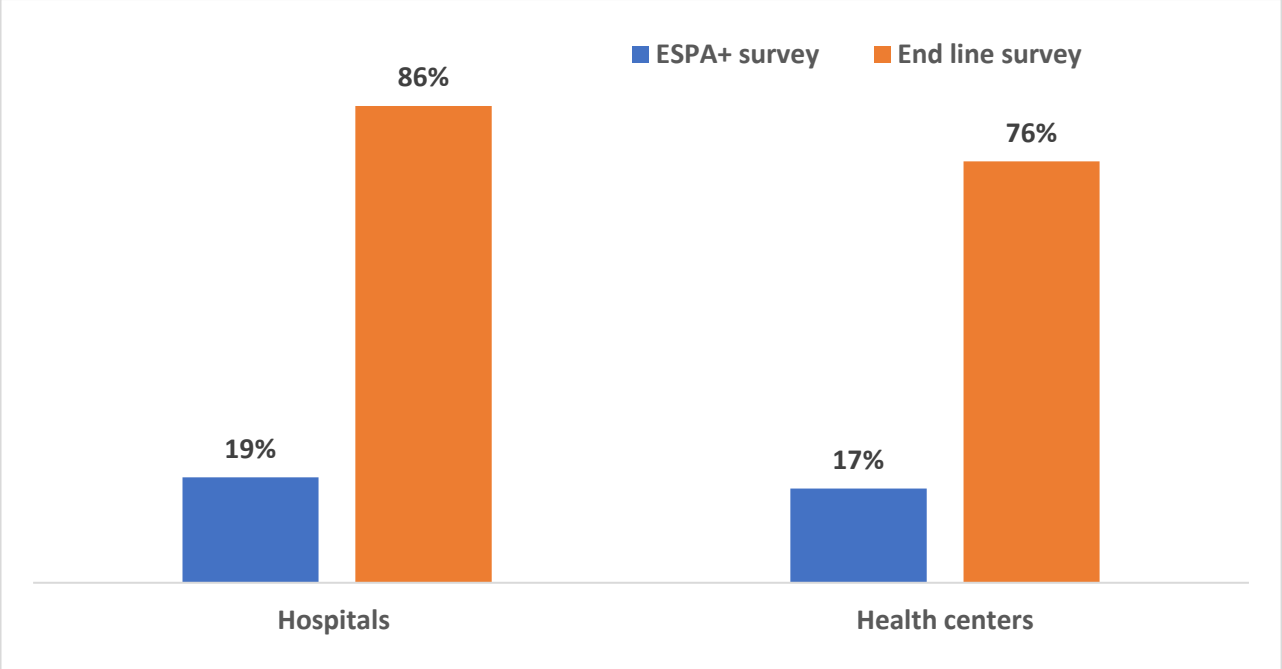

Figure 9: Proportion of health facilities with staff trained in ENC, at 2014 ESPA+ survey and end-line ESDE survey

CBNC training: The CBNC component of the project was implemented in the West Shoa, West Arsi, South West and East Shoa zones in Oromia Region, and Sidama and Gurage zones in SNNP Region. This component has two activities: (1) training of HEWs on CBNC to equip them with the required skills to correctly classify and manage or promptly refer sick children; and (2) equipping health posts with the essential supplies to enable trained HEWs to provide the CBNC-iCCM service as per the national standards. Accordingly, the project trained 5,087 HEWs on CBNC and achieved 101.7 per cent of its plan. The training was given as part of the iCCM/Integrated Refresher Training (IRT) programme of the FMoH, and provided to HEWs for six days. First, training-of-trainers was provided to 123 trainers from zonal health departments, *woreda* health offices and health facilities. In addition, relevant non-governmental partners were trained, followed by a consecutive cascading of training to HEWs. The trained HEWs were provided with essential supplies, including: essential drugs such as amoxicillin dispersible tablets, gentamicin injectable, 'CBNC-iCCM' registers and other supplies, such as respiratory timers, thermometers and newborn and infant weighing scales. Following the cascading of CBNC training, the project conducted supportive supervision and performance reviews, and clinical mentoring support to 3,500 HEWs at 2,692 health posts.

D. GUIDELINES AND PROTOCOLS

The project distributed 2,000 copies of BEmONC training materials (2,000 copies each of the Trainer's guide, Participant's manual and reference material) to health facilities and training centres. The project also distributed 2,000 copies of various NBC training materials to health facilities and 1,200 CNBC training materials to HEWs.

As shown in the table below, most hospitals and health centres included in the health facility assessment have job aids and guidelines, such as obstetric protocol, prevention of mother-to-child transmission (PMTCT) guideline, and integrated management of pregnancy, childbirth, postpartum and newborn care guideline. Findings from the qualitative study showed that the availability of guidelines and protocols contributes to the

improvement of the quality of services. Interviewed health workers said that they use the guidelines and protocols to help them correctly diagnose and treat cases, as well as to improve their recording practices.

Table 17: Availability of job aids and guidelines at health facilities, at end-line ESDE survey

Job aids and guidelines available in…	Hospitals	Health centres
ANC rooms		
Obstetric protocol	100.0	81.5
National PMTCT guideline	100.0	83.3
FANC wall chart	71.4	83.3
MgSO4 treatment algorithm for pre-eclampsia and eclampsia	100.0	74.1
Delivery rooms		
Obstetric protocol	84.6	74.1
National PMTCT guideline	84.6	81.5
Integrated management of pregnancy, childbirth, postpartum and newborn care guideline	69.2	83.3
MgSO4 administration job aid	92.3	87.0
Neonatal resuscitation algorithm	92.3	90.7
Active management of third stage of labour (AMTSL) guideline	84.6	81.5
PNC rooms		
Obstetric protocol	85.7	68.5
Integrated management of pregnancy, childbirth, postpartum and newborn care guideline	100.0	75.9
Postnatal danger signs and symptoms wall chart	100.0	79.6

3.2.4. Demand creation, access to information and knowledge about MNCH services

A. DEMAND CREATION AND THE ROLE OF HDAs

The HDA is a 'one by five' community group, with each group having one leader and five group members. The HDA structure was formed by the government to create community-level health cadres to support HEWs in the dissemination of information and demand creation for the use of health services at the community level.

The ESDE project supported demand creation for the use of MNH services through the documentation and dissemination of HDA best practices for scaling-up best practices in other areas. The project planned to document and disseminate five HDA best practices and managed to document three from two regions (two in Tigray and one in Oromia). The identification and documentation of best practices was conducted with the participation of an expert group from the FMoH and the respective RHBs. The FMoH published a report on best practices and disseminated it to RHBs. The FMoH also used the lessons learned from the documentation of best practices in revising the 'Family Health Guide'.

Community members who participated in FGDs and HEWs reported that HDAs are actively involved in demand creation and in improving the utilization of health services. HDAs register pregnant women and report to HEWs. They encourage women to attend ANC follow-ups and give birth at health facilities. One HDA member in Gewane *Woreda*, Afar Region, described their role as follows:

> "*We give advice and education to women to give birth at health centres. We tell them that it is good for both the baby and the mother.*"

Another member of an HDA, in Dangila *Woreda*, Amhara Region, stated:

> "*We do home-to-home care and identification of pregnant mothers. We go from home to home to counsel and tell them [pregnant women] to start ANC and have medical check-ups.*"

Working with HEWs, HDAs organize monthly pregnant mothers' conferences in each *kebele*. The mothers' conferences serves as a platform for pregnant women to discuss health issues and get information about ANC and delivery services. "*We discuss with each other on different occasions. There is also 'innatoch' [mothers] conference; we discuss there*", said a woman FGD participant from Dire Dawa.

