



Investing in Midwifery Models of Care

A framework for estimating resource needs
and benefits of care provided by midwives



Investing in Midwifery Models of Care

A framework for estimating resource needs
and benefits of care provided by midwives

Executive summary

This document outlines an investment case framework to support the scaling up or establishment of care provided by midwives. The primary audience includes health planners and policymakers aiming to build a compelling case for investing in Midwifery Models of Care (MMoC), which can improve maternal and neonatal health, efficiently use healthcare resources and yield economic gains.

The framework is a valuable tool for analysing and articulating the benefits of investing in care provided by midwives. It provides methods to estimate the impacts, economic costs and benefits, and investment requirements for scaling up or establishing care provided by midwives within a country context.

The framework features seven steps to build an investment case for MMoC:

- 1 Situation analysis:**
Conduct a context-specific situation analysis and needs assessment to identify key gaps and priorities in sexual, reproductive, maternal, newborn, child and adolescent health (SRMNCAH). This includes data collection and strategic goal setting.
- 2 Defining the package of care provided by midwives:**
Select a package of interventions tailored to the identified needs and gaps and map them to appropriate service delivery channels.
- 3 Estimating health impacts and costs of interventions:**
Model the health impacts of scaling up or establishing care provided by midwives using tools such as the Lives Saved Tool (LiST). Estimate the associated costs.
- 4 Workforce development:**
Estimate the workforce requirements for the modelled scenarios.
- 5 Estimating benefits:**
Estimate the health and economic benefits resulting from lives, morbidity reduced and economic gains.
- 6 Return on investment:**
Consider the benefit–cost ratio and the ROI calculation for the monetized costs and economic benefits.
- 7 Contextual considerations:**
Account for the contextual factors necessary to create an enabling environment for midwives, ensuring the sustainability and effectiveness of the investment.

This framework outlines:

- ▶ **Background and rationale for investing in care provided by midwives**
- ▶ **Methods for estimating the costs and workforce needs of establishing or scaling up care provided by midwives**
- ▶ **Methods for estimating the health impacts and economic benefits of investing in care provided by midwives**
- ▶ **Contextual considerations for successfully investing in care provided by midwives.**

Health impacts of investing in care provided by midwives are estimated in terms of maternal and neonatal lives saved, improved nutrition, reduced morbidity and the number of unintended pregnancies averted. The corresponding economic benefits include increased education levels, increased workforce participation, social benefits and reduced costs of non-maternal health services. The framework emphasizes the importance of contextual considerations for successfully investing in MMoC, including creating an enabling environment for midwives and establishing monitoring and evaluation systems.



Contents

Executive summary	2
Contents	4
Abbreviations and acronyms	9
Introduction: The need for midwifery investment	10
Global maternal and neonatal health	11
Midwifery Models of Care overview	12
The role and definition of a midwife	13
Rationale for investing in midwifery	14
About the investment framework	17
The role and definition of an investment case	19
Investment case framework for midwifery models of care	24
Conceptual framework	25
Steps for creating an investment case	26
Tools for analysis	27
Step One: Situation analysis	30
1.1 Data collection	30
1.2 Situation analysis and needs assessment	32
1.3 Strategic goal setting	33
Step Two: Defining the intervention package	34
2.1 Defining the package of care provided by midwives	34
2.2 Selecting the interventions provided	38
Step Three: Estimating health impacts and costs of interventions	39
Overview	39
3.1 Estimating health impacts of care provided by midwives using the Lives Saved Tool	40
3.2 Costs of establishing or scaling up care provided by midwives	42

Step Four: Workforce development	48
Overview	48
4.1 Estimating the workforce requirements for the modelled scenarios	49
4.2 Workforce modelling and development	50
4.3 Costs of workforce development	56
Step Five: Estimating benefits	61
Overview	62
5.1 Estimating health benefits	65
5.2 Estimating economic benefits	67
5.3 Estimating benefits of reduced unnecessary interventions	76
Step Six: Return on investment: estimating total costs and benefits	82
6.1 Estimating benefit–cost ratio and return on investment for care provided by midwives	82
Step Seven: Contextual considerations: enabling environment and sustainability	84
Overview	84
7.1 Investing in enabling environment for midwives	85
7.2 Monitoring and evaluation	88
Annex: Example of a terms of reference	90
References	93

List of figures

Figure 1.	Conceptual framework for investing in care provided by midwives	25
Figure 2.	Steps of estimating investment needs and benefits of care provided by midwives	26
Figure 3.	Illustration of a workforce model	51
Figure 4.	Health and economic benefits of investing in care provided by midwives	63

List of tables

Table 1.	Example: Costs of scaling up maternal health intervention coverage (US\$ million)	21
Table 2.	Example: Cost and benefit breakdown by programme area (US\$ million)	22
Table 3.	Tools for analysis	28
Table 4.	Key data needed for performing situation analysis	31
Table 5.	List of interventions that can be provided by midwives	36
Table 6.	Concepts used in LiST for estimating the number of people receiving interventions	41
Table 7.	Costs included in the framework	42
Table 8.	Intervention cost components	44
Table 9.	Key investments at community level	45
Table 10.	Key investments at clinic level	46
Table 11.	Key investments at hospital level	46
Table 12.	Key investments at outreach level	47
Table 13.	Workforce modelling outputs	52
Table 14.	Development strategies and key investment in midwifery workforce	55
Table 15.	Drivers of cost differences of care provided by midwives versus physicians	57
Table 16.	Pre-service training length and costs for midwives versus physicians	57
Table 17.	Parameters for estimating midwifery workforce development costs included in the framework	58
Table 18.	Parameters and assumptions used for economic benefit calculations	64
Table 19.	Parameters for estimating morbidity averted	66
Table 20.	Parameters for estimating workforce benefits	68
Table 21.	Parameters for estimating education benefits	71

Table 22.	Parameters for estimating social benefits	73
Table 23.	Parameters for estimating benefits of reduced unnecessary interventions	78
Table 24.	Key investments in an enabling environment for midwives	86
Table 25.	Example monitoring framework	89
Table 26.	Example activities and deliverables for consultants	92

Acknowledgements

This investment case framework supports the Midwifery Accelerator (see “About the investment framework”) by providing a robust and adaptable tool for estimating the return on investment in midwifery care. The aim is to enable health planners and policymakers to build a compelling investment case for midwifery care, highlighting the potential health and economic benefits of investing in care provided by midwives. The development of this investment case framework would not have been possible without the invaluable contributions and support of numerous individuals and organizations. We would like to express our sincere gratitude to all those who have played a role in shaping this framework.

Development and writing: Jesper Sundewall and Olga Kaartinen of Lund University, Sweden

Reference Group members and key informants: Howard Friedman, Federico Tobar and Mengjia Liang (UNFPA); Beena Varghese, Justine Le Lez, Karin Eva Elisabet Stenberg, Pascal Zurn, Queen Dube (World Health Organization); Ann Robins (UNICEF); Shree Mandke (International Confederation of Midwives); Tamitayo Erobogbo (MSD for Mothers), Tej Nuthulaganti (The Global Fund); Eoghan Brady (Clinton Health Access Initiative); Robyn Churchill and Deborah Armbruster (U.S. Agency for International Development); Meena Gandhi (United Kingdom Foreign, Commonwealth & Development Office)

Midwifery Accelerator core group: Mikaela Hildebrand, Geeta Lal, Chisato Masuda and Duncan Shikuku (UNFPA); Allisyn Morana and Ulrika Rehnström Loi (World Health Organization); Gagan Gupta and Shaimaa Ibrahim (UNICEF); Sally Pairman, Anna af Ugglas and Jacqueline Dunkley-Bent (International Confederation of Midwives); Suzanne Stalls (Jhpiego/Momentum) and Laura Fitzgerald (Jhpiego/Momentum)

UNFPA regional and country offices: Davide De Beni, Catherine Breen Kamkong and Federica Maurizio (Asia and the Pacific), Muna Abdullah and Gareth Lafferty (East and Southern Africa), Edgard Narváez and Alejandra Corao (Latin America and the Caribbean), Gustavo Tapia Terán (Plurinational State of Bolivia), Gabriela Rivera (Mexico), Hilma Shikwambi and Matthew Cummins (West and Central Africa), Adeelka Khan and Musa Elisha (Nigeria)

Financial support: United Kingdom Foreign, Commonwealth & Development Office

Abbreviations and acronyms

ANC	antenatal care
CHAI	Clinton Health Access Initiative
CS	Caesarean section
DHS	Demographic and Health Survey
FTE	full-time equivalent
GBV	gender-based violence
GDP	gross domestic product
HIV	human immunodeficiency virus
HRH	human resources for health
HSS	health system strengthening
ICM	International Confederation of Midwives
LiST	Lives Saved Tool
LMIC	low- and middle-income countries
MA	midwives' association
mCPR	modern contraceptive prevalence
MICS	Multiple Indicator Cluster Survey
MMoC	Midwifery Models of Care
MMR	maternal mortality ratio
MNCH	maternal, newborn and child health
MSF	Midwifery Services Framework
NMR	neonatal mortality rate
ODC	other direct cost
OOP	out-of-pocket expenses
PMA	Performance Monitoring for Action data
ROI	return on investment
SOP	standards of practice
SRHR	sexual and reproductive health and rights
SRMNCAH	sexual, reproductive, maternal, newborn, child and adolescent health
UPs	unintended pregnancies
WFOM	Workforce Optimization Model
WHO	World Health Organization
YLD	years lived with disability

Introduction:

The need for midwifery investment



"Investing in the health workforce — especially midwives, who can provide 90% of needed care but make up less than 10% of the global SRHR workforce — is essential to ensuring every woman can give birth safely."

—Ms. Diene Keita, Executive Director, UNFPA, (Opening remarks at United Nations General Assembly 80th session (UNGA80) side event: the Political Economy of Implementing Primary Health Care)

Global maternal and neonatal health

Maternal and newborn morbidity and mortality rates worldwide remain unacceptably high, with an estimated 712 maternal deaths, 5,200 stillbirths and 6,300 neonatal deaths occurring every day (1, 2). Progress falls short of targets in the Sustainable Development Goals (SDGs) and stark disparities persist globally. Low- and middle-income countries (LMICs) account for more than half of maternal deaths and over 60 per cent of neonatal deaths in the first 28 days of life (1, 2). Most of these deaths are preventable and are due to poor quality of care (3). Additionally, adolescent and unintended pregnancies remain critical public health issues, closely linked to insufficient access to sexual and reproductive health services. These realities underscore the urgent need for intensified, targeted interventions to improve maternal and neonatal health outcomes globally.

Timely and good quality care could address the majority of challenges in maternal and newborn health globally. Midwives who are fully educated, licensed, and integrated into interdisciplinary teams, performing in an enabling environment, can deliver about 90 per cent of the essential sexual, reproductive, maternal, newborn, child and adolescent health (SRMNAH) interventions (4). They play a pivotal role in improving maternal, newborn and adolescents' health, realizing the sexual and reproductive health and rights (SRHR) of women and adolescent girls, achieving universal health coverage, and accelerating progress towards the Sustainable Development Goals. Beyond providing essential maternal and newborn care, midwives also contribute to strengthening health systems by alleviating pressure on healthcare facilities and hospitals.

712

**maternal deaths
every day**

5,200

**babies are stillborn
every day**

6,300

**neonatal deaths
every day**

Midwifery Models of Care overview

Midwifery Models of Care (MMoC) are models in which “the main care providers for women and newborns, starting from pre-pregnancy and continuing all the way through the postnatal period, are educated, licensed, regulated midwives who autonomously provide and coordinate respectful, high-quality care across their full scope of practice, using an approach that is aligned with the midwifery philosophy of care” (5). The philosophy of midwifery care promotes a person-centred approach to care, values the woman–midwife relationship and partnership, optimizes physiological, biological, psychological, social and cultural processes, and uses interventions only when indicated (6). MMoC can be adapted to all contexts and levels of care, ensuring wide accessibility and relevance across different resource levels and cultural contexts. MMoC have immense potential for addressing the global and national inequities in access and quality of healthcare and its outcomes.

Transitioning to MMoC is a cost-effective solution for improving maternal and neonatal outcomes (7), with the impacts extending beyond the health impacts to the healthcare system and society at large. Implementing MMoC has the potential to bring benefits to individuals, communities, health systems and economies through:

- ▶ **saving lives and improving the well-being of women, newborns and their communities**
- ▶ **humanizing care and prioritizing the needs of women**
- ▶ **contributing to societal development and advancing human capital**
- ▶ **providing cost-effective care with long-term economic benefits (5).**

Transitioning to MMoC – with its health and economic returns – is a process enabled by significant investments in midwives. This is a priority highlighted across global initiatives (5, 8). The World Health Organization emphasizes investment in MMoC as a way to maximize the efficiency and impact of resource allocation in maternal and newborn healthcare (5). *The State of the World's Midwifery Report 2021*, published by UNFPA in partnership with the International Confederation of Midwives and the World Health Organization, identifies four areas where greater investment is required for midwives to achieve their potential: high-quality education and training of midwives; health workforce planning, management and regulation; midwifery leadership and governance; and midwife-led service delivery, with MMoC emphasized as integral to service delivery (8). Investments are needed not only to meet the current service demand, but also to realize the high returns of expanding care coverage. Investments in MMoC, especially in LMICs, are likely to bring high returns in health, gender equity, quality education, a strengthened labour force, and inclusive and equitable economic growth (8).

The role and definition of a midwife

The most recent edition of the International Standard Classification of Occupations (ISCO-08) defines midwifery professionals as follows (9):

- **Midwifery professionals plan, manage, provide and evaluate midwifery care services before, during and after pregnancy and childbirth. They provide delivery care for reducing health risks to women and newborn children according to the practice and standards of modern midwifery, working autonomously or in teams with other healthcare providers. They may conduct research on midwifery practices and procedures and implement midwifery education activities in clinical and community settings.**

In some countries, health workers qualified as both nurses and midwives are referred to as “nurse–midwives”. According to ISCO-08, distinctions between these professions should be based on the nature of the work performed rather than the educational pathway (9). Consistent with the guidance in *Transitioning to midwifery models of care: Global position paper* (5), “midwives” in this framework refer to both midwives and nurse–midwives, provided that the nature of the work performed by nurse–midwives aligns with the midwifery tasks specified and listed in ISCO-08 (9).

A midwife is a person who:

- ▶ **Has successfully completed a midwifery education programme based on the ICM Essential Competencies for Midwifery Practice (10) and the framework of the ICM Global Standards for Midwifery Education, recognized in the country where the programme is located;**
- ▶ **Has acquired the requisite qualifications to be registered and/or licensed to practice midwifery and use the title “midwife”; and**
- ▶ **Demonstrates competency in the scope of practice of the midwife (11).**

In this framework, the term “midwife” refers to midwife professionals who are fully educated and licensed in accordance with global standards.

Rationale for investing in midwifery



Quality of care

Educated, licensed and regulated midwives, fully integrated into the health system, are pivotal to achieving high-quality care and driving improvements in health outcomes. High-quality care is defined as safe, effective, people-centred, timely, efficient, equitable and integrated (5). It encompasses the aspects defined in the evidence-based framework for quality maternal and newborn care developed by Renfrew et al (12).

Transitioning to MMoC enhances quality of care by optimizing outcomes for women and newborns, by minimizing unnecessary interventions and by maximizing resource efficiency. Ensuring quality of care can also enable long-term cost reductions, ensuring the sustainability of investments made. Ultimately, transitioning to MMoC contributes to the realization of universal health coverage (5).

For midwives to deliver high-quality care, they must be adequately supported and integrated into the health system. Countries must establish structured quality assurance mechanisms, such as accredited education programmes aligned with the *ICM Global Standards for Midwifery Education* (13). Required mechanisms also include regulation, evidence-based guidelines, ongoing professional development, audits, and robust monitoring and evaluation systems.

Ensuring quality of care is a fundamental requirement for the success of investments in maternal and newborn health, as only high-quality care leads to improved outcomes and cost reductions, while poor quality care is unfavourable and risky to women and newborns (5). Without high-quality care, the economic benefits of investing in care provided by midwives cannot be realized.



Health benefits

Care provided by midwives can improve health outcomes for mothers and their newborns and substantially reduce maternal and neonatal mortality and stillbirths especially in low- and middle-income countries. A recent analysis of 88 countries demonstrated that a substantial increase in coverage of midwife-delivered interventions (25 per cent increase every five years to 2035) could avert 40 per cent of maternal and newborn deaths and 26 per cent of stillbirths (4). Even a modest increase (10 per cent every five years) in coverage of midwife-delivered interventions could avert 23 per cent of maternal and neonatal deaths and 14 per cent of stillbirths. With universal health coverage of midwife-delivered interventions, 65 per cent of maternal and neonatal deaths and stillbirths could be averted (4).