Interviewed health care providers acknowledged that HDAs are playing a decisive role in creating demand for the use of MNH services, especially in increasing institutional delivery. In this respect, HDAs support pregnant women to deliver at health facilities by facilitating ambulance transportation. HDAs also mobilize communities to contribute money and cereals for mothers in maternal waiting rooms. An interviewed health worker in Hagere Mariam *Woreda*, Oromia Region, explained the role as follows:

> "*The health development army collects materials from the community for mothers in maternity waiting homes. The community in each kebele decided to contribute 5kg of cereals and 3 Birr [per household]. The HDA collects and transfers the same to the woreda health office.*"

Identifying pregnant women showing danger signs and referring them to health facilities and reporting any occurrence of maternal or newborn death to HEWs were among the other reported roles that HDAs actively play in their respective communities.

B. ACCESS TO INFORMATION AND KNOWLEDGE ABOUT MNCH SERVICES

The majority (91.1 per cent) of women have heard of ANC and 61.7 per cent of them have heard about PNC. Women in Afar and Somali regions have relatively limited access to information about ANC. Access to information about PNC is limited in Somali, Gambella and Afar regions. In these regions, less than half of the respondents have ever heard about PNC.

Table 18: Access to information about ANC and PNC by residence and region of respondents, at end-line ESDE survey

Residence and region	Ever heard about ANC		Ever heard about PNC	
	Count	Per cent	Count	Per cent
Residence				
Urban	722	95.0	530	69.7
Rural	1,792	89.6	1,174	58.7
Region				
Tigray	230	88.5	143	55.0
Afar	53	66.3	39	48.8
Amhara	589	98.2	465	77.5
Oromia	692	91.1	429	56.4
SNNP	458	91.6	277	55.4
Benishangul-Gumuz	80	100.0	63	78.8
Somali	160	72.7	80	36.4
Gambella	38	95.0	17	42.5
Harari	40	100.0	29	72.5
Addis Ababa	137	97.9	134	95.7

Dire Dawa	37	92.5	28	70.0
Total	**2,514**	**91.1**	**1,704**	**61.7**

The table below shows the sources of information about ANC and PNC for those women who have heard about the services. For women in rural areas, the primary source of information about ANC and PNC is HEWs; for those living in urban areas, the primary source is health centres. Over two-thirds (68.7 per cent) of rural women with information about antenatal care stated that they obtained the information from HEWs, while the proportion for PNC stood at 56.8 per cent. The ESDE project played its part in increasing access to information in remote and rural areas of the country by distributing 10,000 multi-powered solar-operated radios to health posts. More than half of urban women who had ever heard about ANC and PNC said that they got the information at health centres (58.6 per cent for ANC and 62.6 per cent for PNC).

Table 19: Source of information about ANC and PNC, at end-line ESDE survey

Source of infomation	ANC			PNC		
	Urban	Rural	Total	Urban	Rural	Total
HAD	4.4	5.7	5.3	3.2	2.6	2.8
Health post/HEW	44.2	68.7	61.7	32.8	56.8	49.3
Health centre	58.6	47.0	50.3	62.6	56.0	58.1
Government hospital	8.2	3.3	4.7	34.5	21.1	25.3
Private clinic/hospital	3.5	1.4	2.0	4.9	1.5	2.6
Television/radio/newspaper	12.7	6.5	8.3	7.5	4.6	5.5
Friends/neighbours	20.8	18.3	19.0	12.3	11.6	11.8
Other	0.7	0.2	0.4	0.2	0.0	0.1
Number of women	722	1,792	2,514	530	1,174	1,704

Six women in every 10 (59.8 per cent) knew that a pregnant woman should start ANC visits during the first trimester (urban 62.3 per cent, rural 58.8 per cent). Seventy-two per cent knew a pregnant woman should visit a health facility for ANC at least four times (urban 75.2 per cent, rural 70.6 per cent). On the other hand, knowledge about the timing of the first PNC visit was found to be low. Only 46.2 per cent of women knew the first PNC should be received within 48 hours (two days) after delivery (urban 45.5 per cent, rural 46.5 per cent). Generally, knowledge seems comparable between urban and rural areas.

Women respondents were asked to mention “danger signs after delivery” within the first six weeks after delivery. Just over half (51.9 per cent) mentioned vaginal bleeding and a similar proportion (51.5 per cent) mentioned severe abdominal pain. One-third (34.7 per cent) said headaches and 22.8 per cent said fever are danger signs and symptoms after delivery. Only 6.1 per cent of women knew convulsions/seizures are a danger sign and symptom.

Table 20: Knowledge about danger signs and symptoms in the mother during the first six weeks after delivery, at end-line ESDE survey

Danger signs and symptoms	Urban		Rural		Total	
	Count	Per cent	Count	Per cent	Count	Per cent
Vaginal bleeding	264	49.8	621	52.9	885	51.9
Severe abdominal pain	274	51.7	604	51.4	878	51.5
Headache	203	38.3	389	33.1	592	34.7
Fever	152	28.7	236	20.1	388	22.8
Foul-smelling discharge	67	12.6	133	11.3	200	11.7

Calf pain	71	13.4	122	10.4	193	11.3
Convulsion/seizure	52	9.8	52	4.4	104	6.1
Urgency/hesitancy and frequent urination	21	4.0	47	4.0	68	4.0
Do not know	78	14.7	157	13.4	235	13.8
Total	**530**	**100.0**	**1,174**	**100.0**	**1,704**	**100.0**

C. TECHNICAL AND FINANCIAL SUPPORT TO THE NATIONAL EmONC ASSESSMENT

The ESDE project has provided financial support to the 2016 Ethiopia EmONC Assessment. UNICEF also provided technical support throughout the assessment process, starting from the inception to data analysis and dissemination of findings. The 2016 Ethiopia EmONC Assessment was a national cross-sectional census conducted at 4,385 public and private health facilities that provided MNH services. The assessment generated evidence on the availability, coverage, quality, utilization and key determinants of EmONC services. Findings of the assessment were disseminated in 2017 in the presence of higher government officials and representatives of development partners. Findings and recommendations drawn from the assessment will be used to plan interventions from federal to *woreda* level to improve MNH in the country.

3.3. Efficiency

According to the financial report of the project, the project spent 48 per cent of the allocated budget on the procurement of supplies and commodities, and 37 per cent on transfers and grants to partners. Overall, the project spent 89 per cent of the allocated budget on direct programme costs. Considering the project covered all regional states and city administrations of the country, the project was efficient in utilizing a high proportion of the budget on direct programme costs, spending only a small portion of the budget on indirect expenses.

The designing and planning of the project were conducted with the participation of the FMoH, EU, UNICEF and other partner organizations. This enabled assurance that project activities were complementary to related interventions and that duplication of effort was minimized. The project was also coherent with the government programme, as half of the project fund was allocated to directly support the MDG PF. Although there are NGOs working on MNCH projects, such as ICAP, JHPIEGO, Amref Health Africa and Save the Children, there was minimal duplication of intervention, as the activities were complementary to the project and the interventions implemented by NGOs had limited geographical scope. One informant from a partner organization explained that the chance of the duplication of activities was minimal, since the FMoH has a database about projects implemented by various actors:

> "*There is a very minimal chance of project overlap in the country. This is because Ministry of Health has a platform that clearly shows detailed activities of NGOs and the health facilities they are supporting. It is already known which NGO works where. Funds can't also be duplicated. Each project has a separate proposal clearly stating the source of the fund. So, there is no such duplication.*"

The project efficiently utilized the existing government structure and personnel from partner organizations to implement its activities. Equipment and supplies were distributed to health facilities using the existing health structure, from federal level to *woreda* health offices. Training was given in partnership with EMwA, EPS, FMoH and RHBs. EMwA and EPS also

provided mentoring, supervision and post-training follow-ups to trainees. Experts from zonal health departments, *woreda* health offices and health facilities were involved in providing CBNC training to HEWs. There was also flexibility in revising activities through discussion with the FMoH and EU.

By developing an implementation structure from federal to grass-root level, in partnership with the government and professional associations (as described above), the project successfully executed its activities. However, implementation of the project was delayed because of political instability. As a result, the project period was extended by 15 months. Some activities also needed approval from the FMoH, since they were implemented through its structure, resulting in delays in the implementation of activities. Long approval processes, both on the part of EU and UNICEF, with final approval coming from their headquarters, sometimes resulted in delays in decision-making.

3.4. Sustainability

Equipment: The project improved the availability of equipment for sustainable provision of MNH services. However, non-functionality of equipment and lack of periodic maintenance remains a challenge for sustainability. Here, interviewed health workers identified the poor quality of equipment as one of the reasons for frequent non-functionality. However, the issue of non-functionality was generally about equipment at health facilities and not specifically related to equipment supplied by the ESDE project. According to informants, improper use of equipment by health workers, due to a lack of training on how to operate the equipment and a lack of user manuals at health facilities, also contributed to the non-functionality of equipment. Although the ESDE project trained health workers on maintenance, all health facilities do not have such trained personnel, and they do not have the skills to perform major maintenance. Bioengineers are responsible for major maintenance, and the availability of bioengineers in the country is limited, so they are not able to address the maintenance needs of the health facilities on time:

> "*Actually, effective mechanisms are not yet established to maintain equipment at health centre level. When equipment breaks, we most often wait for the bioengineering department to maintain or health care finance to replace it*. *In fact, the project gave refresher training on maintenance of equipment, and those who work in the newborn corner sometimes undertook minor maintenance. But complicated maintenance is done by the bioengineering department, not at health centre level.*" [FGD, health care provider, Gadab Hasasa *Woreda*, Oromia Region]

Interviewed health workers also reported that some equipment remains unused and is kept in storage due to the lack of skilled personnel to install it:

> "*There are very few bioengineers in the country, maybe less than 10 in number. So, it is very hard to get them for maintenance and installation of medical equipment. For example, there is a steam sterilizer, bought for 600,000 Birr three years ago, here in this facility. But, it still hasn't started providing a service, since no one knows how to install it. Equipment may also depreciate before the expected time because of lack of knowledge of professionals on how to use them properly. So, in this regard there is a major gap*." [KII, Yeka sub-city, Addis Ababa]

Some participants expressed concern that the supply of equipment could be interrupted after the project has been phased-out:

> "*Now, the utilization and service provision are in good status. But, the concern is basically in terms of the supply of equipment. Equipment is not continuously supplied, and this undermines the sustainability of service provision and utilization. So, if the project is completed, service provision and utilization may be interrupted if the concerned body fails to keep on providing the necessary equipment and drugs.*" [FGD, health care provider, Gadab Hasasa *Woreda*, Oromia Region]

Supplies and drugs: Although health workers noted that the availability of supplies and drugs had improved, they expressed concern that the supply may not be sustainable. According to informants, poor logistics systems often cause delays in supply, and health facilities face shortages of essential supplies and drugs. Informants also noted that the supply of drugs was better when the ESDE project was active and declined only recently, which will potentially affect the sustainability of service provision. Here, health workers suggested that, to solve the delay and ensure an uninterrupted supply of supplies and drugs, procurement should be done at zonal and *woreda* levels. One interviewed expert in Goba Lafto *Woreda* health office, Amhara Region, said: "*The woreda health office and zonal health administration should be responsible for buying drugs and supplies for newborn corner and emergency obstetrics.*"

Informants also reported that equipment provided to health facilities are of different types, and, thus need different types of reagents and spare parts. Hence, unless there is supply of standardized medical equipment, getting reagents and spare parts at local markets will be a challenge that could potentially affect the sustainable provision of services.

Trained personnel: The ESDE project provided a range of training, which enhanced the capacity of health facilities to sustainably provide high-quality MNH services. Post-training follow-ups and supervisions provided by the project were instrumental in improving the service provision. Nevertheless, a high turnover of trained health care providers was reported as a challenge for sustainability:

> "*The sustainability of the service provision without the project is difficult because there is a turnover of trained health care providers.*" [FGD, health care provider, Menz Lalo Midir *Woreda*, Amhara Region]

Informants stressed that to provide services in a sustainable way, there is a need for the government to train more health workers. Providing refresher training, continuous supervision and mentoring of trained health workers were also suggested by informants to ensure sustainability.

> "*I feel sustainability of service provision and utilization is good at this moment. But this may not continue if supervision and monitoring are not kept in place. For me, there should be a commitment from the government to ensure the sustainability.*" [KII, health care provider, Gadab Hasasa *Woreda*, Oromia Region]

HSS: One of the components of the ESDE project was direct financial support to the MDG PF. Accordingly, the project contributed to strengthening the overall health system of the country. The support will enhance the capacity of the FMoH to provide sustainable MNH services by addressing financial gaps.

Government commitment: The fact that MNH is a priority area for the government means the prospects for sustainability are high, as the government will continue providing the service after the project has been phased-out. According to informants, the government is committed to reducing maternal and child deaths and there is no doubt it will continue

providing the service in a sustainable way. Informants stressed that the government should take the lead rather than rely on short-term projects. An expert at a health office in Goba Lafto *Woreda*, Amhara Region, explained: "*The service provision and utilization will continue. Once the project has laid the ground, the government will continue the project.*" Yet, other informants are worried that the supply of equipment, supplies and drugs may not be the same after the project. For example, a health worker in Bole Sub-city, Addis Ababa, remarked: "*I prefer this project to continue till all the gaps are filled. Professionals need to be updated routinely. Depreciated equipment needs to be changed. These things result in poor-quality service and lack of interest in professionals.*"

Demand: There is increased demand among the community for MNH services that will have a positive contribution to the sustainable utilization of services. Activities by HEWs, HDAs and mothers' groups has increased demand for service utilization.

3.5. Gender, equity and humanitarian principles

The project design specifically targeted females as the direct beneficiaries of improved access to high-quality maternal health services. The project aimed at improving MNH and contributed to the realization of gender equity by benefiting both male and female neonates from improved neonatal health services. While both male and female health workers directly benefited from training, the fact that almost all HEWs and the majority of HDAs and nurses/midwives are female means that females predominantly benefited from capacity-building interventions.

With respect to equity, the project was implemented across all regional states and city administrations, both in rural and urban areas, which contributed to the realization of equitable access to health services for women and children. The project interventions were focused on improving the health of women and neonates, who are among the most vulnerable groups.

Although a rights-based approach was not explicitly stated in the project document, the project was designed for the realization of the basic rights of the lives of women and the right of children to survival. In this regard, the project interventions were designed to improve MNH, thereby reducing maternal and neonatal mortality by increasing access to and utilization of high-quality MNH services.

4. Conclusions

Relevance

The ESDE project is relevant to the country's needs and priorities: The project demonstrates its relevance to the health sector's priorities by targeting MNH, in line with the HSDP and MDGs.

The interventions are appropriate: The project has been designed to strengthen the capacity of health facilities at the grass-root level and the country's health system by direct funding of the MDG PF. The interventions have addressed bottlenecks on both the demand and supply sides, and the actions were aligned to the seven key priority interventions identified in the country's accelerated action plan for reducing maternal mortality.

Effectiveness and contribution

Project targets related to the utilization of key MNH services have been achieved: The targets for at least one ANC visit by pregnant women, delivery by a skilled provider and PNC within two days after birth were achieved. Compared with findings from the 2014 Mini EDHS, the utilization of ANC services (the proportions of women who attend at least one ANC visit, receive ANC from a skilled provider, attend the first ANC during the first trimester, and attend at least four ANC visits) has notably increased. Similarly, marked progress was made in increasing institutional delivery, deliveries assisted by a skilled provider and the use of PNC services. However, PNC utilization was relatively low compared with other services, which could relate to a lack of knowledge, as more than half of women do not know the first PNC should be received within 48 hours. Moreover, PNC utilization in urban areas showed a declining trend that needs further studies to identify the factors.