By promoting care provided by midwives, recourse to certain interventions is reduced. Such interventions include Caesarean section, episiotomy, labour induction, vacuum-assisted delivery, oxytocin augmentation and cervical ripening. This occurs without corresponding increases in adverse outcomes (7, 14–22). Additional improved outcomes including decreased risk of post-partum anaemia, preterm birth, stillbirth, admission to neonatal intensive care unit, low newborn birth weight and birth asphyxia (18, 19, 23, 24). Use of midwives also increases the likelihood of exclusive breastfeeding at discharge from birth admission and improves women's satisfaction with their care (17, 25).

In addition, midwives are the essential link to bring a woman into the healthcare system at the most effective and efficient time and level (26). Receiving care from a midwife is not limited to hospitals but extends to community-based facilities and homes, increasing the options for women to choose their care location. The ability of midwives to provide community-oriented care and improve access for disadvantaged populations, compared with physicians, makes care provided by midwives an effective solution for addressing inequalities in SRMNCAH care (27, 28).



Cost-effectiveness of midwifery care

Growing evidence suggests that implementing care provided by midwives is an efficient and impactful way of using resources. **Care provided by midwives is found to produce improved or equivalent health outcomes compared with standard medical care, most often at a lower cost** (7, 15, 24, 29, 30). Reduced reliance on unnecessary interventions further contributes to cost savings (14, 15, 16) and supporting women to give birth in primary care facilities and homes reduces health expenditures related to giving birth in hospitals (31). However, it should be noted that cost savings vary significantly depending on the context and organization of services (29) and that comprehensive quality data for LMICs remains limited.

Sources of potential cost savings with care provided by midwives include:

- ▶ **Staff salaries (7, 29)**
- ▶ **Appropriate number, location and length of antenatal visits (6)**
- ▶ **Reduced length of hospital stay for mother (14, 17)**
- ▶ **Reduced unnecessary interventions (7, 14, 16, 17, 24)**
- ▶ **Reduced admission to neonatal intensive care (7).**

Estimates show the potential for substantial cost savings for health systems (15, 29, 32). In the United States, expanding midwifery care to 100 per cent of low-risk births could save US\$340 million per year (15). In Morocco, investing in midwives to achieve 95 per cent of universal health coverage would cost an estimated \$638 million for the country while yielding economic benefits of \$10.15 billion – a return nearly 16 times the initial investment.

Beyond cost savings, investing in care provided by midwives enables a more upstream approach. It does so by shifting care from specialized obstetric services to primary care, where treatment is more cost-effective. Over time, increased demand at the primary care level can help redistribute resources away from higher-cost specialized care towards more affordable primary care services.

Another way to assess cost-effectiveness is by evaluating the cost drivers in midwife-led care versus physician-led care and comparing them to the care and health outcome effectiveness. Such comparisons also promote MMoC as the more cost-effective option, primarily driven by faster and lower-cost of training, lower salaries and higher retention rates compared with physicians (33). This finding is consistent with the evidence presented above that highlights the cost-effectiveness of care provided by midwives.

Globally, salaries for a physician or medical specialist are generally at least double that of a midwife. Cost simulations for scaling up midwife-led care versus physician-led care identified a twofold salary difference, making salaries the primary driver of the lower cost of MMoC. If benefits and incentives to redistribute health workers to more remote areas are included in implementation, differences become even larger as benefits and incentives are often proportional to salary (33).

Pre-service training costs constitute approximately 8 per cent of the incremental costs associated with scaling up health systems across all healthcare worker cadres (33). **Training midwives is significantly more affordable, costing about one third of what is required to train physicians.** This cost difference reflects the more specialized and shorter duration of midwife training programmes (33). Further savings may arise from focusing on training midwives instead of nurse–midwives, as is already implemented in many countries globally. Moreover, scaling up midwifery education may require constructing new training facilities, and these can be developed at a substantially lower cost than multidisciplinary medical teaching facilities (33).

In addition to care provided at healthcare facilities, midwives are also able to provide person-centred care at home and in community settings (5), which could generate further potential cost savings (34).

Scaling up family planning as a part of care provided by midwives maximizes the health and social benefits and reduces the overall cost of the investment (4, 26). High unmet need for contraception is linked to increased rates of preventable maternal deaths. Countries with high unmet need for family planning often have higher rates of maternal complications and deaths (37). Almost 50 per cent of all stillbirths and newborn deaths averted, and a significant reduction in abortions, in LMICs are attributed to family planning (4). Given its significant potential to reduce unintended pregnancies, maternal morbidity and maternal death, and mortality, scaling up family planning as part of midwifery scale-up can accelerate global progress and substantially enhance the return on investment.



© UNFPA Bamyán, Afghanistan/Rada Akbar



Efficiency of investing in the midwifery workforce

Severe global staff shortages remain a significant barrier to accessing quality care. At current rates, the SRMNCAH workforce is projected to meet only 82 per cent of the demand by 2030. Closing this gap will require the creation of 1.3 million new health worker positions, most of which are midwives (8). Without sufficient investment and reform in the global supply of qualified health workers, inefficiencies in healthcare will persist. Even maintaining current coverage levels will demand additional resources due to population growth (35). **Strategic investments in the health workforce have the potential to significantly enhance health outcomes, well-being and overall human security.** They also support decent jobs and inclusive economic growth. However, such investments are only productive when they are efficient and lead to measurable improvements in social outcomes (36).

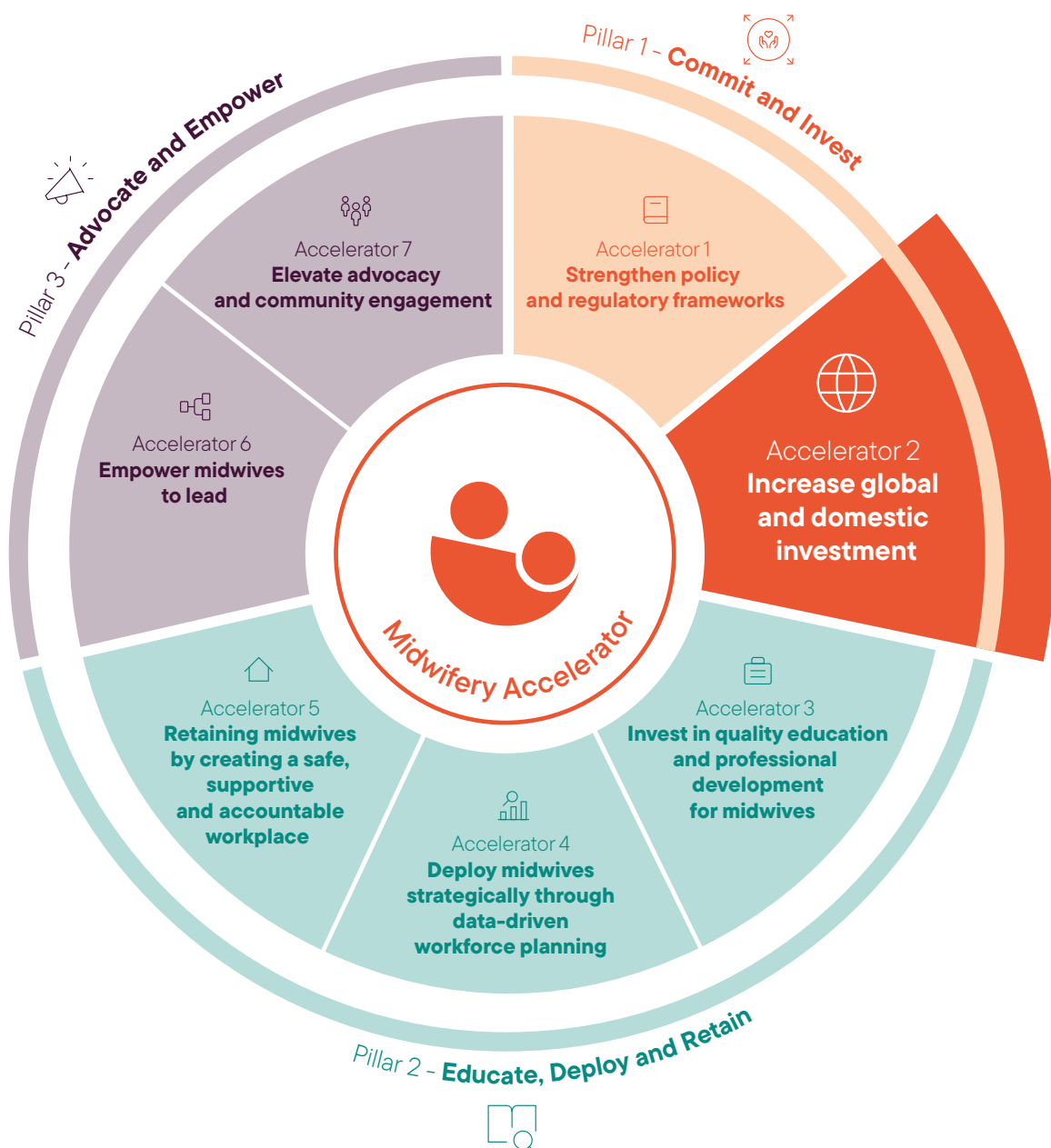
Specifically, investing in midwifery has been shown to yield high returns. Midwives not only improve maternal and child health outcomes and strengthen preparedness for humanitarian crises, but also boost economic development by empowering women and increasing their participation in the labour force (36). Yet, the benefits of midwifery cannot be fully realized without addressing the severe workforce shortages that limit the ability of midwives to deliver cost-effective, high-quality care.

Investments are needed to ensure a sufficient and equitably distributed workforce with the required skills, which is aligned with international standards and the scope of midwifery practice. Scaling up requires recruiting and training midwives, enhancing the capacity of educators, and providing robust supervision and mentoring systems and an enabling regulatory and legal environment to practice fully to their education (8). Comprehensive, multilevel investments are essential – not only in midwives but also in the infrastructure that supports their education, deployment and practice.

About the investment framework

The investment case framework for MMoC is designed to support countries undertaking midwifery-oriented reforms. By narrowing its focus to care provided by midwives, the framework enables precise analysis, facilitating actionable conclusions and recommendations. It offers a practical guide for estimating the costs and investment needs, as well as the resulting health and economic benefits, of care provided by midwives. It focuses on identifying necessary investments, data sources and methods to build robust evidence-based cases for strategic investments.

Developed as part of the [Midwifery Accelerator](#), the framework aims to catalyse country-level commitments and accelerate investments in care provided by midwives as a part of MMoC. The Midwifery Accelerator highlights the importance of governmental investment strategies and efficient use of funds as critical accelerators for improving SRMNCAH outcomes, contributing to global progress towards universal health coverage and the Sustainable Development Goals.



The framework supports countries in analysing and demonstrating the benefits of care provided by midwives, such as improving maternal and newborn health, optimizing scarce healthcare resources, and achieving significant economic gains. Beyond cost-effectiveness, it emphasizes quantifying broader benefits, including lives saved, morbidity reduced and unintended pregnancies averted.

Designed for adaptability across diverse contexts, the framework provides guidance to planners and decision makers, regardless of the current level of midwifery care. It can be used to advocate for introducing MMoC, expanding existing services or ensuring sustained investment. By promoting standardization, alignment and accountability, the framework encourages countries to set clear targets, share best practices, and monitor progress towards achieving universal health coverage and the Sustainable Development Goals.

Through this framework, countries can align resources and investments to prioritize MMoC and build compelling arguments to drive transformative health reforms.

The role and definition of an investment case

Despite strong evidence on the health benefits of investing in midwives, country-specific data on the return on investment for care provided by midwives remains limited. Only a few nations have conducted comprehensive assessments to estimate these returns, creating a critical gap in actionable evidence.

Making the case

An investment case presents an argument for investing in a particular area of health or intervention. Investment cases are tools to demonstrate the returns that can be achieved by investing in an area of interest by presenting the range of costs required and benefits that can be expected from investing in the interventions. They demonstrate the value of investment in monetary terms such as productivity losses averted and benefit–cost ratios. They also demonstrate the value in term of health outcomes such as lives saved and disability-adjusted life years averted (37).

An investment case serves as an advocacy tool to illustrate the costs and value of an investment, identify financial gaps, and outline the resources and commitments needed. Investment cases are typically developed to influence decision making and often target donors and governments; however, they can also be aimed at planners and other stakeholders (37).

Purpose of a country investment case:

- ▶ **Gather country-level data on current financing and commitments towards achieving the desired results.**
- ▶ **Identify the investments required within the country's development framework(s) to achieve the desired results.**
- ▶ **Develop a compelling case, highlighting the return on investment, to support a prioritized set of investments necessary for achieving the desired results.**

Examples of investment cases

The following examples of national investment cases are provided for inspiration. While not about midwives, consider how they are structured and how they could be useful as models for creating a case for investing in care provided by midwives.

- ▶ **South Sudan: Investment cases towards ending unmet need for family planning, preventable maternal deaths, and gender-based violence**
- ▶ **The case for investment in the three transformative results in the Arab region**
- ▶ **Lao PDR: Prioritizing health investments for human capital development.**

Examples of content: tables and graphs

This framework provides guidance on how to build an investment case that presents key content in tables and graphs. These visual elements illustrate the results generated by analysis performed through using this framework. Most of the tables and graphs are generated using the Lives Saved Tool (LiST), which will be discussed more in detail in the following section.

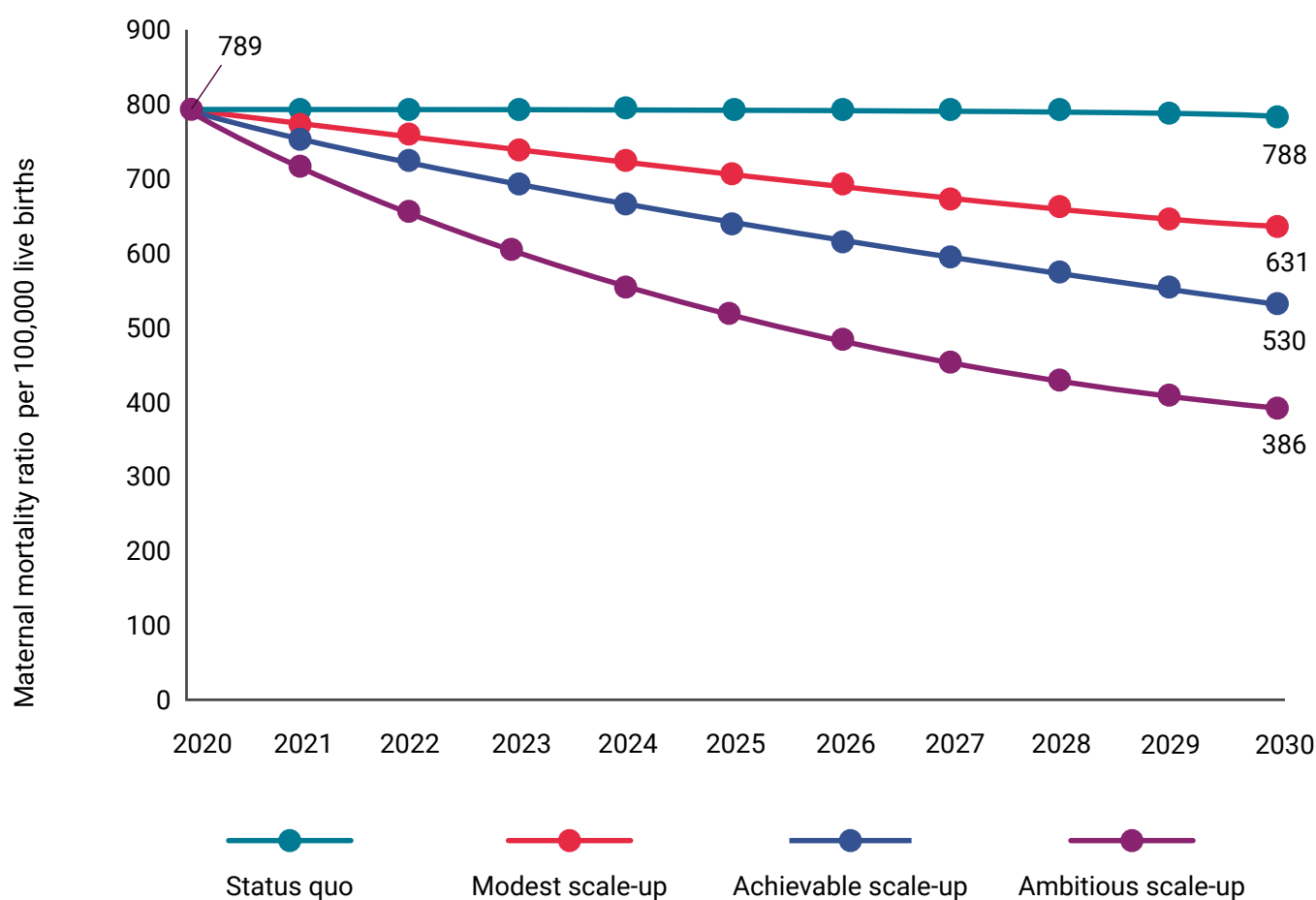
Example of modelling the impact of scaling up interventions delivered by midwives on maternal deaths and family planning