However, there are disparities among regions and by educational status of women on the use of MNH services: The utilization of ANC, institutional delivery and PNC were found to be relatively low in regions such as Afar and Somali, which are mostly populated by pastoralists. The utilization of MNH services increases with increased educational status, with the lowest utilization recorded among women with no education.

Home delivery is reducing in rural areas: The proportion of births delivered at home in rural areas has reduced more than three-fold, compared with results from the 2014 Mini EDHS. Informants from the qualitative study attributed efforts by HEWs and HDAs, improved support from husbands and family members, and better service at health facilities (e.g., improvement in the availability of equipment and trained health care providers, and availability of maternal waiting room) to the reduction of home delivery in rural areas. However, in FGDs, a few women from Amhara Region reported that they use institutional delivery for fear of being fined if they deliver at home – a practice that could potentially have a negative impact on the sustainable utilization of the service.

Various factors affect service utilization: The lack of transportation emerged as the main barrier to institutional delivery. Here, the unavailability of an ambulance service to transport women from health facility to home after delivery was reported to discourage women from using institutional delivery. There are also reports that health care providers do not provide urban and rural clients with the same level of care. On the demand side, the belief that institutional delivery is not necessary and customary is another factor affecting service utilization.

MDG performance fund successfully transferred: The project successfully transferred the allocated budget to the MDG PF of the FMoH, as per the agreement, and put in place a mechanism for ensuring its proper utilization.

The capacity of health facilities strengthened: The supply of BEmONC and newborn care equipment, supplies and commodities strengthened the capacity of health facilities to provide MNH services. Most surveyed health facilities have essential equipment to provide BEmONC and newborn care services, an achievement attributed to the support of the project. However, various factors – such as non-functionality of equipment (due to poor quality and improper use), lack of immediate maintenance, and delays in distribution of equipment – affected the efficient utilization of equipment and thereby the service provision. However, this doesn't necessarily imply the equipment distributed by ESDE, as the survey doesn't specifically assess equipment supplied by the project. Moreover, although the availability of equipment has improved, there is still a shortage of some equipment and supplies. The lack of a continuous drug supply, due to poor logistics systems, remains a major challenge for effective service delivery.

Training was successfully provided: The project successfully delivered all planned training to health workers and HEWs. The proportion of health facilities with health care providers trained in BEmONC and ENC has remarkably increased compared with the situation in 2014. This shows the contribution of the project in improving MNH services, as the availability of trained providers is a major input for the provision of high-quality and continuous services. Post-training follow-up, mentoring and supervision were instrumental in ensuring trainees applied the knowledge and skills they gained from training. The project also strengthened community-level services by training HEWs on CBNC and the provision of essential supplies to health posts for CBNC-iCCM services.

Efficiency

The ESDE project demonstrated its efficiency through a successful partnership: The project established a successful partnership between the government and professional associations. This enabled the project to minimize the duplication of activities and utilize the existing structure and personnel for the successful execution of project activities.

The project utilized most of the budget on direct programme costs: The project has efficiently utilized the allocated budget by spending most of it on direct programme costs than indirect expenses.

External factors affected project implementation: Factors such as political instability and long approval process for activities executed by the FMoH resulted in delays in implementation.

Sustainability

The project laid the foundation for sustainable service provision: By improving the capacity of health facilities through equipment support and training of health workers, the ESDE project laid the foundation for the sustainable provision of MNH services.

Government commitment and increased demand for MNH services could play a positive role in sustainability: The commitment of the government to improve MNH and increased demand for the use MNH services because of grass-root demand creation activities were identified as positive factors for the sustainable utilization of services.

However, various factors affect service provision that could have a negative effect on sustainability: This evaluation identified several issues that could potentially affect the provision and utilization of MNH service in a sustainable way. These factors include non-

functionality of equipment and lack of periodic maintenance, shortage of essential supplies and drugs, and high turnover of trained health care providers.

Gender, equity and humanitarian principles

The project specifically benefited women across the country: Although both male and female neonates are benefited from health services, the project interventions primary benefited females. The project interventions covered all regional states and city administrations of Ethiopia and benefited women and children in rural and urban areas of the country.

5. Recommendations

The following are recommendations based on the evaluation findings and conclusions. The evaluations are first drafted by the external consultant and enriched using inputs from stakeholders. Stakeholders from EU, UNICEF, federal ministry of health of Ethiopia, various NGOs, and UN agencies participated in a consultative meeting to discuss about the evaluation findings and recommendations. During the meeting, the consultant presented the evaluation findings and recommendations and participants gave feedback and comments. Then, the evaluation report and recommendations are revised by incorporating comments and feedback from stakeholders.

Replicating the project approaches and strategies in future similar projects: The ESDE project approaches and strategies are effective, as evidenced by the substantial increase in the utilization of MNH services. Hence, EU, UNICEF, and FMOH of Ethiopia could consider replicating the project approaches and strategies in addressing both the demand and supply sides, in strengthening the capacity of health facilities at grass-root level and the overall country health system in future similar interventions.

Providing special support for developing regions: Given the relatively low level of service utilization in regions such as Afar and Somali, the study recommends similar projects to provide special support to the aforementioned regions. Such support by UNICEF and FMOH should include providing technical and capacity building support to regional, zonal and *woreda* health offices to improve their planning, implementation and monitoring capacity.

Assessing the factors for the decline in PNC service utilization in urban areas: Both the 2016 EDHS and this survey showed a declining trend in PNC service utilization in urban areas. Hence, before designing similar projects, there is a need to undertake qualitative studies to identify the factors for the reduction in service utilization.

Demand creation for the use of institutional delivery: The belief that institutional delivery is not important or customary is among the main reasons for women giving birth at home. Hence, demand creation activities, such as health education by HDAs and HEWs and education through mass media, should focus on addressing this issue.

Capitalizing on the existing success in reducing home delivery: Learning from lessons on the positive role of HEWs, HDAs, husbands and other family members in increasing the demand and use of MNH services, similar interventions should work to further strengthen these grass-root assets.

Strengthening local capacity for supervision and monitoring: The project used professional associations to undertake post-training follow-up, mentoring and supervision. Although this has proven to be effective in providing post-training support to trainees, the

approach is not feasible for continued supervision after the project ends. Hence, in future similar projects UNICEF should strengthen local capacity for long-term monitoring and supervision by involving *woreda* health offices in mentoring and supervision activities.

Improving functionality of equipment: Given the fact that the non-functionality of equipment is the primary challenge for sustainable service provision (although this doesn't specifically relate to equipment supplied by the ESDE project), there is an urgent need to address it. On one hand, there should be a system at national (FMOH) level to ensure high-quality materials are procured and purchased. On the other hand, UNICEF and FMOH should strengthen local capacity for the maintenance of equipment by establishing maintenance teams at zonal, or preferably *woreda*, level.

Supporting the logistics system: To ensure the sustained, effective distribution of supplies and drugs, similar projects need to support the health system from the federal to *woreda* level and improve the overall logistics system.

6. Lessons learned

Lesson 1

The ambulance service provided to pregnant women plays crucial role in increasing the utilization of institutional/skilled delivery. However, ambulances only provide a service to transport pregnant women to health facilities, and the lack of a service to transport women back home after delivery can discourage them from choosing institutional delivery. Hence, future similar projects need to address this issue by designing strategies to provide a transport service from health facility to home, especially for women living in areas located far from health facilities.

Lesson 2

ANC attendance is a gateway for the use of institutional delivery, as women who attend ANC services are likely to give birth at health facilities and consequently attend PNC services. Therefore, demand creation activities need to focus on increasing ANC attendance, as this will have a positive impact on improving institutional delivery and PNC service utilization.