These results were generated in the [LiST Impact model](#) using an example country and scenarios:

Example: Number of annual maternal deaths by projection scenario

	2020	2021	2022	2023	2024	2025
Status quo	3,697	3,731	3,757	3,775	3,787	3,792
Interventions scale-up	3,697	3,596	3,465	3,320	3,168	3,009

Example: Maternal mortality ratio per 100,000 live births, by projection scenario



These results were generated in the [LiST Family Planning Impact model](#) using an example country and scenarios:

Example: Family planning impact (contraceptives)

	2020	2021	2022	2023	2024
Number of unintended pregnancies averted due to modern method use	8,310,932	8,624,526	8,926,176	9,225,111	9,518,784
Number of unsafe abortions averted due to modern method use	3,688,824	3,828,013	3,961,901	4,094,584	4,224,931

Example: Family planning cost

	2020	2021	2022	2023	2024
Number of modern method users	22,293,913	23,135,124	23,944,295	24,746,180	25,533,953
Cost of using modern methods (US\$)	377,625,274	391,874,113	405,580,242	419,162,977	432,506,663

Example of a breakdown of estimated costs of scaling up intervention coverage by projection scenarios:

Table 1. **Example: Costs of scaling up maternal health intervention coverage (US\$ million)**

Cost	Status quo	Modest scenario	Ambitious scenario
Intervention cost	46.80	98.00	194.00
Programme cost	7.02	14.80	29.20
Wastage cost	0.08	2.06	4.15
Logistics cost	4.90	12.30	25.00
Infrastructure investment cost	23.40	49.20	97.20
Other health systems cost	65.00	137.00	270.00
Total	147.12	313.36	619.55

Adapted from: South Sudan: Investment Cases Towards Ending Unmet Need for Family Planning, Preventable Maternal Deaths, and Gender-based Violence (38)

Example of a breakdown of estimated costs and benefits of scaling up intervention coverage by projection scenarios:

Table 2. **Example: Cost and benefit breakdown by programme area (US\$ million)**

Cost breakdown	Baseline	Full scale-up scenario	Additional costs
Midwife-delivered: Family planning	41.00	48.70	7.50
Midwife-delivered: Other	13.00	34.00	20.00
Total without overhead costs	54.26	82.77	28.51
Overhead costs	48.90	75.05	26.15
Total cost (with overhead costs)	103.17	157.82	54.65
Benefit breakdown			Total benefit
Non-midwife-delivered interventions (with overhead costs)	5.78	4.36	1.42
Midwife-delivered: Family planning			476.84
Midwife-delivered: Maternal health			290.15
Total benefit			768.04

Note: Example generated for illustrative purposes for this framework.



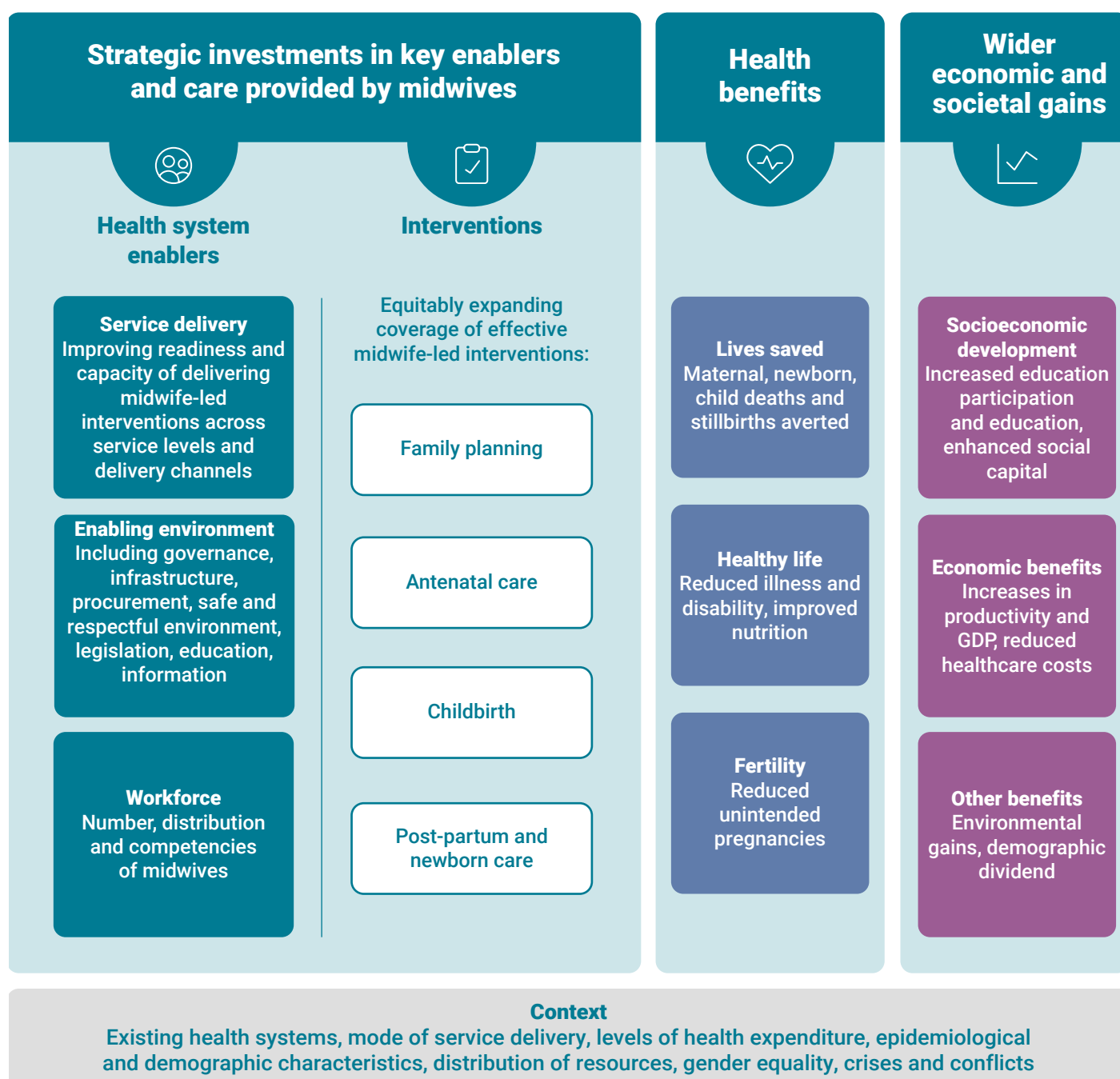
Investment case framework for midwifery models of care



Conceptual framework

The structure of the **conceptual framework for investing in care provided by midwives** is guided by the Global Investment Framework for Women's and Children's Health (35). It outlines the strategic investments in terms of key health system enablers as well as interventions provided by midwives. The framework highlights the anticipated benefits of such investment, including health benefits and wider economic and social gains. It also acknowledges that both investments and expected benefits are influenced by the context in which they occur. The conceptual framework for investing in care provided by midwives is illustrated in Figure 1.

Figure 1. **Conceptual framework for investing in care provided by midwives**



Steps for creating an investment case

The process begins with a context-specific situation analysis and needs assessment to identify key gaps and priorities in SRMNCAH. Based on this analysis, strategic goals are defined to address these issues. Next, an intervention package of care provided by midwives is selected, tailored to the identified needs and gaps, and mapped to appropriate service delivery channels to effectively address SRMNCAH priorities. The health impacts of scaling up or establishing care provided by midwives are then modelled. This step is followed by estimating the costs, benefits and workforce requirements for the proposed scenarios. The process concludes with an evaluation of the contextual factors necessary to create an enabling environment for midwives, ensuring the sustainability and effectiveness of the investment. The steps for developing an investment case are illustrated in Figure 2.

Figure 2. **Steps for estimating investment needs and benefits of care provided by midwives**



Tools for analysis

The tools used for analysis include the OneHealth Tool, the Lives Saved Tool (LiST), FamPlan and Impact40.org (Table 3). These tools are designed to facilitate comprehensive analysis to support the investment case framework for care provided by midwives.



OneHealth Tool

The OneHealth Tool facilitates scenario generation, priority setting and cost assessments for maternal, newborn and child health (MNCH) at both programmatic and health system levels. It provides an approach for estimating costs across all health system components, including human resources, facilities, equipment, transportation, medicines, supply chains, health information systems, monitoring and evaluation, governance (policy and advocacy), and financing and administration activities. The OneHealth Tool is pre-populated with country-specific data, including annually updated default values for quantities and prices derived from United Nations statistical databases. Using this tool is recommended as utilizing this framework requires comprehensive health system analysis, including impact and cost modelling, workforce development, and health system investments. The OneHealth Tool includes other tools as integrated modules: Lives Saved Tool (LiST) and FamPlan.



Lives Saved Tool (LiST)

The Lives Saved Tool (LiST) is the central tool for the analysis performed using this framework. LiST estimates the health impacts of scaling up maternal, newborn and child health (MNCH) and nutrition interventions. LiST is housed in Spectrum, a software package maintained by Avenir Health. The desktop version is more comprehensive and integrates with other tools. The online version has a simplified interface but lacks certain features and integration. LiST includes a family planning component that is sufficient for modelling family planning in this framework. LiST can be used as an integrated part of the OneHealth Tool or used separately as a stand-alone tool.



FamPlan

FamPlan models the impact of scaling up family planning interventions. It can be used for more detailed analysis on the impacts of scaling up family planning. FamPlan is available only in the Spectrum desktop platform, fully integrated with LiST. The [Spectrum manual](#) offers comprehensive instructions for using all the modules in the platform.

Users of the OneHealth Tool can leverage the LiST and FamPlan models to assess the health impact of establishing or scaling up care provided by midwives. Scenario analyses can be performed in LiST and FamPlan, and then integrated into the OneHealth Tool to estimate the health system requirements for achieving the desired impacts.



Impact40.org

UNFPA offers an online platform designed for strategic planning to end preventable maternal deaths, address unmet family planning needs, and eliminate harmful practices. Impact40.org integrates LiST and FamPlan for impact and cost modelling and serves as a user-friendly option for simplified analyses. Detailed instructions for using the tool are available in the [User Guide to Impact40 Tool to Estimate Transformative Results Impact and Cost](#). It should be noted that Impact40 focuses on 40 priority MNCH interventions, excludes broader care provided by midwives, and does not account for health system considerations. For more comprehensive and integrated analyses, users are encouraged to rely on the OneHealth Tool and LiST module within it.

Table 3. **Tools for analysis**

These tools are continuously updated. Users should always refer to the latest versions to ensure the accuracy of their analyses.

Tool	Description	Link
OneHealth Tool	An integrated tool that consists of various interlinked modules, including costs, workforce needs, infrastructure and financing. It can be used for comprehensive health system analysis and planning. LiST and FamPlan are included as components in the tool. Using OneHealth, programmes and interventions can be costed, producing a total cost, by year, broken down by inputs and activities. Global default estimates are provided for many indicators, but most can be adjusted to more accurately represent context-specific data.	https://www.avenirhealth.org/software-onehealth.php
Lives Saved Tool (LiST)	A mathematical modelling tool that allows users to estimate the impact of scaling up coverage of maternal, newborn and child health and nutrition interventions in low- and middle-income countries. Costs of interventions can also be estimated.	https://www.livessavedtool.org
FamPlan	A tool that calculates the benefit of expanding family planning in terms of total fertility rate. The programme uses assumptions about the proximate determinants of fertility and the characteristics of the family planning programme to calculate the cost and the number of users and acceptors of different methods by source.	https://famplan.spectrumweb.org
Impact40	UNFPA's online tool offers an evidence-based approach to guide strategic planning for ending preventable maternal deaths, ending the unmet need for family planning, and ending gender-based violence and harmful practices such as female genital mutilation and child marriage. Impact40 is a simpler, streamlined alternative to LiST, focusing on 40 maternal, newborn and child health (MNCH) interventions. It is designed for users who may not have the capacity or need to work with the full complexity of LiST.	https://www.impact40.org



Step One:

Situation analysis

In this section, the following steps of analysis are taken:



1.1 Data collection



1.2 Situation analysis and needs assessment



1.3 Strategic goal setting



1.1 Data collection

Various types of data must be collected when performing cost and impact analyses. This includes data on the country's epidemiological and demographic profile, health system characteristics, infrastructure, costs and the SRMNCAH workforce.

The OneHealth Tool and LiST include some country-level health system data for situation analysis. Up-to-date data on a specific country will likely need to be imported. Where country-level indicators are unavailable, global estimates can often be used as substitutes.

Templates for collecting relevant data for modelling can be found in [Impact40](#) and in the UNFPA resource *Developing Investment Cases for Transformative Results Toolkit* (37). Additional data is needed for more comprehensive modelling in the OneHealth Tool. The tool provides detailed costing templates around the cost categories that can be used for data collection.

It is recognized that data availability may pose significant challenges on the country level. Countries with limited data can still use the investment framework effectively by potentially utilizing data sharing, proxy data and global estimates. Default data may be provided by the programmes used.

Table 4 lists key data required to perform a situation analysis, with potential data sources.

Table 4. **Key data needed for performing situation analysis**

Category	Data	Source
Health indicators	Total national population estimates (disaggregated by age and gender); annual population growth rate	National surveys (DHS, MICS, etc.) United Nations World Population Prospects
	Number of pregnancies	Performance Monitoring for Action PMA Data
	Number of live births	Lives Saved Tool
	Maternal mortality ratio (per 100,000 live births)	
	Under-5 mortality (per 1,000 live births)	
	Infant mortality rate (per 1,000 live births)	
	Neonatal mortality rate (per 1,000 live births)	
	Stillbirths per 1,000 total births (live and stillbirths)	
	Percentage of births attended by skilled birth attendants	
	Health facility delivery	
	Anticipated number of pregnancies over the following years (i.e. 10 years)	
	Anticipated distribution of pregnancies	
Population characteristics	Age profile	Country census WHO Global Health Observatory World Bank Open Data
	Fertility rate	United Nations World Population Prospects World Bank Open Data
Health system characteristics	Coverage gaps in essential SRMNCAH services	National health service monitoring data, i.e. Service Provision Assessment Surveys
	Availability of drugs	WHO Global Health Observatory National health service monitoring data, i.e. Service Provision Assessment Surveys
	Equipment and other essential supplies	WHO Global Health Observatory National health service monitoring data, i.e. Service Provision Assessment Surveys
	SRMNCAH policy environment	National policy and strategy documents

Infrastructure	Types, number and distribution of facilities, model of care and service delivery	WHO Global Health Observatory National health service monitoring data, i.e. Service Provision Assessment Surveys
	Transport and referral system	National health service monitoring data, i.e. Service Provision Assessment Surveys
SRMNCAH workforce characteristics	Availability and distribution of SRMNCAH staff	National Health Workforce registries
	Age profile	Human Resources for Health Information System
	Migration patterns	Ministry of Health annual reports
	Attrition rates	Health Facility Assessments



1.2 Situation analysis and needs assessment

Investments should be grounded in the specific needs of the country and health system context. Aligning with national policies and adopting a country-led approach is essential for the successful investment and implementation of care provided by midwives (39).

Conduct a thorough situation analysis to ensure that planned investments are evidence-based, relevant and contextually appropriate. The situation analysis should include a review of maternal health, mortality rates and the country's economic status, with a particular focus on the primary causes of preventable maternal deaths (40). The goal of the situation analysis is to identify the key contributors to maternal and neonatal mortality and stillbirths, the major risk factors, and the most effective interventions to address them. In addition, the analysis should explore relevant characteristics of the current health system that impact the provision of care provided by midwives, such as workforce and available infrastructure.

The OneHealth Tool can be employed to perform a situation analysis. It enables users to input and analyse baseline data on health system indicators, evaluate current health system performance, identify gaps and weaknesses in intervention coverage, and assess the availability of essential resources. Additionally, it allows for the examination of bottlenecks and inequities in the distribution of resources and outcomes. The OneHealth Tool provides a structured framework to guide the mapping of data for maternal and child health programmes. It also supports a bottleneck analysis to identify service delivery weaknesses and strategies to address them.

Impact models can help explore the primary causes of maternal and newborn deaths, and identify the most effective interventions to address these issues. The effectiveness of selected interventions can be assessed in the Lives Saved Tool, with measures such as the percentage reduction in deaths from specific causes or reduction in case fatality rates. The default values in LiST are based on high-quality global evidence and typically do not require adjustment (36). LiST also offers a Visualizer function that enables users to explore the causal links between interventions, risk factors and the causes of maternal deaths. The LiST Visualizer can be accessed at www.listvisualizer.org.



1.3 Strategic goal setting

With the results of the situation analysis, define clear strategic goals for investing in care provided by midwives. These strategic goals should articulate the intended maternal and newborn health outcomes. They should be specific, measurable, achievable, relevant and time-bound (SMART). This will promote accountability and facilitate progress towards desired results.

Aligning these goals with national and global health priorities, such as the Sustainable Development Goals on maternal and newborn health and Every Woman Every Newborn Everywhere (EWENE), enhances coherence and impact. However, it is important to acknowledge that achieving broader targets requires sustained and multifaceted efforts beyond investments in care provided by midwives alone.

Step Two:

Defining the intervention package

In this section, the following steps of analysis are taken:

-  2.1 **Defining the package of care provided by midwives**
-  2.2 **Selecting the interventions provided**



2.1 Defining the package of care provided by midwives

Whether conducting an analysis or developing an investment case, it is essential to clearly define the package of interventions provided under MMoC. A list of evidence-based interventions deliverable by midwives is provided in Table 5. These interventions span the full continuum of care: essential interventions related to contraception, HIV prevention and treatment, preconception care, antenatal care (ANC), labour and childbirth, post-partum and newborn care, safe abortion services*, nutritional support, and the prevention and management of communicable and non-communicable diseases such as tuberculosis, malaria and diabetes (5).

LiST contains a set of SRMNCAH interventions, many of which can be delivered by midwives. The key competencies required for SRMNCAH care (8) are identified in *The State of the World's Midwifery 2021*. These competencies have been mapped to corresponding interventions within LiST (4). Using this mapping, intervention coverage scenarios can be modelled in LiST to estimate the impact of scaling up care provided by midwives, and the resources required to do so. This investment framework for MMoC specifically focuses on modelling increased service coverage; it does not address the reorganization of existing resource use.

* In line with paragraph 8.25 of the International Conference on Population and Development (ICPD) Programme of Action, where abortion is legal, UNFPA states that national health systems should make safe abortion care accessible to the full extent of the national law. Post-abortion care should be available everywhere to save women's lives. UNFPA respects the sovereign right of countries to decide the extent to which safe abortion care is part of a comprehensive approach to sexual and reproductive health and reproductive rights. In all cases and everywhere, UNFPA opposes criminalization of abortion and opposes reproductive violence such as coercive abortion, forced pregnancy or the discriminatory practice of gender-biased sex selection.

In Table 5, the list of interventions is adapted from those defined by Nove and others (4), updated to align with the updated ICM Essential Competencies for Midwifery Practice (10). Each intervention is deliverable in its entirety by a midwife according to the ICM Global Standards for Midwifery Education. It is listed as an essential intervention within the ICM Essential Competencies for Midwifery Practice (10) or the Global Strategy for Women's, Children's and Adolescents' Health (41).

In reality, the scope of midwifery practice extends beyond the areas modelled in this framework. This is a limitation of the modelling.

The interventions modelled in this framework are limited to those that can be analysed using the Lives Saved Tool, which primarily focus on those directly impacting mortality, morbidity and nutritional outcomes. Some essential interventions are not currently included in LiST. For example, midwives commonly perform fetal heart rate auscultation and care for small and sick newborns, which are critical for newborn survival and long-term well-being. While these interventions cannot be modelled within this tool, investing in midwifery care will generate significant positive health impacts through these services, even though they are not reflected in the modelling results.

Midwives play a key role in life-saving interventions, such as Caesarean section, as part of interdisciplinary teams. This framework focuses specifically on interventions that can be delivered solely by midwives. However, their ability to contribute to broader maternal and newborn care within team-based settings further enhances their value. In practice, the scope of midwifery extends far beyond the interventions covered in this framework. Beyond the core areas, midwives provide services including (5, 10):

- ▶ **Health education and promotion of sexual and reproductive health and rights (SRHR)**
- ▶ **Immunization and prevention of communicable and non-communicable diseases**
- ▶ **Prevention and care for gender-based violence (GBV)**
- ▶ **Mental health interventions, such as depression screening**
- ▶ **Care provision in humanitarian settings.**

Midwives also play a critical role in supporting the mother-baby dyad, fostering secure attachment, which is essential for long-term psychosocial and physical well-being. Their contributions can help reduce long-term morbidity and mortality, further emphasizing their broader impact beyond direct mortality reduction.

Given the limitations in modelling, the results of this framework should be interpreted as indicative and directional rather than exhaustive. Although certain midwifery contributions are not captured here, they represent significant additional impacts, reinforcing the immense value of investing in midwifery.

Table 5. List of interventions that can be provided by midwives

Intervention	Indicator or proxy indicator and formula if no standard indicator
Family planning and HIV	
Modern methods of contraception	Percentage of women at risk of getting pregnant currently using any modern method of contraception
HIV	
Prevention of mother-to-child transmission of HIV (including breastfeeding choices)	Percentage of HIV+ pregnant women starting on option B+ prior to conception Percentage of children born to HIV+ mothers on cotrimoxazole
Cotrimoxazole	Percentage of HIV+ children on ART
Per cent on antiretroviral therapy (ART)	
Periconceptual period	
Folic acid supplementation	Proxy formula: 5% of women who have ANC4+ receive folic acid
Safe abortion practices	Percentage of women receiving an abortion who have a safe abortion (i.e. medical, surgical)
Post-abortion case management	Proxy formula: if facility delivery is >50%, $0.75 \times$ facility delivery; if facility delivery is 30–50%, $0.50 \times$ facility delivery; if facility delivery is <30%, $0.10 \times$ facility delivery
Ectopic pregnancy case management	Proxy formula: if facility delivery is >50%, $0.75 \times$ facility delivery; if facility delivery is 30–50%, $0.50 \times$ facility delivery; if facility delivery is <30%, $0.10 \times$ facility delivery
Iron fortification	Automated LiST formula **
Zinc fortification	Automated LiST formula **
Antenatal care	
Intermittent preventive treatment in pregnancy	Percentage of pregnant women protected against malaria with two or more doses of sulfadoxine/pyrimethamine or other options if appropriate
Syphilis detection and treatment	Automated LiST formula **
Balanced energy supplementation	Automated LiST formula **
Calcium supplementation	Automated LiST formula **
Multiple micronutrient supplementation (iron and multiple micronutrients) in pregnancy	Automated LiST formula **
Diabetes case management	Proxy formula: $-3.21 + 2.61$ (blood sample)*
Hypertension screening and management	Proxy formula: $-1.62 + 2.5$ (urine sample)*

Tetanus toxoid vaccine	Protected by tetanus toxoid at birth
Malaria case management	Proxy formula: $-1.64 + 2.92$ (blood sample)*
Fetal growth restriction detection and management	Automated LiST formula **
Labour and childbirth	
Removal of retained products of conception	Automated LiST formula **
Parenteral administration of uterotonics	Automated LiST formula **
Induction of labour for pregnancies lasting 41+ weeks	Automated LiST formula **
Manual removal of placenta	Automated LiST formula **
Parenteral administration of antibiotics	Automated LiST formula **
Assisted vaginal delivery	Automated LiST formula **
Magnesium sulfate for eclampsia	Automated LiST formula **
Clean birth environment	Automated LiST formula **
Clean cord care	Automated LiST formula **
Antibiotics for preterm or prolonged Pre-labour rupture of membranes (PROM)	Automated LiST formula **
Neonatal resuscitation	Automated LiST formula **
Immediate drying and additional stimulation	Automated LiST formula **
Thermal protection	Automated LiST formula **
Antenatal corticosteroids	Automated LiST formula **
Delayed cord clamping	Automated LiST formula **
Post-partum and newborn care	
Kangaroo mother care (LMC)	Proxy: 5% of health facility deliveries
Breastfeeding promotion	Percentage of children 1-5 months of age exclusively breastfed
Injectable antibiotics for neonatal sepsis	Proxy: 100% of health facility deliveries
Neonatal resuscitation	Percentage of deliveries with access to detection of breathing problems and resuscitation (with a mucous extractor)
Bacillus Calmette–Guérin (BCG) vaccine	Percentage of live births receiving at least one dose of BCG

Adapted from: Nove et al. 2021 (4)

*Automatically calculated within LiST, utilizing information on the proportion of women giving a urine sample or blood sample during pregnancy, starting ANC before 4 months (early ANC), or attending 4+ ANC visits (ANC4+) (4)

**Automatically calculated within LiST and based on Kanyangarara et al. (42)



2.2 Selecting the interventions provided

Service packages will vary across settings based on a country's epidemiological profile, health budget and priorities. A full scale-up or establishment of all the interventions listed in Table 5 might not be feasible for all contexts. This means that choices must be made – deciding which services to expand first, and which criteria to use for ranking and prioritizing interventions. Gradual expansion of care provided by midwives can be considered.

A potential strategy for selecting interventions is to focus on interventions that best address the main causes of maternal and newborn deaths in a country. The causes of death can be explored in LiST as a part of the country situation analysis. Using national demographic and epidemiological data, the greatest causes of death can be linked to potential interventions to address them. Intervention effectiveness, target coverage and target population are used to estimate the impacts of the interventions selected for potential scale-up (43). This information can be used to guide a discussion on the prioritization of interventions.

Cost-effectiveness data for various interventions should be examined. Comprehensive data, such as that provided by Stenberg et al. (44), can serve as a useful foundation for guiding discussions on which interventions to prioritize. Ideally, the investment case should align with policy discussions regarding the national benefit package. Beyond cost-effectiveness, equity considerations must be included in the prioritization process to ensure that selected interventions address the needs of the most vulnerable populations.

Step Three:

Estimating health impacts and costs of interventions

In this section, the following steps of analysis are taken:



3.1 Estimating health impacts

- 3.1.1 Modelling scenarios: baseline and increased coverage
- 3.1.2 Estimating the number of people in need of the intervention
- 3.1.3 Mapping interventions to service levels
- 3.1.4 Generating results



3.2 Estimating costs of delivering interventions

- 3.2.1 Costs of delivering interventions
- 3.2.2 Investments in health system strengthening by service delivery levels
- 3.2.3 Leveraging innovation to expand access and optimize costs



Overview

The costs estimated here represent the total resources required to deliver the defined interventions, including intervention and programme costs, and are calculated from a healthcare provider's perspective. Necessary investments in the health system to support care provided by midwives are also briefly discussed, while workforce development costs are addressed separately in section 4.

Health benefits are analysed in terms of lives saved, morbidity reduced, and pregnancies averted. In section 5, these health impacts are used to estimate the resulting economic benefits from investing in care provided by midwives.

LiST projections can be conducted for all care provided by midwives to estimate costs and impacts under different scenarios, and to inform intervention prioritization. This framework provides a brief outline of the steps for performing these analyses. More detailed instructions are available in the UNFPA resource *Developing Investment Cases for Transformative Results Toolkit* (37). To estimate the cost of ending preventable maternal deaths through investments in midwives, users are encouraged to:

- ▶ **Download UNFPA's Transformative Results Toolkit instructions.**
- ▶ **Install Spectrum software and the OneHealth Tool.**
- ▶ **Use the LiST Costing Tool for comprehensive and workforce analysis as a component of the One Health Tool.**
- ▶ **Use LiST online or download the software via Spectrum for basic analysis.**



3.1 **Estimating health impacts of care provided by midwives using the Lives Saved Tool**

Use the LiST impact module to estimate impact of establishing or scaling up care provided by midwives. The process involves setting up a LiST baseline projection, determining and setting up modelling scenarios, and generating results. Costing of these scenarios is discussed separately in section 3.2.

3.1.1 **Modelling scenarios: baseline and increased coverage**

Identify the leading causes of maternal mortality, risk factors and key care provided by midwives needed to address them. Next, set up projections for analysis. Two or more potential projections can be set, and costs and outcome impact of different scenarios can be compared.

To begin modelling, input the current contextual coverage data of the defined interventions and set the base year (e.g. 2025). This information is used to set up the baseline projection and a “do nothing” scenario, to which increased coverage scenarios are compared. Baseline intervention coverage should remain constant from the base year to the target year.

After establishing the baseline scenario, set up intervention coverage targets for each target group requiring specific actions by the target year (e.g. 2030). Using the baseline as a starting point, multiple scenarios can be projected by scaling up interventions to achieve various coverage levels. Create multiple files for exploring the different modelled scenarios. For example, scenarios could model baseline coverage, as well as 10 per cent, 25 per cent and 95 per cent scale-up levels, as demonstrated by Nove and colleagues (4).

3.1.2 Estimating the number of people in the need of the intervention

To estimate the number of people receiving the defined interventions, data is required on target population, population in need and coverage. These concepts together with descriptions and potential data sources are described below.

Table 6. **Concepts used in LiST for estimating the number of people receiving interventions**

Indicator	Value	Source
Target population	Population on which the health intervention is focused	OneHealth Tool/LiST Imputed* country-specific data (i.e. national surveys)
Population in need	% of target population that requires the intervention per year It is determined by incidence and prevalence of conditions as well as treatment guidelines.	National surveys (DHS, MICS, etc.) OneHealth Tool
Coverage	% of population in need that actually receives the service (i.e. effective coverage)	National surveys (DHS, MICS, etc.)

* In [statistics](#), imputation is the process of replacing [missing data](#) with substituted values.

3.1.3 Mapping interventions to service levels

To enable more accurate and detailed analysis, interventions should be mapped to service delivery levels (community, outreach, clinic and hospital). LiST includes default assumptions about the distribution of interventions across service delivery levels based on general global data and research. Review and adjust the assumptions for the country context to reflect local realities, which will directly impact the cost estimates and investment needs.

Midwives are able to provide person-centred care also at homes and community settings (5). In LiST, interventions are not categorized by the place of the intervention, but rather by the delivery channel. Care provided at homes is not included in the analysis as a separate category. However, these interventions are generally considered part of the delivery channels and can be appropriately costed under community or outreach care.

3.1.4 Generating results

LiST will impute the relevant data and defining scenarios, replacing missing data values with estimated or substituted values. It will then generate results demonstrating the reduction in deaths over the time frame. Impacts are expressed as maternal, newborn and child lives saved; stillbirths averted; reduction in maternal mortality ratio (MMR) and neonatal mortality rate (NMR). If family planning is included, impacts are expressed as unintended pregnancies and abortions averted.



3.2 Costs of establishing or scaling up care provided by midwives

This section focuses on estimation of costs included in LiST and touches on health system strengthening costs. Workforce development costs are discussed in section 4. Table 7 summarizes all costs included in the framework.

Table 7. **Costs included in the framework**

Cost type	LiST (Lives Saved Tool)	OneHealth Tool	Details
Drugs and commodities	X		Cost per service
Labour	X		Per-minute costs for workforce time
Logistics and wastage	X		Costs of supply chain and material wastage
In-service training	X		Training of pre-existing health workers
Programme	X		Above-facility costs: programme management, research, monitoring and evaluation, communication, media, outreach, training, infrastructure and equipment
Service Infrastructure	X		Costs of infrastructure for service provision
Workforce development		X	Costs of training midwives, salaries during training, replacement
Health system strengthening		X	Governance, financing

Note: The **Lives Saved Tool (LiST)** is the central tool for the analysis performed using this framework.

LiST estimates the health impacts of scaling up maternal, newborn and child health (MNCH) and nutrition interventions.

LiST is housed in Spectrum, a software package maintained by Avenir Health.

3.2.1 Costs of delivering interventions

Use the LiST cost module to estimate the cost of delivering care provided by midwives. Costs are calculated based on the number of people receiving an intervention and the resources required per person to deliver it. Using an ingredients-based approach, LiST estimates the cost per person per year for each intervention. This cost, combined with the number of services delivered, determines the total cost of drugs, commodities, and other resources. By expressing costs as “cost per person per year”, the tool facilitates estimates of the total cost of delivering interventions to the target population in need.