Lesson 3

Improving the quality of services at health facilities also needs to address non-discrimination of users. Some community members complained that there are instances where health workers do not give an equal level of care to clients from rural and urban areas. Hence, capacity building training for health workers should address the need for the provision of equal services for people from different walks of life.

7. References

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8. Appendices

Appendix 1: Project results framework

Logical framework: Enhancing Skilled Delivery in Ethiopia project

	Intervention logic	Objectively verifiable indicators of achievement[1]	Sources and means of verification	Assumptions
Overall objective	To improve maternal and newborn health in Ethiopia towards the national targets	Maternal mortality ratio decreased from 676 per 100,000 live births (in 2011) towards the HSDP goal of 267 by the end of the project	EDHS 2016	Ongoing commitment and partnership to achieve the HSDP goals continues.
		Neonatal mortality rate decreased from 37 per 1,000 live births (in 2011) towards the HDSP goal of 30 by the end of the project		
Specific objective	To increase access to and utilization of high-quality maternal and newborn health services	Deliveries attended by skilled birth provider from baseline of 10% (in 2011) towards the HSDP goal of 62% by the end of the project	EDHS 2016	
		Pregnant women attending at least one ANC visit increased from the baseline of 43% (2011) towards the HSDP goal of 86% by the end of the project	EDHS 2016, Health Management Information System (HMIS), Surveys	
		Newborns who receive two postnatal visits in the first two days after birth increased from the 2011 baseline of 6.7% towards the HSDP goal of 25% by the end of the project	EDHS 2016	
Component 1: Contribution to the MDG Performance Fund				
Result 1	HSDP financing gaps reduced and implementation	Timely disbursement of fund to MDG PF as defined in the JFA	MDG PF reports	JFA respected by all signatories

	supported through contribution to the MDG PF	MDG PF annual activity plan and budget prepared and discussed in agreement with the JFA	MDG PF reports	
		MDG PF activity and financial reports prepared and discussed in coherence with JFA	MDG PF reports	
Component 2: Strengthen access to and demand for maternal and newborn health services				
Result 2	Targeted health facilities are strengthened, equipped and ready to provide maternal and newborn health services	500 HCs and 50 primary hospitals equipped and ready to provide basic and comprehensive EmONC services	Survey, MDG PF reports, HMIS, Project reports	(1) SPA+ conducted to inform planning of procurement and distribution of equipment/supplies (2) Construction of primary hospitals and operation theatres completed (3) FMoH has a maintenance system in place to ensure proper functioning of the equipment (4) Basic infrastructure, such as water, electricity, referral, communication facilities, in place (5) Limited attrition of trained health workers and regular presence of HEWs at health post on 24/7 basis (6) Demand generation successful (7) The airtime costs for the mobile phones of HEWs will be covered by the *woreda* administration
		500 HCs and 10 hospitals equipped and ready to provide ENC	Survey, MDG PF reports, HMIS, Project reports	
		30 operating theatres in primary hospitals equipped and ready to provide CEmONC services and are monitored	Project reports	
		1,000 nurses and midwives trained and supported to provide BEmONC services	Project reports	
		5,000 HEWs trained, mentored and equipped with essential drugs and commodities, including mobile technology to provide and deliver community-based MNH services and data collection	Project reports, MDG PF reports	

Result 3	Demand for and use of maternal health services is enhanced	HDA good practices documented and disseminated through regional workshops in five regions and two city administrations	Project reports	Detailed communication and social mobilization plans developed and implemented for HDAs to raise demand for maternal health services among communities
		HEWs equipped with mobile phones and user guide for data reporting and emergency referral linkages	Project reports	
		10,000 multi-powered radios for health posts procured and distributed	Project reports	
Activities – Result 1		**Means to achieve activities**		**Pre-conditions required**
Activity 1.1	Disbursements into the MDG PF	Contribution agreement with UNICEF		JFA respected by all signatories
Activities – Result 2		**Means to achieve activities**		**Pre-conditions required**
Activity 2.1	Procurement of EmONC equipment, supplies, commodities (including installation and training of users) for 500 HCs and 50 primary hospitals			ESPA+ results with list of EmONC equipment and capacity gaps available for all health centres and hospitals prior to the start of distribution
Activity 2.2	Training at least 250 health professionals in CEmONC			FMoH has a mechanism to monitor the performance and quality of services the certified health professionals will be providing
Activity 2.3	Printing and distribution of two sets of EmONC protocols and job aids to every	Contribution agreement with UNICEF		Standard EmONC protocols and job aids agreed by the FMoH

	maternity ward (3,000)			
Activity 2.4	Procure newborn care equipment (for estimated 500 HCs and 10 hospitals)			
Activity 2.5	Conduct training and mentoring of 1,000 nurses and midwives in ENC, as well as 50 hospital staff in advanced newborn care			
Activity 2.6	Install and monitor the functioning of operating theatres for obstetric surgery in 30 hospitals			Construction of operating theatres in 30 primary hospitals completed and technical staff assigned to operate, maintain and repair the equipment
Activity 2.7	Training, mentoring and supportive supervision of 1,000 nurses and midwives in EmONC			
Activity 2.8	Training and equipping of 5,000 HEWs in CBNC as part of iCCM/IRT and monitoring implementation			Proper functioning of PHCU; Consistent presence of HEWs at health posts on 24/7 basis; Supportive supervision by the *woreda* health offices is carried out
Activities – Result 3		**Means to achieve activities**		**Pre-conditions required**

Activity 3.1	Document and disseminate HDA good practices			
Activity 3.2	Provide communication materials and stationery to HDAs	Contribution agreement with UNICEF		
Activity 3.3	Procure 10,000 multiple-powered radios and distribute to health posts			

Appendix 2: Terms of reference

1. Background

Enhancing Skilled Delivery in Ethiopia (ESDE) is a four-year (Feb 2014 to Nov 2017) project implemented by the Federal Ministry of Health (FMoH), UNICEF Ethiopia and partners, with funding from the European Union Delegation to Ethiopia. The main objective is to improve MNH through improving access to and utilization of high-quality health services by mothers and newborns.

Through different programmes, the ESDE project supports direct service delivery of evidence-based, high-impact interventions that have been proven to reduce maternal and child mortality. ESDE also supports other components of the health system, such as the procurement of essential maternal and newborn medical equipment and supplies, human resources capacity building, community mobilization and demand generation, in order to facilitate service delivery and create a sustainable health system.

The ESDE project has a health system strengthening (HSS) component, as well as a direct health service improvement component. Funding for the broader HSS is channelled through the Millennium Development Goals/Sustainable Development Goals Pooled Fund (MDG/SDG PF) mechanism managed by the FMoH, while funds for direct service delivery are managed by UNICEF.

The project has national coverage of the components for HSS, basic emergency obstetric and neonatal care (BEmONC), neonatal intensive care units (NICUs), newborn corner (NBC) and demand creation. Community-based newborn care (CBNC) is implemented in three zones in Oromia and two zones in Southern Nations, Nationalities and Peoples' Region (SNNPR).

As of December 2016, a total of 2,493 health care professionals from health facilities across the country, including health centres and hospitals, had received competency-based training in BEmONC, ENC and NICU services, and more than 5,000 HEWs were trained in CBNC and equipped accordingly. In addition, equipment for BEmONC (including delivery beds) and operating theatres were installed in 970 health facilities (hospitals and health centres) and 55 hospitals, respectively. Interventions to improve demand generation have benefited 10,000 health posts through the procurement and distribution of multi-powered radios for community-level health education programmes. The project also supported the

ongoing national emergency obstetric and neonatal care (EmONC) assessment to generate evidence on the quality, equity coverage, and utilization of EmONC services, and to identify facility-specific gaps in providing basic and EmONC services.