Costs of interventions are influenced by the level of services in which they are delivered. For this reason, LiST estimates costs of interventions by associating interventions to their previously assigned service levels. LiST includes default assumptions for intervention costs, which are based on predefined treatment inputs such as the required drugs and consumable supplies, provider time, inpatient days and outpatient visits. These assumptions are drawn from the OneHealth Tool’s intervention assumptions and are documented in the *Input Intervention Assumptions Manual* (45). For labour costs, LiST relies on the WHO-CHOICE database. It provides data on average annual salaries, benefits, and time utilization per intervention to estimate health worker costs per minute (37). These default assumptions provide a useful starting point for calculations but must often be adapted to fit the specific country context.

Users are encouraged to review and update intervention cost inputs using recent country-specific data, including local prices for commodities and supplies, health worker salaries, and variations in service delivery costs. This ensures that cost estimates accurately reflect the local health system context and available resources.

LiST estimates the total cost per intervention as follows:

Total cost = Intervention costs + Programme costs + Logistic and wastage costs + Infrastructure investment costs

Intervention costs refer to the total expenses incurred to implement, maintain and evaluate a particular health intervention. Costs included in intervention costs are outlined in Table 8.

Labour cost is estimated as per minute cost, using average health worker time spent on delivering an intervention and average salary.

Drugs and supplies are estimated as “cost per service”. Cost per service is based on information on unit cost, per cent of clients receiving them, and number of units for each item (43).

The unit cost per service is calculated using treatment inputs, and the unit costs for drugs and supplies, provider time, and costs of inpatient days and outpatient visits. This cost is multiplied by the estimated number of services delivered to get the total intervention cost.

Results can be produced by level, allowing analysis of the cost implications in a shift of services between levels.

Table 8. **Intervention cost components**

Cost component	Data input	Source
Drugs and supplies	▶ Drugs and supplies used: cost per service ▶ Number of services delivered	OneHealth Tool/LiST Imputed* country-specific data
Labour	▶ Medical personnel time per service ▶ Medical personnel salary estimates ▶ Number of services delivered	OneHealth Tool/LiST Imputed country-specific data
Other recurrent and capital costs: outpatient visits and hospitalization	▶ Cost per inpatient day and/or outpatient visit ▶ Number of visits per case ▶ Number of services	OneHealth Tool/LiST Imputed country-specific data

* In statistics, **imputation** is the process of replacing missing data with substituted values.

Costs per inpatient day and outpatient visits are driven from the WHO-CHOICE database and contain both other direct costs (ODCs) and indirect costs, as well as personnel costs and the cost of consumables. To avoid double counting of personnel cost of delivering an intervention, adjustments should be made to labour time costs to account for inpatient day and outpatient visit personnel cost.

Programme costs capture the above service delivery costs incurred to manage or deliver a service or intervention that are not linked directly with clients, patients or health systems. These typically include but are not limited to training, supervision, and administration and management costs (43). Data for estimating programme costs can be sourced from LiST or replaced with more country-specific estimates. Default programme costs are included in LiST and can be entered as a percentage of intervention costs or as an absolute number, as an incremental service delivery cost. Using the percentage format, programme costs are applied to all intervention costs (37).

Logistic and wastage costs include expenses related to the distribution of health supplies, while wastage costs refer to losses incurred from unused or expired materials. Default rates for logistics and wastage are included in LiST Costing and applied to the total cost of drugs used in costed interventions. Defaults can be replaced if country-specific data are available.

Infrastructure investment costs are associated with building, upgrading, maintaining and operating healthcare infrastructure. Infrastructure costs are expressed as default ratios and can be sourced from LiST or imputed with more country-specific estimates. Estimates of these costs are expressed as a percentage over and above the intervention costs as an incremental service delivery cost.

Results generated by the LiST costing module include **total costs** for each intervention, as well as disaggregated costs by intervention including drug and supply costs, labour costs, other recurrent costs, capital costs and above-facility costs. Results can be written out to an Excel file for further analysis. The sum of all intervention costs, multiplied with the number of recipients

for each intervention, provides the total cost of the programme. Total costs should be calculated for baseline and scaled-up scenarios for the defined time period from a healthcare provider's perspective. Future costs should be discounted (commonly at 3 per cent rate) per annum.

Cost estimates help when outlining the funding required for delivering the defined care provided by midwives. These costs – intervention, programme, logistic, wastage and infrastructure investment costs – should be analysed together with workforce development costs and health system investments to deliver the interventions to form a **comprehensive picture** of the investments needed. To translate lives saved into economic benefits and further motivate investments, the methods discussed later in this framework can be utilized.

3.2.2 Investments in health system strengthening by service delivery levels

Another area of investment is the health system. To ensure health system readiness to deliver the selected care provided by midwives, investments are required for health system strengthening (HSS) on different service delivery levels. Map the necessary investments for each service delivery level, together with the demographic and epidemiological needs and potential barriers.

This section outlines the key investments for facilitating care provided by midwives on different service delivery channels. However, investments in service delivery are highly context-dependent and require further analysis outside the scope of this framework. Examples of key investments in facilitating care provided by midwives by service delivery level are listed below:

Community level: Midwives often provide outreach services, health education and basic antenatal care in community settings. In rural or hard-to-reach areas, midwives provide essential care via mobile teams and clinics or outreach efforts to ensure access to services.

Table 9. **Key investments at the community level**

Investment area	Key investments
Infrastructure	▶ Equip community health centres with the necessary supplies that enable midwives to provide quality care
Training	▶ Ensure midwives have skills to manage the interventions in low-resource settings ▶ Continuous training to ensure professional development
Community engagement	▶ Promote awareness of midwives and care provided by midwives ▶ Strategies to build trust within communities

Clinic: Midwives manage most routine SRMNCAH services at health centres or clinics, including deliveries and postnatal care.

Table 10. **Key investments at clinic level**

Investment area	Key investments
Infrastructure	▶ Equip Primary Health Care (PHC) facilities with the necessary supplies that enable midwives to provide quality care
Coordination of care and referral system	▶ Strengthen referral systems to hospitals to ensure timely quality care, including communication and transportation ▶ Facilitate interdisciplinary and interfacility collaboration
Continuous training	▶ Ensure midwives are updated in clinical practices and have opportunities for ongoing professional development to meet their full potential and scope of practice

Hospitals: Midwives play a crucial role in stabilizing and referring complicated cases to hospitals, as well as managing emergencies at secondary health facilities. Work is often done in multidisciplinary teams together with other healthcare professionals.

Table 11. **Key investments at hospital level**

Investment area	Key investments
Advanced training	▶ Ensure midwives have advanced training and are equipped to handle complications as well as referral and stabilization protocols
Collaboration and integration of midwives	▶ Foster effective collaboration and team-based approach with other healthcare professionals for managing high-risk pregnancies ▶ Ensure clear scope of work for midwives and clarity of roles for different professionals
Sufficient workforce and coordination of care	▶ Invest in workforce expansion and coordination to match the often-high demand of specialized care

Outreach: Midwives have great potential in expanding service coverage through outreach, including digital health tools to provide, for example, teleconsultations, remote monitoring and health communication. Such solutions are crucial especially for otherwise hard-to-reach areas and populations and in times of crisis.

Table 12. **Key investments at outreach level**

Investment area	Key investments
Infrastructure	▶ Investment in mobile clinics, transportation, means of communication, effective and functioning referral system – also in hard-to-reach areas ▶ Internet and mobile network infrastructure to support telehealth services in underserved areas
Technology	▶ Development of telehealth and digital health platforms ▶ Technology required for delivering services
Digital literacy	▶ Training for midwives in using telehealth tools and technologies ▶ Community education to ensure care recipients are equipped to use services

Context-specific investments should also be costed: The LiST and OneHealth Tool, which primarily focus on the direct health interventions and their outcomes, may not fully capture all investments necessary for successfully establishing or scaling up midwifery services. First, identify the required contextual health system investments for different service delivery levels, a process this publication has described in detail. Second, add any additional investments. These investments can be costed separately by adding them as distinct cost categories in LiST or using the Health System Strengthening and Behaviour Change Communication modules in the OneHealth Tool. It is also possible to include costs related to governance and financing, which are likely necessary.

It is important to note that infrastructure and programme costs directly related to service delivery are included in the intervention and programme costs estimated in LiST (as outlined in section 3.2.1). To ensure accuracy, these costs should only be counted once to avoid double counting.

3.2.3 Leveraging innovation to expand access and optimize costs

Integrating technologies such as telehealth and e-medicine into midwifery care enhances accessibility, efficiency, and cost-effectiveness while ensuring high-quality outcomes. Remote consultations, digital health monitoring, and virtual training help reduce unnecessary hospital visits, optimize midwives' time, and expand care access – also in crisis-affected areas (46). When implemented equitably, these innovations strengthen midwifery services, enhance cost-effectiveness, and contribute to advancing universal health coverage (47, 48).

Innovative technologies also play a crucial role in midwifery education and community training (49). They have the potential to enhance the quality of learning, improve practical skills for trainee midwives, and extend educational opportunities to health workers in remote areas – potentially also lowering training costs while increasing workforce capacity.

Step Four:

Workforce development

In this section, the following steps of analysis are taken:

-  4.1 **Estimating workforce requirements**
-  4.2 **Workforce modelling and development**
-  4.3 **Costs of workforce development**

The key steps in workforce analysis and development are outlined in this section. It also provides guidance on resources to support country-level assessments. It addresses strategies and costs associated with the expansion of midwifery workforce to deliver the modelled interventions.



Overview

This investment framework for MMoC assumes that planners are operating in a context where: (1) there is interest or commitment to investing in midwives and that (2) scaling up midwifery care will require expanding the national midwifery workforce. The framework focuses on care that can be delivered exclusively by midwives, but it acknowledges that midwives are part of a broader health system and often work in interdisciplinary teams. To ensure an effective SRMNCAH workforce and maximize investments in midwifery, workforce development must also consider other cadres working alongside midwives. Although this framework focuses on midwives, the same strategies should be applied to other cadres as needed, depending on a country's model of care.

Comprehensive, evidence-based labour-market analysis and workforce planning are essential for optimizing the health workforce and ensuring strategic investments lead to the greatest impact. Effective planning reduces workforce imbalances, eliminates inefficiencies, enhances staff performance and improves retention. By utilizing country-specific labour-market data, investments in midwives can be optimized to achieve high-quality, equitable care and desired health outcomes (50).

Workforce analysis and development aim to address critical questions:

- ▶ Which districts have the highest demand for SRMNCAH services, and what types of clinicians are needed to meet those demands?
- ▶ How can national investments in public-sector health staffing and skill mix be aligned with the current demand and the scaled-up scenarios for services provided by midwives?
- ▶ In resource-constrained settings, how can national planners strategically prioritize investments in midwives when expanding the workforce?

By answering these questions, policymakers can ensure that investments in midwives are efficient, equitable and aligned with national health priorities. The *Health Labour Market Analysis Guidebook* (51) by the World Health Organization offers a comprehensive guide that can be utilized for conducting labour-market analysis on a country level.

Target setting is important in Step Four. Setting high-quality workforce development targets is crucial for maximizing investment impact and ensuring effective monitoring and evaluation. This framework largely adopts a service-target approach to estimate workforce needs for delivering the modelled interventions, aligning workforce targets with overall SRMNCAH coverage goals. The aim is not just to increase health worker numbers or skills but to ensure a fit-to-practice, fit-for-purpose workforce that strengthens health systems and supports universal SRMNCAH access. To drive meaningful progress, targets should be evidence-based and context-specific. This makes workforce development a key approach for equitable and effective health improvements.

Traditional workforce targets, such as minimum health worker density per population, are often insufficient for addressing the evolving needs of the health workforce and may be unrealistic in many contexts. Beyond numerical targets, consider equitable distribution, competency, quality, motivation, productivity, and performance to build a resilient and effective midwifery workforce (52).

Workforce development targets must align with the overarching goals of midwifery investments while supporting national development plans and the Sustainable Development Goals related to the health workforce. To ensure accountability and measurable progress, targets should follow the SMART criteria: specific, measurable, achievable, relevant and time-bound.



4.1 Estimating workforce requirements for the modelled scenarios

Workforce requirements in this framework are based on modelled scenarios to estimate the investment needed in midwives for scaled-up service delivery.

While LiST provides cost-per-minute estimates for labour, it does not directly calculate the total number of midwives needed for expanded interventions. However, its cost data can inform a more detailed workforce analysis using the OneHealth Tool, which estimates workforce needs alongside financial costs.

To determine the optimal number of midwives required, users can input total health worker time from LiST into the OneHealth Tool's workforce module. This requires specifying annual working time, accounting for working hours, administrative duties, leave days and non-service delivery time. The tool then calculates the full-time equivalent (FTE) midwives required to meet service demands.

Planners can identify investment needs by estimating midwifery workforce needs under baseline and scale-up scenarios. Comparing these estimates with the existing workforce (modelled in Section 4.2) will highlight workforce gaps, which can then inform workforce development strategies and cost projections.



4.2 Workforce modelling and development

Once the required number of midwives is estimated, compare this number with the existing workforce to identify feasible investment opportunities. Modelling both current and future midwifery workforce trends helps determine workforce development needs and associated costs. This process highlights gaps between supply and demand, identifying necessary investments in training, recruitment and workforce scale-up.

Comprehensive workforce modelling and optimization should assess:

- ▶ **Current and future workforce availability**
- ▶ **Skill mix and distribution across health facilities**
- ▶ **Service volumes and projected demand.**

This analysis helps pinpoint workforce gaps, resource mobilization opportunities, and investment needs for midwifery scale-up.

Although the modelled interventions in this framework are deliverable solely by midwives, often midwives work as parts of interdisciplinary teams. Therefore, workforce development strategies depend on, and must account for, the model of care in which midwives operate.

4.2.1 Gap analysis

Gap analysis should be conducted as part of workforce planning to evaluate the difference between the current workforce capacity and the workforce required to meet health system needs. Key areas to assess include:

- ▶ **Shortages or surpluses in the workforce**
- ▶ **Skill gaps and competency needs**
- ▶ **Inequalities and misalignment in the distribution of the workforce**
- ▶ **Misalignment between training programmes and future workforce demands**
- ▶ **Barriers to workforce entry.**

By identifying these gaps, planners can design targeted workforce development strategies that align with national health goals and ensure sustainable midwifery workforce investments.

4.2.2 Example of a simple workforce model

A workforce model should be used for modelling the **current and required workforce** in a country context. This helps track the healthcare workforce and its changes over time. Such a model can be utilized in assessing the workforce development needs to meet the demand of the modelled scenarios of delivery of care provided by midwives. While various workforce models can be used, planners should strive for using standard workforce modelling methods for their respective country or regional context. The general inputs and outputs for modelling are outlined below.

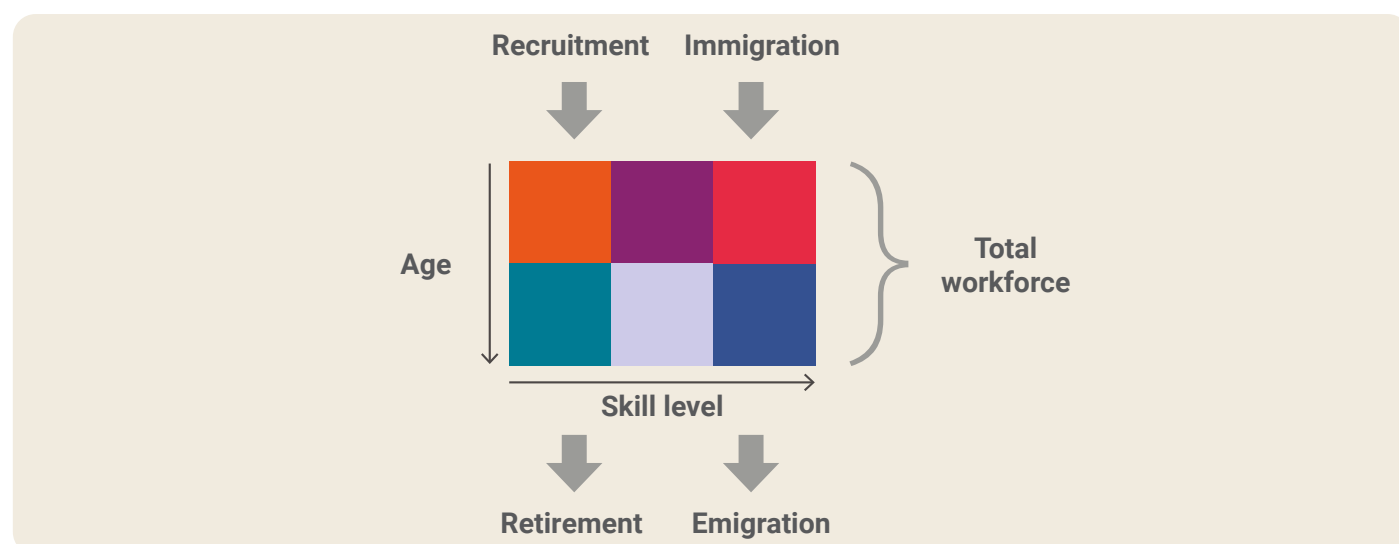
In a workforce model used, workers should be categorized into age and qualification categories, each of which has a total number of workers and a total full-time equivalent (FTE). As this framework focuses on care provided by midwives, the stock modelled should focus on midwives and cadres that will be upgraded into midwives through training.

Each year, workers become older and move across age categories. Others commence a training programme that will increase their skill level, moving across qualification categories. When a worker commences training, they reduce the total FTEs in their category for the time of the training, according to their capacity to work while training.

In addition, each year a net inflow and outflow from each age/qualification category takes place. Inflows reflect the new workers entering the workforce through, for example, recruitment and immigration. Outflows reflect the existing workers leaving the workforce through, for example, retirement and emigration. If data is available, tracking inflows and outflows through different mechanisms can assist in designing interventions to target workforce inflow and outflow rates. The idea of workforce modelling is illustrated in Figure 3, where the boxes illustrate the different age/skill categories between which workers can move.

Figure 3. **Illustration of a workforce model**

Different coloured boxes represent different age/skill categories between which workers can move.



An integrated approach to analysis is recommended. Use the Human Resources for Health module within the OneHealth Tool to link projections of the available midwifery workforce with the previously generated estimates of the workforce required to deliver the selected interventions. Modelling can also be performed separately using Excel.

Regardless of the method used, workforce modelling should produce the following outputs for each year modelled:

- ▶ **Number of midwives***
- ▶ **Number of a lower cadre workers that can be trained into a midwife, i.e. midwifery associate professional**
- ▶ **Number of people in training**
- ▶ **Undeployed midwives**
- ▶ **Total number in workforce.**

Modelling should be performed for the different scale-up scenarios and same defined time frame as impact modelling. Modelling should start with a baseline scenario, representing an approach where actions are not taken to scale-up or establish midwifery. Outputs of workforce modelling can be mapped as illustrated in Table 13.

* "Midwives" in this framework refer to both midwives and nurse–midwives, provided that the nature of the work performed by nurse–midwives aligns with the midwifery tasks specified and listed in ISCO-08 (8). This is consistent with the "Transitioning to midwifery models of care: Global position paper". (5).

Table 13. **Workforce modelling outputs**

	2024	2025	2026	2027	2028	2029	2030
Midwives							
Midwifery associate professionals or equivalent							
Midwives in training							
Undeployed midwives							
Total number in workforce							

After modelling the baseline scenario, workforce development needs can be described. This can be done by calculating the difference between the available workforce and the number of midwives needed to deliver the defined intervention scenarios, as estimated in section 4.1. This projected need for midwives must be compared with the current supply, production capacity and attrition rates to determine what changes need to occur to achieve this goal.

4.2.3 Workforce optimization

In addition to adequate coverage of health workforce, **ensuring the right mix of skills** within each facility is crucial for meeting patient needs. Optimization of the national health workforce, including midwives, is vital for effectively utilizing resources, delivering care where it is needed, achieving desired outcomes and universal health coverage, and maximizing benefits.

The optimal health workforce for each health facility can be calculated using models such as the Workforce Optimization Model (WFOM) developed by the Clinton Health Access Initiative (CHAI) (53). WFOM combines health worker time-motion observations with service delivery data to generate workforce targets by cadre, facility type and region. The model applies a formula that multiplies the total number of services by the time required per service, then divides by the available working time per health worker. The output provides a detailed list of health facilities, specifying the number and types of health workers needed to meet service demand (53).

Such modelling enables planners to effectively mobilize existing resources and identify the optimal deployment of a scaled-up midwifery workforce, ensuring maximum impact and achieving transformative results.

4.2.4 Pipeline analysis for pre-service training

Effective workforce planning must incorporate pipeline analysis of pre-service education to **track the progression** of health worker trainees from enrolment to workforce entry. This approach helps to assess whether the supply of trained midwives aligns with projected workforce needs to achieve desired outcomes. To ensure a responsive and sustainable health workforce, it is crucial to evaluate the training pipeline and match workforce supply with health system demands. Utilizing evidence-based models, such as that developed by Berman et al. (54), enables planners to forecast training outputs and workforce availability under both current conditions and future scenarios. This optimizes resource allocation and investment strategies.

4.2.5 Workforce development strategies

This investment framework for MMoC is designed to support countries at different stages of midwifery workforce development. Given the limited scope of the framework, this section provides general guidance rather than an in-depth workforce analysis.

Workforce development strategies must be tailored to health system capacity and the set targets for investments into midwifery and aligned with national workforce gaps and needs. Strategies will vary depending on the existing midwifery workforce, population needs and health system capabilities.

Key factors to consider in workforce development strategies (55):

- ▶ **Training capacity: If midwife demand exceeds training capacity, efforts should focus on establishing new training institutions or expanding existing ones.**
- ▶ **Retention and attrition: If workforce attrition is a challenge, retention programmes should be implemented to address retirement, career shifts or emigration.**

- ▶ **Geographic distribution:** To improve coverage, targeted recruitment from underserved areas and incentive programmes for midwives to relocate should be prioritized.
- ▶ **Training quality:** Investments in trainer capacity, curricula and facility upgrades are essential for producing highly skilled midwives.

Expanding midwifery coverage often requires increasing the workforce; however, in some contexts, upskilling existing nurses may be a viable alternative. Those operating in settings where different strategies may be more suitable are encouraged to refer to the resources provided at the end of this chapter for additional guidance.

Meeting the demand for midwives can be achieved either by increasing the inflow of midwives into the field (e.g. through recruitment or immigration) or by reducing the outflow (e.g. through retention strategies addressing retirement and emigration). This framework focuses on two key workforce expansion approaches, recognizing that other strategies may be relevant depending on the country's needs:

- 1. Establishing a new cadre of midwives**
- 2. Scaling up the existing midwifery workforce.**

Both approaches require strategic investments. Additional costs associated with workforce development strategies are detailed in Table 14, complementing the training, salary and replacement cost estimates in Section 4.3. Costs are highly dependent on the strategy, level of midwifery and health system capacity and characteristics in the country. Costing of workforce development activities can be done using the HRH module on OneHealth Tool.

Table 14. Development strategies and key investment in midwifery workforce

Option	Activity	Key costs and investments
1. Establishing a new cadre of midwives	a) Introduce a bachelor's degree or direct entry programme for training midwives	▶ Cost per midwife trained ▶ Cost per educator trained ▶ Cost of teaching and training facilities established ▶ Educational infrastructure established ▶ Curricula development ▶ Development of accreditation and regulation ▶ Average midwife salary ▶ Midwifery post creation
	b) Introduce a bridging course to convert previous training into midwifery degree (i.e. post-nursing programme)	▶ Cost per midwife trained ▶ Cost per educator trained ▶ Educational infrastructure established ▶ Curricula development ▶ Development of accreditation and regulation ▶ Average midwife salary ▶ Midwifery post creation
2. Scaling up existing midwifery workforce	c) Increase the number of graduate midwives	▶ Cost per midwife trained ▶ Cost per educator trained ▶ Educational infrastructure established ▶ Average midwife salary ▶ Midwifery post creation
	d) Improve recruitment and retention of midwives in hard-to-reach areas	▶ Recruitment cost per midwife ▶ Average midwife salary ▶ Retention strategy development ▶ Benefits and scholarship per midwife to incentivize locating to hard-to-reach areas ▶ Midwifery post creation
	e) Improve absorption of midwives into the public health system by increasing the number and filling midwife posts	▶ Recruitment cost per midwife ▶ Average midwife salary ▶ Procedures to develop effective deployment strategies ▶ Midwifery post creation

4.2.6 Spillover effects of investing in pre-service training

Investing in pre-service training for midwives will also generate several spillover effects that extend beyond the immediate goal of increasing workforce capacity (8, 36). These effects can positively impact health systems, economies and communities in both direct and indirect ways. Adequately trained midwives can bring higher clinical competency in their environments, contribute to task-shifting and efficiency, help foster innovation, and be further trained to serve as mentors and educators for training others. Training health workers will also contribute increased social capital and protection, health security, reduced inequality and, ultimately, to economic growth (36).



4.3 Costs of workforce development

This section outlines the cost components of meeting the demand by training midwives. Pre-service training costs are discussed separately. Costs of workforce development will differ significantly depending on the level of midwifery and model of care in the country.

4.3.1 Making the case for midwives: cost differences in workforce development

Prioritizing midwifery over other health cadres in resource-limited settings can create challenges. To strengthen the case for midwifery investment, the potential cost savings of midwives compared to physicians are outlined below, for use in evidence-based advocacy with decision makers.

Midwives are able to deliver the majority of SRMNCAH care, leading to improved health outcomes. Further, midwives offer a cost-effective solution to workforce shortages. Their training, salary, incentive costs and attrition rates are significantly lower compared with physicians, making them a high-impact investment (33). Training midwives to fill service gaps can be completed more quickly and at a much lower cost than training physicians or advanced nurse–midwives. In comparison to nurse–midwives, whose training typically takes seven to eight years, directly training midwives is a more cost-effective option (33).

Compare the costs of increasing the workforce at country level through professional midwives versus other cadres. This will provide more accurate and detailed insights. Some sources of cost savings are illustrated in tables 15 and 16 to provide examples of the potential relative cost savings.

Table 15. Drivers of cost differences of care provided by midwives versus physicians

Cost category	Cost of physician relative to midwife
Salaries, benefits and incentives	Greater than or equal to ≥ 2 times higher
Pre-service training	3 times higher
Attrition	2 times higher
In-service training	Similar
Administration	Similar

Source: Friedman et al. 2015 (33)

Table 16. Pre-service training length and costs for midwives versus physicians

Training programme	Duration (years)	Estimated cost
Physician	7 to 8	3 times midwife training cost
Midwife	3 to 4	One third ($\frac{1}{3}$) of physician training cost
Start-up cost of construction of a training facility (US\$)		
Multidiscipline medical university (training for physicians)	2 million to 10 million	
Training school (midwives, nurses, laboratory technicians)	0.3 million to 2 million	

Sources: Friedman et al. 2015 (33); International Finance Corporation, 2007 (56)

4.3.2 Estimating workforce development costs

The modelled difference between supply and demand of midwives forms the basis for training needs and investment. The workforce development costs in this framework include training costs, cost of replacement and training salary compensation. Necessary parameters for performing cost analysis of training midwives to meet workforce needs are listed in Table 17.

By using default values or imputing the data listed below, the costs of midwifery workforce development can be estimated using the **OneHealth Tool**. The Human Resources for Health module generates outputs related to required staff, salaries, benefits, incentives, pre-service training needs, the scaling up of training capacity and the associated budget (57).

Table 17. **Parameters for estimating midwifery workforce development costs included in the framework**

Parameter	Value
Projected difference between supply and demand for the projection year for different healthcare workers	
Midwives	Number of workers
Midwifery associate professionals	Number of workers
Nursing associate professionals	Number of workers
Training length (midwifery associate > midwifery professional)	X years
Training length (graduate > midwifery professional)	X years
Training cost (midwifery associate > midwifery professional)	US\$
Training cost (graduate > midwifery professional)	US\$
Cost of replacement for midwifery associate	US\$
Midwife in training salary compensation	% of normal salary paid while training
Midwifery associate professionals full-time equivalent (FTE) allowed for continued work while training	Number of FTEs (range 0–1)

4.3.3 Costs of pre-service training of midwives

The pre-service education system in LMICs is largely responsible for the overall supply of health workers. Expanding pre-service training for healthcare workers is essential for many countries striving to meet workforce demands and make progress towards universal health coverage. Expanding pre-service training capacity is likely required to deliver the scaled-up scenarios for care provided by midwives.

Scaling up pre-service training and strengthening the health workforce demands substantial upfront investment. It also yields significant long-term benefits. Pre-service training accounts for approximately 8 per cent of the total costs required to scale up the health workforce across all cadres, according to the High-Level Taskforce on Innovative Financing for Health Systems (58). Current evidence promotes the cost-effectiveness of midwives over other cadres, and also when it comes to pre-service training (33).

The cost components of midwifery pre-service training programmes are often divided into capital costs and recurrent costs. Capital costs refer to one-time expenses on items expected to last more than one year, such as initial construction or upgrading of facilities' equipment purchases. Recurrent costs include costs of operations, maintenance, personnel and supplies (55).

Typical costs of midwifery pre-service training commonly include, but are not limited to, the following (55):

Capital costs:

- ▶ **School construction**
- ▶ **Equipment purchases**
- ▶ **Transportation costs (if vehicles are purchased).**

Recurrent costs:

- ▶ **Facility costs (operation, maintenance and supplies)**
- ▶ **Student accommodation and meals**
- ▶ **Student allowance**
- ▶ **Midwifery education staff costs**
- ▶ **Administration costs**
- ▶ **Transportation costs (excluding initial purchases of vehicles).**

Costing is always dependent on the perspective from which it is conducted. For example, when using the LiST model for costing interventions, the perspective is typically that of the healthcare provider. However, the costing of pre-service training can be done from the perspective of the national government or other actors involved in midwifery education. From the government's standpoint, tuition paid by midwifery students is considered revenue rather than a cost. In cases where a profit-neutral organization runs the pre-service training programme, the annual tuition fee would be considered the annual cost per student (55).

The costs associated with pre-service training also depend on the existing level of midwifery in a country and the type of training provided (55). For instance, upgrading other cadres, such as community health workers or nurse–midwives, will require different training durations compared to training new professional midwives with no prior healthcare experience, leading to varying costs.

4.3.4 Ensuring sustainable financing of midwifery workforce

Scaling up the midwifery workforce requires sustained financial commitment. To build a strong investment case for midwifery care, stakeholders should explore financing strategies that ensure long-term sustainability. Efforts to securing both domestic and international funding and integrating workforce financing into national health budgets are essential for achieving lasting health and economic benefits, many of which materialize over time.

**Box 1: Resources for workforce analysis and development**

- ▶ [Global strategy on human resources for health: Workforce 2030](#) (WHO, 2016)
- ▶ [Health labour market analysis guidebook](#) (WHO, 2021)
- ▶ [Case example in Zambia using the CHAI Workforce Optimization Model](#) (Walsh et al., 2017)
- ▶ [WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas](#) (WHO, 2010)
- ▶ [Task Shifting: Global recommendations and guidelines](#) (WHO, 2008)
- ▶ [National health workforce accounts: a handbook](#) (WHO, 2023)
- ▶ [The State of the World's Midwifery 2021](#) (UNFPA, ICM, WHO, 2021)

Step Five:

Estimating benefits

In this section, the following steps of analysis are taken:

-  5.1 **Estimating health benefits**
-  5.2 **Estimating economic benefits**
-  5.3 **Estimating benefits of reduced unnecessary interventions**

Step Five focuses on estimating the health and economic benefits of investing in care provided by midwives. It is well established that investing in care provided by midwives yields significant health, social and economic benefits. This is because improved maternal and child health outcomes – including reduced morbidity, mortality, stillbirths, unintended pregnancies and enhanced nutrition – translate into broader economic gains. Scaling up care provided by midwives, particularly in family planning, can drive the following economic benefits:

1. Workforce participation

- ▶ Increased workforce participation due to life years gained
- ▶ Increased workforce participation due to morbidity reduction
- ▶ Increased workforce participation due to pregnancies averted

2. Education

- ▶ Increased school completion rates among adolescents due to reduced unintended pregnancies
- ▶ Higher future earnings linked to improved educational attainment

3. Social benefits

- ▶ Reduced stillbirths, maternal and neonatal mortality and morbidity leading to positive socioeconomic impacts

4. Fertility

- ▶ Lower costs associated with care provided by non-midwives

5. Other social and economic gains

6. Reduction in unnecessary medical interventions

- ▶ Lower costs associated with a reduction in unnecessary interventions performed
- ▶ Lives saved and morbidity averted.