UNICEF Ethiopia believes that the above achievements have culminated in contributing to the improvements observed in national MNH. The rate of national skilled delivery has increased steadily according to successive reports from the FMoH – from 40.7 per cent in 2006 Ethiopian Fiscal Year (EFY) to 77 per cent in 2008 (EFY). Ethiopia has witnessed a progressive decline in the maternal mortality ratio, which is also reflected in the 2016 EDHS report (412/100,000 live births). The national NMR has also shown a considerable decline: 37 per 1,000 live births in 2011, compared to 29 per 1,000 live births in 2016.

In line with the ESDE project proposal, the end-term assessment should therefore aim at investigating how much the project has contributed to these achievements.

Objectives

The overall objective will be to assess, draw lessons and document the relevance, effectiveness, efficiency, sustainability, and added value of the ESDE project in the improvement of national maternal, neonatal care and child health.

The specific objectives of the assessment include:

1. Assess the relevance of the project vis-à-vis the country context and priority.
2. Asses the contributions of the project in improving national maternal, neonatal and child health.
3. Identify the key health system contributions of the project to ensure the sustainability of high-quality MNCH services.

2. Owners of the research and use of the findings

The primary owners of the research will be FMoH, EU and UNICEF, as the ESDE project is implemented through a tripartite partnership of these three organizations.

The findings of the assessment will be used to primarily inform the national MNCH programme, in particular, and the overall health system, in general.

The key success factors and weaknesses, if any, will also be openly shared with the global health community so that lessons learnt in Ethiopia can be utilized elsewhere in the world, most importantly in developing nations that seek to improve MNCH services.

3. Scope of the study

The following areas will be the focus of the assessment:

6. Examining the implementation strategy and priority interventions in view of the HSS
7. Results achieved, including the improvement in health-seeking behaviour
8. Challenges, risks and mitigation measures put in place
9. Partnership among the major stakeholders and IPs that contributed to achieve results
10. Exit and sustainability strategies.

Due to the absence of a baseline survey, the study will not determine the attribution of results to the project.

Half of the funding was channelled directly through UNICEF. Therefore, the assignment will largely focus on assessing the implementation and results related to this component of the funding.

Study questions

In order to address the overall and specific evaluation objectives, the following specific questions will be taken into consideration.

Relevance

- To what extent were the objectives of the ESDE project fitting to the needs identified nationally at the time of the beginning of the project?
- To what extent were the inputs identified realistic, appropriate and adequate to achieve the results?

Effectiveness and contribution

- To what extent was the ESDE project effective in delivering planned results?
- Has the cause and effects link been ensured between inputs and activities, and outputs, outcomes and impacts of the project intervention?
- How effectively were the intervention modalities (training, equipping facilities, etc.) used in the implementation of the project?
- What is the level of ESDE project contribution in the overall progress to enhanced skill delivery in the country?
- To what extent does the project add benefits to what would have resulted from the GoE's and/or other Development Partners' interventions only?

Efficiency

- How far do the actual or expected results (outputs and outcomes) justify the costs incurred?
- To what extent was there internal coherence among project components/IPs' strategies and was there any significant overlap and duplication of project activities with other similar interventions funded nationally and/or by other donors which could otherwise result in unnecessary wastage of resources?
- What were the factors which contributed to the project's efficiency?

Sustainability

- What is the likelihood of sustainability of project output, outcomes and benefits after completion of the project?
- How effective are the mechanisms established to maintain equipment and services provision so that sustainable utilization for a reasonable period of time is ensured?
- What are the important issues that require particular attention in order to improve the likelihood of sustainability of outcomes?
- To what extent are capacities strengthened at individual, institutional and system level?

Gender, equity and humanitarian principles

- To what extent has the project contributed towards realization of gender equality?
- To what extent was the equity criteria considered when UNICEF targeted its resources?
- To what extent is UNICEF perceived to be neutral in its humanitarian action by different stakeholders (e.g. affected communities, parties to the conflict, other humanitarian actors)?
- To what extent has UNICEF and its partners reached all groups in need, given the available resources?

EU-ESDE result area	Description	Method of data collection to assess
Result 1	HSDP financing gaps reduced and implementation supported through contribution to the MDG PF	Because of administrative issues, the assessment will not go into details of assessing the MDG PF contribution; however, to show the entire picture of the support, this component of the project will be indirectly assessed through a review of relevant documents, such as: the project proposal, including the detailed implementation plan; progress reports submitted by UNICEF to the European Union; EU verification mission reports; medical equipment installation report; Joint Financial Agreement document; contract agreement document between UNICEF and EU; reports from IPs; national studies on MNCH, HSDP and HSTP, etc.
Result 2	Targeted health facilities are equipped and ready to provide MNH services	Data for health facilities: – The consultant will use secondary data from national studies recently conducted by FMoH, such as EmONC assessment, SARA, etc. In-depth interviews with key informants from government, donor organizations, and IPs, such as: – FMoH – Federal Ministry of Finance and Economic Development – Regional Health Bureaus – Bureau of Finance and Development – Health facilities: hospitals, health centres and health posts – IPs: Save the Children, L10K, Ethiopian Midwives Association, Ethiopian Paediatrics Society – European Union – UNICEF – Sub Saharan Africa Research and Training Center
Result 3	Demand for and use of maternal health services is enhanced	Household survey: A cross-sectional multi-stage cluster survey of households will be employed to: – Assess the utilization of maternal, newborn and child health (MNCH) services in the project intervention area. – Establish perceptions on the quality, awareness, knowledge and demand for high-impact MNCH services in the intervention areas. – Establish patterns of service utilization by socio-economic status and geographic location.

4. Design and methods

The absence of baseline information and implementation of different programmes in different areas poses a challenge in determining the attributions of the project. Hence, the use of a mix of methodologies will help to triangulate the information and ascertain the association of findings to the projects. The methods used in the assessment will include a review of existing documents, household surveys, health facility assessments and in-depth interviews with beneficiaries and partners (see table below for details).

Findings will then be compared against the results of similar implementation components from other studies conducted before the project began, as well against the national HSDP targets and MDGs 4 and 5.

5. Specific tasks with timeline

No.	Task	Anticipated timeline
1	Evaluation design, methodology and detailed work plan	01–15 September 2017
2	Inception report submission/presentation	26–30 September 2017
3	Document review and stakeholder interviews	11–19 October 2017
4	Field visits (data collection)	20 October – 19 November 2017
5	Data analysis	20 November – 05 December 2017
6	Report writing and presentation/submission of initial draft report	06–30 December 2017
7	Collection of feedback from UNICEF, EU, FMoH	01–10 January 2018
8	Draft report ready for validation	11 January 2018
9	Validation workshop	17 January 2018
10	Finalization of Evaluation report incorporating additions and comments provided by all stakeholders, and submission to UNICEF	18–30 January 2018

6. Estimated duration of contract

The evaluation will be conducted over a period of 5 months, from 01 September 2017 to January 2018.

7. Expected deliverables

The following are expected to be submitted by the consultant based on the agreed upon timeframe. All deliverables will be produced in English.

A. Inception report

The consultant will prepare and submit and/or present an inception report which details understanding of the task and how the evaluation questions will be addressed. This will ensure that the consultant and the signatories of the project, primarily UNICEF and EU, have a shared understanding of the evaluation.

The inception report is expected to have included an evaluation matrix which summarizes the design, methodology, questions, data sources and collection tool and method of analysis for each data source. The report will also include the scope of work, with clear descriptions of activities, work plan with a proposed schedule of tasks, and timeframe. The report will be discussed and agreed upon with UNICEF and EU.

B. Draft evaluation report

The consultant is expected to submit a draft evaluation report for review and comments by UNICEF. UNICEF will share the draft report to all relevant stakeholders, including EU. Comments from the reviewers will then be collected and provided to the consultant for incorporation or amendment, as deemed necessary.