Overview

Standardized methods for quantifying economic and social benefits of improved health vary depending on the context. This framework classifies benefits of care provided by midwives into workforce, economic, social and cost-saving impacts. It uses a multifaceted approach with a societal perspective to assess both direct and indirect contributions.

Workforce and education benefits, representing direct contributions to societal productivity, are estimated through the human capital approach (HCA), which assumes that better health leads to increased productivity and lifetime earnings. Social benefits from saved life years are calculated using the approach of Stenberg et al. (35), which estimates the social value of a life year as a proportion of average GDP per capita. While the value of a life year typically includes two components – the direct economic contribution through the production of goods and services and the broader social value of life – this analysis measures workforce benefits separately, incorporating only the social component (35). The benefits of reduced fertility are measured as cost savings in maternal and neonatal care provided by other healthcare workers. Additionally, reductions in unnecessary interventions are assessed as cost savings, alongside the economic benefits of extended life years.

Figure 4 illustrates the pathways to economic benefits from care provided by midwives.

Table 18 provides detailed parameters and assumptions for analysis, with benefit-specific valuation methods outlined accordingly.

All projected benefits should be discounted annually, typically at a 3 per cent rate. The discount rate should align with national standards for similar economic evaluations.

Figure 4. Health and economic benefits of investing in care provided by midwives

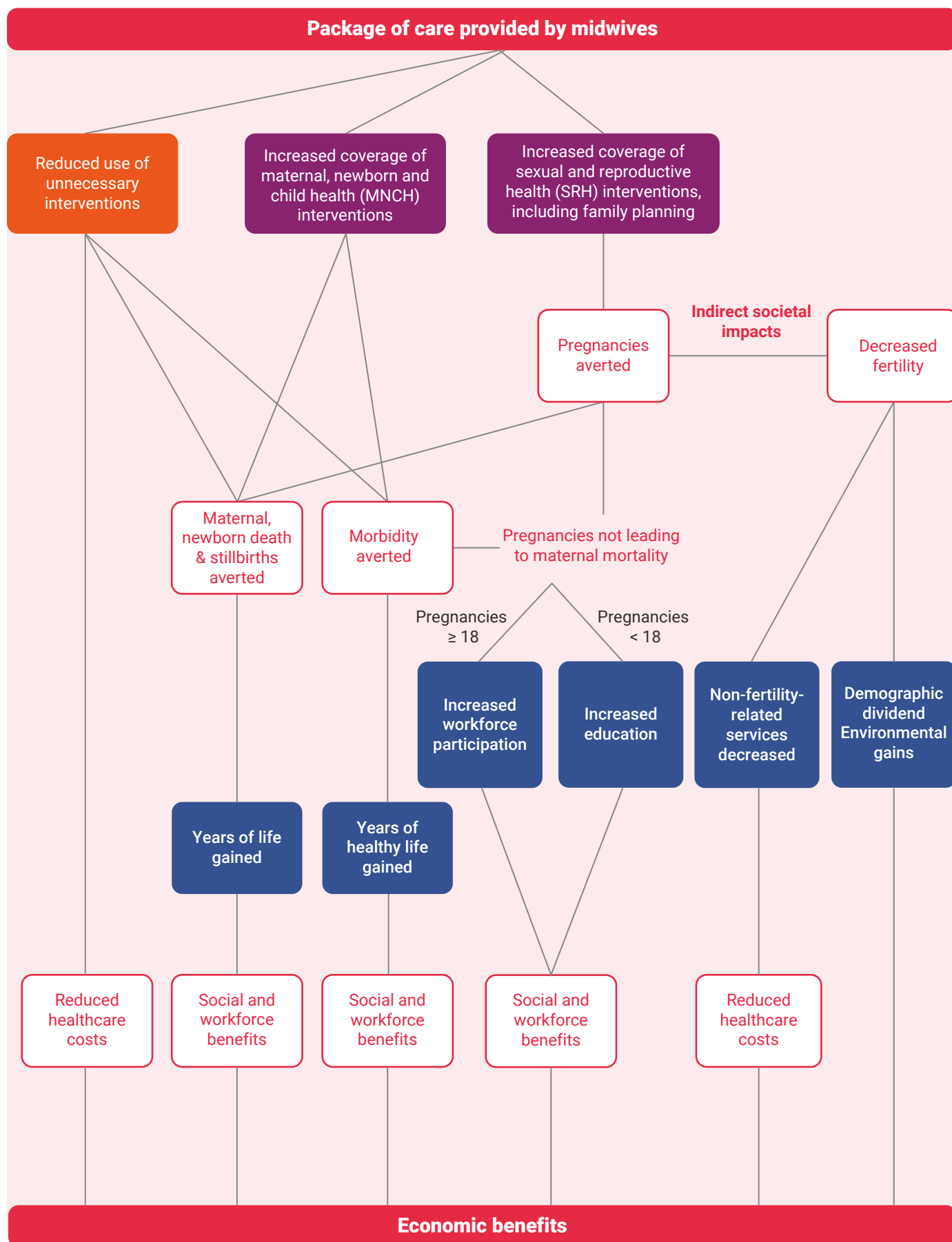


Table 18. Parameters and assumptions used for economic benefit calculations

Key Indicator	Value	Source
Life expectancy	Number of years	WHO Global Health Observatory
Population	Total population in most recent available value	World Bank, World Development Indicators
All-cause mortality for each age group	Most recent available values	Institute for Health Metrics and Evaluation, Global Health Data Exchange
Percentage of unintended pregnancies among girls <18 years	% of unintended pregnancies	National surveys
Years of education gained due to teenage pregnancy averted	1	Assumption, UNFPA 3 TR (40)
Additional earnings per year of education gained	8.8%	Education Economics (59)
Time out of workforce due to pregnancy	Number of months	International Labour Organization National maternity policy
Proportion of stillbirths that are intrapartum	% of stillbirths Global estimate (50% per global estimates)	National health monitoring data (60)
Morbidity-to-mortality ratios Preterm birth complication Birth injury Congenital abnormalities Nutritional deficiencies Obstructed labour Maternal disorders	Ratio	IHME Global Disease Burden Data
Years lived with disability (YLD) Preterm birth complication Birth injury Congenital abnormalities Nutritional deficiencies Obstructed labour Maternal disorders	Number of YLDs	IHME Global Disease Burden Data
Social value of a life year	0.5 times GDP per capita (for example)	Global Investment Framework (35)
Disability weight	Disability weight (value between 0 to 1)	IHME Global Disease Burden Data
Labour-force participation rate (female)	% of women	World Bank

Labour-force participation rate	% of population	World Bank
Average age of pregnancy	Number of years	National surveys
GDP per capita	US\$	World Bank
GDP per capita worker	GDP per capita adjusted to workforce participation	Calculation
GDP per capita annual growth rate	GDP per capita growth (annual %)	World Bank
Annual growth rate of real GDP per employed person	GDP per employed person growth (annual %)	International Labour Organization (Our World in Data)
Discount rate	3% per annum (for example)	



5.1 Estimating health benefits

5.1.1 Years of life gained

The health benefits of preventing illness and death can be measured in terms of years of life gained. This includes lives saved through interventions during the periconceptual, pregnancy and delivery periods, which help prevent maternal and neonatal deaths as well as stillbirths. Additionally, preventing unintended pregnancies through family planning also contributes to reduced mortality. The number of deaths averted due to fewer unintended pregnancies can be estimated based on maternal mortality rates among existing pregnancies.

LiST calculates changes in cause-specific mortality based on intervention coverage change, intervention effectiveness for that cause, and the per cent of cause-specific mortality sensitive to that intervention (40). LiST estimations of the number of maternal and neonatal deaths and stillbirths averted can be converted into age-specific years of life gained in each calendar year using a population model with context-specific life expectancy data. Using a model that is stratified in single year age brackets, and each year people could enter the model if their death was averted, turn a year older, and be removed due to all-cause mortality. Stillbirths and newborn deaths averted can be entered in the model at age zero, and maternal deaths averted are entered according to age-distribution of all pregnancies. There is some debate about years of life gained from averting stillbirths (more specifically disability-adjusted life years gained)(61). For this analysis, years of life gained were considered for the proportion of stillbirths averted that are intrapartum (40). Intrapartum stillbirth is defined as fetal death occurring after the onset of labour and prior to delivery. If country-level or regional data is unavailable, a global estimate of 50 per cent as estimated by Lawn and others (60) can be utilized.

The total number of people in each year in the population model represents the years of life gained that year. The population model can be run for an arbitrary duration to, for example, capture longer-term benefits of deaths averted than the originally defined time window. Years of life gained can be translated to economic benefits, as described in the following sections.

5.1.2 Morbidity averted

Levels of morbidity are averted through investing in care provided by midwives. Studies quantifying the benefits of morbidity averted remain scarce and preferred methods might vary.

While LiST directly focuses on mortality, it includes some morbidity-related outcomes for specific interventions. These outcomes can be directly used to estimate morbidity cases averted. In circumstances where morbidity cannot be estimated using LiST, morbidity-to-mortality ratios can be used to estimate morbidity averted.

Following the methodology of Stenberg and others, benefits are estimated for four causes averted for children (pre-term birth complications, birth injury, nutritional deficiencies and congenital abnormalities) and two for mothers (obstructed labour and maternal disorders) (35). These causes are used due to their likelihood to result in serious and sustained disabilities. Morbidity averted can be estimated using the morbidity-to-mortality ratio and disability weights, for example, years lived with disability (YLD). This can be done by multiplying total number of morbidity cases averted by the estimated morbidity averted. Other causes of morbidity can be included in the analysis if deemed appropriate.

Economic benefits related to morbidity averted can be measured in terms of increased participation in and productivity of workforces, by calculating years of productive life gained from YLDs averted, and in terms of social benefits, by application of disability weights to the social value of a life year saved (35).

Table 19. **Parameters for estimating morbidity averted**

Number cases of morbidity averted	Number cases of mortality averted	Morbidity-to-mortality ratio	Years lived with disability (YLD)
Number of cases of cause-specific morbidity averted (those available in LiST)	Number of cases of cause-specific mortality averted	Cause-specific morbidity-to-mortality ratio	Number of cause-specific YLDs

The number of cases of cause-specific morbidity averted can be estimated as follows:

$$M^a = C \times N$$



Where:

- › **M^a**: Number of cases of cause-specific morbidity averted
- › **C**: Cause-specific morbidity-to-mortality ratio
- › **N**: Number of cases of cause-specific mortality averted

Total cause-specific morbidity averted can be estimated as follows:

$$\text{Total cause – specific morbidity averted} = M^a \times YLD$$



Where:

- › **M^a** : Number of cases of cause-specific morbidity averted
- › **YLD** : Number of cause-specific years lived with disability

Total morbidity averted is calculated by adding up total cause-specific morbidity averted for all causes included in the analysis. Morbidity averted should be expressed as total YLDs averted.

5.1.3 Unintended pregnancies averted

Benefits related to unintended pregnancies (UPs) averted can be estimated if family planning interventions are scaled up as a part of the package of care provided by midwives. Using the family planning module in LiST, the number of unintended pregnancies averted through investing in care provided by midwives can be estimated. The number of unintended pregnancies averted can be used to estimate consequential economic benefits of increased education for pregnancies for girls under 18 years. The number of unintended pregnancies averted can also be used to estimate workforce participation for girls aged 18 and over, maternal deaths averted and those resulting from reduced fertility.



5.2 Estimating economic benefits

5.2.1 Workforce participation economic benefits

Economic benefits resulting from increased workforce participation can be calculated using years of life gained. To estimate economic gains, years of life gained among working-age people (aged 18–65) are considered. The average salary is estimated as GDP per worker, adjusted for workforce participation rates among women (for maternal deaths averted) or the whole population (for neonatal deaths and stillbirths averted). Similarly, workforce benefit of morbidity averted can be estimated using the number of healthy life years gained due to morbidity averted.

In addition to years of life gained, unintended pregnancies among women aged 18 and older can also be assumed to lead to increased workforce participation due to not being temporally absent from the workforce. Removal of a woman from the labour force can be estimated based on context-dependent maternity leave policies. In example, if a country had a policy of maternity leave for three months, the economic benefit of an unintended pregnancy averted would be calculated as the GDP per worked multiplied by 0.25 and scaled for workforce participation rates among women.

GDP per worker can be estimated using GDP per capita and labour market participation rates.

GDP per worker can be assumed to increase every year and should be considered in estimations.

GDP annual increase rate per employed person should be used to adjust for expected annual growth.

Future benefits should be discounted at the defined discount rate.

Table 20. **Parameters for estimating workforce benefits**

Years of life gained (among aged 18–65)	Unintended pregnancies averted	Morbidity averted	GDP per capita worker	Workforce participation rates	Length of absence from workforce due to maternity leave	GDP per employed person annual increase rate	Discount rate
Number of life years gained	Number of unintended pregnancies (UPs) averted for girls aged 18 and older	Total morbidity averted (number of YLDs)	GDP per capita <i>times</i> workforce participation rate	Workforce participation rate among women (maternal deaths averted) Workforce participation rate among total population (for neonatal deaths averted)	Number of months expressed as a decimal (1 being a full year)	GDP growth per employed person (annual %)	3% (for example)

Workforce benefits are estimated as follows:

$$\text{Workforce benefit of maternal deaths averted} = L \times G \times P \times (1 + r)^t \times \frac{1}{(1 + d)^t}$$



Where:

- › **L:** Total life years gained (due to maternal deaths averted) (only including life years gained between ages 18–65)
- › **G:** GDP per worker per year
- › **P:** Female workforce participation rate (expressed as a decimal)
- › **r:** Annual GDP growth rate per employed person
- › **t:** Time-horizon over which benefits are calculated (in years)
- › **d:** Discount rate

$$\text{Workforce benefit of neonatal deaths averted} = L \times G \times P \times (1 + r)^t \times \frac{1}{(1 + d)^t}$$



Where:

- › **L:** Total life years gained (due to neonatal deaths averted) (only including life years gained between ages 18–65)
- › **G:** GDP per worker per year
- › **P:** Total workforce participation rate (expressed as a decimal)
- › **r:** Annual GDP growth rate per employed person
- › **t:** Time-horizon over which benefits are calculated (in years)
- › **d:** Discount rate

$$\text{Workforce benefit of UPs averted} = N \times G \times L \times P \times (1 + r)^t \times \frac{1}{(1 + d)^t}$$



Where:

- › **N:** Number of unintended pregnancies (UPs) averted (for girls 18 years and older)
- › **G:** GDP per worker per year
- › **L:** Length of absence due to maternity leave (in years, e.g. 0.5 for 6 months)
- › **P:** Workforce participation rate among women (expressed as a decimal)
- › **r:** Annual GDP growth rate per employed person
- › **t:** Time-horizon over which benefits are calculated (number of years)
- › **d:** Discount rate

$$\text{Workforce benefit of morbidity averted} = L \times G \times P \times (1 + r)^t \times \frac{1}{(1 + d)^t}$$



Where:

- › **L:** YLDs averted
- › **G:** GDP per worker per year
- › **P:** Workforce participation rate among women (expressed as a decimal)
- › **r:** Annual GDP growth rate per worker
- › **t:** Time-horizon for the healthy life years gained (in years)
- › **d:** Discount rate
- › **r:** Annual GDP growth rate per employed person
- › **t:** Time-horizon over which benefits are calculated (number of years)
- › **d:** Discount rate

5.2.2 Education economic benefits

Reduction in unintended pregnancies can be assumed to lead to increases in the average level of education obtained by girls. To estimate the economic benefits resulting from this increase in education, data or assumptions are needed on the proportion of unintended pregnancies that are averted among girls younger than 18 years. This percentage of unintended pregnancies averted can be assumed to lead to an average increase in education based on an expected disruption to schooling due to pregnancy and birth. The average increase in education context can be estimated utilizing the average age of unintended pregnancy for girls under 18 and expected length of schooling in a country context.

Using an estimated distribution of the age of pregnancies, additional years of education can be estimated. Length of schooling is known to on average lead to increase in lifetime earnings (62). Following a previous analysis by UNFPA (40), a one-year increase in education due to averting a pregnancy can be assumed. However, if more detailed country-specific data is available, it should be prioritized for a more accurate estimation.

A global estimate of a median 8.8 per cent increase in per capita income with each additional year of schooling is suggested (59). To calculate the economic benefit from additional years of schooling, GDP per worker can be used as a proxy for average wage. GDP per worker can be estimated using GDP per capita and labour market participation rates. This can be multiplied by the expected percentage of income increase to obtain the economic benefit for each working year. These benefits can be applied from the year a girl turns 18 until retirement age and scaled for workforce participation among women.