C. The final report

A final report, which has incorporated all the valuable comments of all the reviewers after the validation workshop, will be submitted to UNICEF. The content, structure and quality of the report should meet the requirements of UNICEF. The report should include the following chapters/sections:

1. **Title page**
2. **Executive summary**

   Description of programme/project; Evaluation questions and purpose of the evaluation; Brief description of methods and analytical strategy (if appropriate); Summary of main findings; Implications of findings; Recommendations, if appropriate.

3. **Table of contents and other sections that preface the report**

   Table of contents contains at least all first and second level headers in the reports; Titles and page numbers are accurate; Lists of tables, figures, and appendices are included, if appropriate; List of acronyms or abbreviations is included, if appropriate; Acknowledgments section references sponsors, data collectors, informants, contributors to the report, research assistants, reviewers of the report, etc.

4. **Introduction and background**

   Purpose of evaluation and evaluation questions, if not covered in the methodology section; Description of the programme/project or phenomenon being evaluated (including goals and historical context, if appropriate); Identification of target population for the programme and relevant audiences and stakeholders for the evaluation; Review of related research; Overview and description of report structure.

5. **Methodology**

   Purpose of evaluation and evaluation questions, if not covered in the introduction; Evaluation approach or model being used, as well as rationale for the approach or model; Design of the evaluation, including sample sizes and timing of data collection; Methods of data collection, including description

of data collection instruments; Sources of information and data; Limitations of the evaluation (e.g., limitations related to methods, data sources, potential sources of bias, etc.).

6. **Results chapters**

   Details of the evaluation findings are clearly and logically described; Charts, tables, and graphs are understandable and appropriately and consistently labelled; Discussion of evaluation findings is objective and includes both negative and positive findings; All evaluation questions are addressed, or an explanation is included for questions that could not be answered; Findings are adequately justified.

7. **Summary, conclusion, and recommendations**

   Summaries of findings are included in each chapter or altogether in a summary chapter; Discussion and interpretation of findings are included; Summary and conclusion fairly reflect the findings; Judgments about the programme that cover merit and worth are included; If appropriate, recommendations are included and are based on findings in the report.

8. **References and appendices**

   A suitable style or format is used consistently for all references; References are free of errors; References cover all in-text citations; All appendices referenced in the text are included in the appendix section, in the order they are referenced; Data and information in the appendices are clearly presented and explained.

In summary, the contractor is expected to:

- Develop assessment implementation protocol and procedures with high standard methodologies as per the TOR
- Secure the necessary ethical clearance and other prerequisites to conduct the study
- Finalize data collection forms
- Recruit and train surveyors
- Conduct data collection
- Data entry
- Data cleaning
- Analyse data
- Write preliminary and final comprehensive report
- Consult with UNICEF/EU, FMoH, JSI/L10K, SCI, EMwA, EPS and other partners throughout the different stages of the assessment
- Provide supervision to the data collectors to ensure high-quality implementation is achieved
- Following the completion of data collection, cleaned raw data should be submitted to UNICEF.

The consultant will develop a PowerPoint presentation including the main findings and recommendation and a five-page executive summary of the evaluation, which can be used as a policy brief.

The consultant will also support UNICEF to develop a management response to the evaluation findings.

8. Reporting and supervisor

The consultant will report to UNICEF MNCH cluster.

9. Expected background and experience

The principal investigator assigned by the research company should be a public health specialist with the following qualifications:

- Master's degree/PhD in public health/medicine with a minimum of 10 years of work experience in public health research, preferably on MNCH.
- With a solid statistical and survey design background.

The regional/area coordinators assigned by the research company should be public health professionals with the following qualifications:

- Master's degree in public health/demography/medicine.
- A minimum of 5 years of work experience in public health research, preferably on MNCH and data management related to public health research.
- Degree in statistics and knowledge of survey design/sampling methodology is an asset.

The firm should also provide:

- proof of similar previous work, including application of digital data collection method such as tablet, PDA, other mobile-health practices
- a renewed licence for the year
- a recent audit report and guarantee letter/insurance coverage liable for the recovery of any damage would occur.

10. General conditions: procedures and logistics

- Consultants will not be provided lodgings and/or meals.
- Consultants will not work from UNICEF office, remote location, or a combination.
- Consultants are not entitled to DSA.
- Consultants should provide their own materials, i.e. computer, office supplies, etc.
- Consultants are not authorized to have access to UNICEF transport.
- Consultants will be paid only upon submission of deliverables.
- Flight costs will not be covered by UNICEF.
- UNICEF can exercise quality assurance activities at any time.

11. Intellectual property rights (Insert this text or modify it based on discussions with government counterparts)

All intellectual property rights in the work to be performed under this agreement shall be vested in the GoE and UNICEF, including without limitations, the right to use, publish, translate, sell or distribute, privately or publicly, any item or part thereof. The GoE and UNICEF hereby grant to the Recipient Organization a non-exclusive royalty-free licence to use, publish, translate and distribute, privately or publicly, any item or part of the work to be performed under this Agreement for non-commercial purposes. Neither the Recipient Organization nor its personnel shall communicate to any other person or entity any confidential information made known to it by GoE and UNICEF in the course of the performance of its obligations under the terms of this Agreement nor shall it use this information to private or company advantage. This provision shall survive the expiration or termination of this Agreement.

The core reports will be issued by the steering committee for the research, noting in the acknowledgements section those institutions and persons who have made major contributions to their authorship. Further analysis of data collected in the evaluation will first appear as (enter name of reports the research steering committee will issue). Once the official report is cleared consultants will be free to work further on those papers for publication in peer reviewed journals upon approval by the GoE and UNICEF. Consultants will provide the steering committee members with raw data, corrected/verified data once cleaned and programming files that permit replication of results from core evaluation reports.

Data collected for the research is the property of the GoE/UNICEF country programme. Master versions of the data, coding protocols and programing code permitting replication of the results of core evaluation reports will be kept by the programme. Copies of the data will be distributed to researchers with the permission of the evaluation steering committee with a view to helping to disseminate learning derived from the data sets.

Appendix 3: List of study *woredas* with their sample size

Region	Woreda	Sample size
Tigray	Alamata	60
	Medebay Zana	60
	Kelete Awelallo	60
	Dagua Temben	40
	Hintalo Wejirat	40
Afar	Gewane	60
	Chifra	20
Amhara	Gonder Zuria	60
	Debresina (Borena)	60
	Dangila	60
	Dessie Zuria	80
	Goba Lafto	60
	Bure Zuria	80
	Menz Lalo Midir	60
	Awabel	60
	Fogera	40
	Hagere Mariam	40
Oromia	Tole	60
	Guduru	40
	Chwaka	40
	Toke Kutaye	60
	Sululta	60
	Lome	60
	Jeju	60

Region	Woreda	Sample size
	Kuni	60
	Agarfa	40
	Adami Tulu	60
	Robe	60
	Gobu Seyo	40
	Hawi Gudina	40
	Gedeb Asasa	40
	Gololcha Bale	40
SNNP	Masha	40
	Sheka	60
	Gimbo	40
	Sodo (Gurage)	60
	Hadero Tubito	40
	Damot Sore	60
	Shebedino	60
	West Abaya	40
	Gesha (Deka)	40
	East Badawacho	60
Benishangul-Gumuz	Dibate	60
	Dangura	20
Somali	Shinile	60
	Shekosh	60
	Kebribeyah	60
	Jigjiga	40
Gambella	Gambella Zuria	20
	Itang	20
Harari	Harari (Rural)	20
	Harari (Urban)	20
Addis Ababa	District 1	40
	District 2	40
	District 3	60
Dire Dawa	Dire Dawa (Rural)	20
	Dire Dawa (Urban)	20
Total		**2,760**

Appendix 4: List of documents consulted

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5. Federal Ministry of Health of Ethiopia. *Health Sector Development Program IV 2010/11 – 2014/15. Final draft.* October 2010.
6. Federal Ministry of Health of Ethiopia. *Health Sector Transformation Plan 2015/16 – 2019/20 (2008–2012 EFY).* October 2015.
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16. UNICEF, WHO, World Bank Group, United Nations Population Division. *Levels and trends in child mortality. Report 2015. Estimates developed by the UN Inter-Agency Group for Child Mortality Estimation.* New York: UNICEF, 2015.
17. Preston C. Social inequality, prejudice and discrimination. *Culturescope* 1999; 61: 29–31.
18. Mullan Z. Transforming health care in Ethiopia. *The Lancet Global Health* 2016; 4 (1): e1.
19. Mehari AM. *Levels and determinants of use of institutional delivery care services among women of childbearing age in Ethiopia: analysis of EDHS 2000 and 2005 data.* DHS Working Papers. Calverton, Maryland, USA: ICF International, 2013.

Appendix 5: Data collection tools

Household Survey Questionnaire .doc


KII Guides.docx


FDG Guides.docx


Hospital assessment


Health center assessment


Health post assessment

Appendix 6: List of supervisors and data collectors

Region/Team	Name	Role
Amhara-Wollo	Mekuriya Mekonnen	Supervisor
	Tigist Terefe	Qualitative
	Tinsae Tegene	Enumerator
	Sisaynesh Alemayehu	Enumerator
	Tsehay Amare	Enumerator
	Worknesh Asmare	Enumerator
	Hilari Alemayehu	Enumerator
Amhara-Gumuz	Eyilachew	Supervisor
	Helen Bishaw	Qualitative
	Kalkidan Aemiro	Enumerator
	Adugna Fetene	Enumerator
	Tsedale Seifu	Enumerator
	Azeb Wubante	Enumerator
	Emebet Akalu	Enumerator
Oromia-Dire-Harar	Melkamu Kena	Supervisor
	Jiregna Assefa	Qualitative
	Birtukan Debebe	Enumerator
	Selamawit Nebro	Enumerator
	Wogenawit Kedir	Enumerator
	Genet Teferi	Enumerator

Region/Team	Name	Role
	Aliya Hawulas	Enumerator
Oromia-Wollega	Abreham Tibebu	Supervisor
	Milion Bekele	Qualitative
	Fikirte Sinkneh	Enumerator
	Kedija Aman	Enumerator
	Chaltu Baja	Enumerator
	Meskerem Worku	Enumerator
	Hiwot H/Mariam	Enumerator
Oromia-Bale	Engliz Ketema	Supervisor
	Asegid Ayele	Qualitative
	Tsigereda Assefa	Enumerator
	Magi Wakjira	Enumerator
	Nadiya Kemal	Enumerator
	Gaddisse Tesfaye	Enumerator
	Leti Getachew	Enumerator
SNNP Team I	Ermiyas Ganamo	Supervisor
	Becam Yohannes	Qualitative
	Ethiopia Tesfay	Enumerator
	Frehiwot Damtew	Enumerator
	Hiwot Assefa	Enumerator
	Samrawit Brehane	Enumerator
SNNP-Gambella	Mesafint Eshetu	Supervisor
	Leila Shekur	Qualitative
	Samrawit Gomoro	Enumerator
	Tigist Tsegaye	Enumerator
	Emawayish Taddesse	Enumerator
	Mekoya Tarekegn	Enumerator
Tigray-Afar	Birhane G/Mariam	Supervisor
	Getachew Assefa	Qualitative
	Helen Beyene	Enumerator
	Tigist Tekeste	Enumerator
	Hamer Mezgebe	Enumerator
	Hareg G/Kidan	Enumerator
Somali	Dr. Yoseph Feleke	Supervisor
	Biniam Kebed	Qualitative
	Weziira Ahmed	Enumerator
	Beza Chalachew	Enumerator
	Mahlet Anberber	Enumerator
	Mahlet Kefele	Enumerator
Addis Ababa	Belete Dawit	Supervisor
	Hana Mersha	Qualitative
	Yehezbalem Demessie	Enumerator
	Kalkidan Zinabu	Enumerator
	Rabiya Hassen	Enumerator

Appendix 7: Evaluation Matrix

Results and Indicators	Methods	Source of data	Target	Baseline value	End-line value
Specific Objective: To increase access to and utilization of quality maternal and newborn health services					
Indicator 1: Deliveries attended by skilled birth provider from baseline of 10% (in 2011) towards the HSDP goal of 62% by the end of the project	• Household survey	**One-to-one interview with:** • Women of reproductive age (15-45 years) who have given birth in the last 3 years (since 2014)	62%	10%	
Indicator 2: Pregnant women attending at least one ANC visit increased from the baseline of 43% (2011) towards the HSDP goal of 86% by the end of the project			86%	43%	
Indicator 3: Newborns who receive two postnatal visits in the first two days after birth increased from the 2011 baseline of 6.7% towards the HSDP goal of 25% by the end of the project			25%	6.7%	
Result 1: HSDP financing gaps reduced and implementation supported through contribution to the MDG PF					
Indicator 1: Timely disbursement of fund to MDG PF as defined in the JFA	• Document review	**Available documents including:** • Project proposal • Project detailed implementation plan • Progress reports submitted by UNICEF to the European Union • EU verification mission reports • Medical equipment installation report • Joint Financial Agreement document • Contract agreement document between UNICEF and EU • Reports from implementing partners • National studies on MNCH, HSDP, and HSTP			
Indicator 2: MDG PF annual activity plan and budget prepared and discussed in coherence with the JFA					
Indicator 3: MDG PF activity and financial reports prepared and discussed in coherence with JFA					
Result 2: Targeted health facilities are equipped and ready to provide MNH services					
Indicator 1: No. of primary hospitals equipped and ready to		**Documents from national studies such as:**	50 primary hospitals		

Results and Indicators	Methods	Source of data	Target	Baseline value	End-line value
provide basic and comprehensive EmONC services including essential newborn care (ENC)	• Health facility assessment • Document review • Key Informant interviews	• EMONC assessment • SARA **Key informants from:** • Federal Ministry of Health and Ministry of Finance and Economic Development • The European Union and UNICEF • Regional Health and Finance and Economic Bureaus • Woreda Health Offices • Hospitals and Health centres • Implementing partners • Sub Saharan Africa Research and Training Center • Health Extension Workers			
Indicator 2: No. of HCs equipped and ready to provide basic EmONC services including ENC.			500 HCs		
Indicator 3: No. of operating theaters in primary hospitals equipped and ready to provide comprehensive EmONC services and monitored			55 operating theaters		
Indicator 4: No. of nurses and midwives trained and supported to provide basic EmONC services			1,000 nurses and midwives		
Indicator 5: No. of HEWs trained, mentored and equipped with essential drugs and commodities including mobile technology to provide and deliver community based MNH services and data collection			5,000 HEWs		
Result 3: Demand for and use of maternal health services is enhanced					
Indicator 1: HDAs good practices documented and disseminated through regional workshops in five regions and two City Administrations	• Household Survey • Health facility assessment • Key Informant interviews • Focus Group Discussions	**One-to-one interview with:** • Women of reproductive age (15-45 years) who have given birth in the last 3 years (since 2014) **Key informants from:** • Regional Health Bureaus • Woreda Health Offices • Health centres • Implementing partners • Health Extension Workers **Focus group discussants:** • Women of reproductive age • Health care providers and woreda health office managers • Health Development Armies			
Indicator 2: No. of HEWs equipped with mobile phones and user guide for data reporting and emergency referral linkages					
Indicator 3: No. of multiple purpose radios for health posts procured and distributed			10,000 multiple purpose radios		

Appendix 8: Letter of ethical approval