GDP per worker can be assumed to increase every year and should be considered in estimations.

GDP annual increase rate per employed person should be used to adjust for expected annual growth.

Future benefits should be discounted at the defined discount rate.

Table 21. **Parameters for estimating education benefits**

Unintended pregnancies averted	Years of education gained due to pregnancies averted	GDP per capita worker	Median increase per capita per additional year of schooling	Workforce participation rate	GDP per employed person annual increase rate	Discount rate
Number of unintended pregnancies averted for girls <18	Number of education years gained	GDP per capita × workforce participation rate	8.8%	Workforce participation rate among women	GDP growth per employed person (annual %)	3% (for example)

The economic benefit of increased education due to unintended pregnancies (UPs) averted can be estimated as follows:

$$\text{Education benefit of UPs averted} = N \times G \times (1 + E)^Y \times P \times (1 + r)^t \times \frac{1}{(1 + d)^t}$$



Where:

- › **N:** Number of unintended pregnancies averted (girls <18)
- › **G:** GDP per worker per year
- › **E:** annual increase in GDP per capita for each additional year of education (i.e. 0.088)
- › **Y:** Average additional years of education gained per person
- › **P:** Workforce participation rate among women (expressed as a decimal)
- › **r:** Annual GDP growth rate per employed person
- › **t:** Time-horizon over which benefits are calculated (number of years)
- › **d:** Discount rate

5.2.3 Social economic benefits

Social economic benefits refer to the social value of improved health through care provided by midwives, combining the direct contribution to the economy through the production of goods and services, and the social value of a human life. These benefits are not captured in the formal economy. However, to capture their relative importance to the economy and account for these benefits in estimations, they can be valued using GDP per capita (35).

When evaluating the benefits of improved health, it is common to assign a monetary value to life using the concept of the value of a statistical life year (VSL) (63). However, this approach remains contentious and problematic. As an alternative, Stenberg et al. (35) proposed valuing a life year at 1.5 times GDP per capita, with 1 times GDP per capita representing economic benefits and the remaining 0.5 times GDP per capita as social benefits. This approach has also been used in similar studies (40, 64). Users are advised to apply 0.5 times GDP per capita to estimate the social benefit of each life year saved. The most appropriate value should be chosen depending on the country context. For social economic benefits of morbidity averted, disability weights should be applied for each year of morbidity averted.

Valuing the social impact of preventing stillbirths remains challenging (65). Due to the limited scope of this framework, we assume that all life years gained hold the same social value (35, 40), including those gained from averting intrapartum stillbirths.

GDP per capita can be assumed to increase every year and should be considered in estimations. GDP annual increase rate per capita should be used to adjust for expected annual growth.

Future benefits should be discounted at the defined discount rate.

Table 22. Parameters for estimating social benefits

Years of life gained	Morbidity averted	Disability weights	GDP per capita	Statistical social value of a life year	GDP per capita annual growth rate	Discount rate
Number of life years gained	Total morbidity averted (YLDs)	Cause-specific disability weight (value between 0 to 1)	GDP per capita	0.5 times GDP per capita (for example)	GDP per capita growth (annual %)	3% (for example)

Social economic benefit of mortality averted can be estimated as follows:

$$\text{Social benefit of mortality averted} = L \times G \times V \times (1 + r)^t \times \frac{1}{(1 + d)^t}$$

→

Where:

- › **L:** Total life years gained due to mortality averted
- › **G:** GDP per capita per year
- › **V:** Statistical social value of a life year
- › **r:** Annual GDP growth rate per capita
- › **t:** Time-horizon over which benefits are calculated (number of years)
- › **d:** Discount rate

Social economic benefit of morbidity averted can be estimated as follows:

$$\text{Social economic benefit of morbidity averted} = L \times G \times V \times D \times (1 + r)^t \times \frac{1}{(1 + d)^t}$$



Where:

- › **L:** Total cause-specific YLDs averted
- › **G:** GDP per capita per year
- › **V:** Statistical social value of a life year
- › **D:** Cause-specific disability weight (value between 0 to 1)
- › **r:** Annual GDP growth rate per capita
- › **t:** Time-horizon over which benefits are calculated (number of years)
- › **d:** Discount rate

Social economic benefit of morbidity averted can be calculated first as cause-specific morbidity averted. Total social economic benefits are estimated as a sum of total mortality and morbidity averted due to all causes included in the analysis.

5.2.4 Benefits of increased family planning and reduced fertility: reduction in the cost of non-midwife-delivered interventions

When family planning services are scaled up as a part of care provided by midwives, a reduction in fertility risks can be assumed. Benefits related to reduction in fertility are especially pronounced in countries with high levels of fertility and unintended pregnancy. Due to reduction in fertility risks, a reduction in demand and cost of other maternal health services is assumed to follow.

When family planning is scaled up as part of care provided by midwives, it is expected to reduce the number of unintended pregnancies, which in turn leads to lower fertility rates (4). As a result, the demand for and cost of other, non-midwife-delivered services, such as hospital deliveries, emergency care and obstetrician-led prenatal care, decrease, which directly translates into cost savings for the healthcare system. These reductions are considered additional benefits rather than direct reductions in the overall cost of care provided by midwives.

One potential approach is performing a sensitivity analysis using impact and cost data in LiST and FamPlan. The analysis should compare the costs and outcomes of an intervention package that includes family planning with a package that does not include family planning. By comparing these two scenarios, the contribution of family planning to the overall cost savings can be calculated. The reduction in the total cost when family planning is included in care provided by midwives represents the economic benefit derived from reduced demand for more costly interventions delivered by other healthcare workers.

5.2.5 Other social and economic benefits of investing in midwives

In addition to the benefits discussed above, there are other pathways in which investing in SRMNCAH interventions produce wider social and economic benefits (35).

There are numerous economic benefits to the interventions in the scope of midwifery that were excluded from the analysis in this framework. All of the following interventions directly or indirectly impact health outcomes and economic participation:

- ▶ **care of the sick newborn**
- ▶ **health education including sexuality education**
- ▶ **immunization and prevention of communicable and noncommunicable diseases**
- ▶ **prevention and care for GBV**
- ▶ **mental health screening and support for women and their families**
- ▶ **support for healthy attachment between the mother and her newborn**
- ▶ **care provision in humanitarian settings.**

While these interventions are not included in the analysis, significant additional economic benefits can be expected through these pathways.

Decreased fertility following improved coverage of family planning contributes to a “demographic dividend” – a period of economic growth resulting from shifts in a population’s age structure. The demographic dividend generally occurs when the share of the working-age population is larger than the non-working-age share of the population (66). Through the effect, countries can expect lowering of dependency rate for a substantial time period (the proportion of young and old people compared with those of a working age). They also can expect an increased labour supply through mothers’ and caregivers’ ability to enter or remain in the workforce, and higher productivity. These factors contribute to an increase in per capita GDP (35). Reduced fertility also results in environmental gains through reduced pressure on environmental resources (35, 67).

Finally, various economic benefits can be expected to follow investing in health workforce. The High-Level Commission on Health Employment and Economic Growth highlights six main pathways in which investments in health workforce produces societal economic benefits: improved social cohesion, social protection, innovation, health security, economic output and productivity due to improved health (36).

Quantifying these benefits remains difficult with limited methodologies and therefore they are not covered in this framework. However, any analysis will benefit from recognizing these gains as they likely result in benefit–cost ratios higher than estimated using this framework.

5.2.6 Realizing economic benefits

Investment in care provided by midwives is a long-term investment. Similar to investments in SRMNCAH interventions overall (35), the investment costs into midwifery, including costs for health system strengthening and infrastructure, will rise rapidly in the early years but begin to fall as a share of GDP once those upfront costs are met. Total benefits will rise rapidly and continue to accumulate over time.

It also should be noted that benefits and returns of investment in care provided by midwives are realized over different time frames. The social benefits of reducing morbidity and mortality begin to accrue immediately, while the economic gains from increased workforce participation and changes in fertility take longer to materialize. For children whose lives are saved, it may take up to 20 years for them to enter the workforce, but the resulting economic benefits will continue to grow over subsequent decades (35). Reductions in fertility translate into economic benefits through several longer-term mechanisms.



5.3 Estimating benefits of reduced unnecessary interventions

The philosophy of midwifery and the MMoC emphasize the use of interventions only when medically indicated, thereby optimizing outcomes while minimizing unnecessary interventions. Investing in midwifery offers a strategic approach to addressing the global trend of overmedicalization in pregnancy and childbirth, which is characterized by the inappropriate, unnecessary or routine use of interventions without a clear medical need based on the condition of the woman or newborn. Overuse of interventions such as Caesarean section has been associated with adverse short- and long-term health outcomes for women and their newborns (68-70). Their overuse has also been associated with increased health system costs and out-of-pocket (OOP) expenses for families (14, 16, 71).

Examples of commonly overused interventions that could be reduced through increased investment in midwifery (7, 14–22):

- ▶ **Caesarean section (CS)**
- ▶ **episiotomy**
- ▶ **labour induction**
- ▶ **vacuum-assisted delivery**
- ▶ **oxytocin augmentation**
- ▶ **cervical ripening.**

Minimizing unnecessary interventions through midwifery has the potential to reduce adverse health outcomes, enhance the quality of care, and contribute to lowering morbidity and mortality rates. Additionally, reducing these interventions generates cost savings and frees up resources that can be redirected to alleviate pressures in other areas of the health system (72). In addition to health system resources, out-of-pocket (OOP) expenses for mothers and their families can also be reduced through reduced interventions and admission periods.

Using Caesarean section as an example, global estimates suggest that redirecting resources currently allocated to “excess” CS to countries where additional procedures are critically “needed” could fully fund these essential interventions, leaving nearly \$2 billion in surplus resources (72). This highlights the significant number of resources spent unnecessarily that could be more effectively reallocated.

In this framework, the cost savings stemming from unnecessary interventions are considered an economic benefit of investing in midwives. In addition, morbidity and mortality averted through averted unnecessary interventions produce economic benefits and can be estimated using the methodology in Section 5.2.

High-quality data on the extent or magnitude of reductions in unnecessary interventions attributable to midwifery remains limited. Furthermore, the appropriate range for intervention rates across different countries is still debated (72), adding complexity to precise estimations. Accurately estimating potential cost savings from reducing unnecessary interventions through midwifery at the country level would require more detailed modelling, such as decision trees and cost-effectiveness analyses (73) – an approach that is beyond the scope of this framework. However, assumptions can be made to illustrate the potential scale of savings in a hypothetical scenario.

This section outlines the potential steps for estimating cost savings associated with reducing unnecessary interventions. Caesarean sections are used as an example to illustrate the analytical process. The framework should be applied to analyse all relevant interventions.

Outcomes included in this framework:

- ▶ **number of unnecessary interventions averted**
- ▶ **cost savings**
- ▶ **number of lives saved**
- ▶ **long-term economic benefits.**

Additional savings are likely to arise from a reduction in intervention-related complications and their associated costs. However, these potential savings are not accounted for in this framework due to the limited availability of data.

Table 23. Parameters for estimating benefits of reduced unnecessary interventions

Key Indicator	Source
Intervention rate	National surveys
Proportion of unnecessary interventions	Estimation using national surveys, registered data and global guidelines, etc.
Annual number of births	National surveys
MMR for unnecessary intervention	National surveys
NMR for unnecessary intervention	National surveys
% of unnecessary interventions averted through midwifery	Assumption Source: Sandall et al. 2024 (7)
Number of lives saved through averted unnecessary interventions	Estimation
Cost per intervention	LiST OneHealth Tool Intervention Assumptions National data
Cost per alternative service or intervention (if necessary)	LiST OneHealth Tool Intervention Assumptions National data

Steps of estimating the economic benefits of potential unnecessary interventions averted:

1. Identify the intervention rate

- a. Calculate the annual number of interventions performed in each country by multiplying the intervention rate by the annual number of births.

2. Determine the proportion of unnecessary interventions

- a. Use global guidelines to estimate the proportion of unnecessary interventions among all performed.
 - i. For example, the World Health Organization recommends a CS rate of 10–15 per cent, suggesting that rates above this likely include unnecessary procedures (73).

3. Quantify adverse outcomes associated with unnecessary interventions

- a. Calculate the number of maternal and neonatal deaths attributable to unnecessary interventions by applying maternal mortality ratios (MMR) and neonatal mortality rates (NMR) to the number of unnecessary interventions.

4. Model the impact of reducing unnecessary interventions through midwifery investments

- a. Data on the rates of reduction in unnecessary interventions attributable to midwifery remain scarce. If specific data are unavailable, use assumptions to estimate the impact of reducing unnecessary interventions through increased midwifery care.

5. Estimate direct cost savings

- a. Identify the average cost per intervention:
 - i. Use tools such as LiST and the OneHealth Tool to obtain inputs and unit costs for many interventions, such as CS.
 - ii. For interventions not included in these tools, adopt a consistent approach focused on the health provider perspective and employ the ingredients-based method. This involves determining the quantities of inputs needed and their costs per intervention.
- b. Calculate cost savings or cost differences between interventions and their alternatives:
 - i. For example, when estimating cost savings from averted CS, calculate the difference between the cost of a CS and a vaginal delivery.
 - ii. If no alternative exists, the cost saving equals the cost of the intervention.
- c. Calculate total savings from reducing unnecessary interventions:
 - i. Multiply the number of unnecessary interventions by the cost saving per intervention averted.

6. Estimate long-term economic benefits of lives saved through averted unnecessary interventions

- a. Use the methods outlined in Section 5.2 of this framework to estimate long-term economic benefits associated with lives saved.



Example calculation framework: Economic benefits of reducing the rate of unnecessary Caesarean section in a sample country (in US\$)

1. Identifying the intervention rate

- ▶ Annual births: ~2.9 million
- ▶ Current CS rate: 33% (assumed for this scenario)
- ▶ Number of CS performed annually: $2.9 \text{ million} \times 33\% = 957,000$ CS annually

2. Determining the proportion of unnecessary interventions

- ▶ WHO recommendation for CS rate: 10–15%
- ▶ Excess CS rate: $33\% - 15\% = 18\%$ (considered unnecessary CS)
- ▶ Number of unnecessary CS annually: $2.9 \text{ million} \times 18\% = 522,000$ unnecessary CS

3. Quantifying adverse outcomes associated with unnecessary CS

- ▶ Maternal mortality ratio (MMR) for CS: 15 per 100,000 CS
- ▶ Neonatal mortality rate (NMR) for CS: 20 per 1,000 CS
- ▶ Maternal deaths attributable to unnecessary CS: $522,000 \times 15 / 100,000 = 78.3$ maternal deaths annually
- ▶ Neonatal deaths attributable to unnecessary CS: $522,000 \times 20 / 1,000 = 10,440$ neonatal deaths annually

4. Modelling the impact of reducing unnecessary CS through midwifery investments

- ▶ Assumed reduction in unnecessary CS through midwifery: 20%
- ▶ Reduced unnecessary CS: $522,000 \times 20\% = 104,400$ CS averted annually
- ▶ Deaths prevented:
 - Maternal deaths prevented: $78.3 \times 20\% = 15.66$ maternal deaths prevented annually
 - Neonatal deaths prevented: $10,440 \times 20\% = 2,088$ neonatal deaths prevented annually

5. Estimating direct cost savings in US\$

- ▶ Average cost of a CS: \$300
- ▶ Average cost of a vaginal delivery: \$50
- ▶ Cost saving per CS averted: $300 - 50 = \$250$ per CS
- ▶ Total cost savings from reduced unnecessary CS: $104,400 \times 250 = \$26.1$ million annually

6. Estimating economic benefits of lives saved

- ▶ Economic value of a life saved (maternal and neonatal):
 - Maternal life: \$15,000
 - Neonatal life: \$5,000
- ▶ Total economic benefit of lives saved:
 - Maternal lives saved: $15.66 \times 10,000 = \$234,900$
 - Neonatal lives saved: $5,220 \times 5,000 = \$10.44$ million
 - Combined long-term benefit: \$10.67 million

Total estimated economic benefit:

- ▶ Annual cost savings: \$26.1 million
- ▶ Annual economic benefit of lives saved: \$10.67 million

Note: This scenario is hypothetical and intended for illustrative purposes only. The values provided are not derived from real data of any country.

Step Six:

Return on investment: estimating total costs and benefits

In this section, the following step of analysis is taken:



6.1 Estimating benefit–cost ratio and return on investment for care provided by midwives

Step Six focuses on the estimating the benefits against the return on investment of investing in Midwifery Models of Care.



6.1 Estimating benefit–cost ratio and return on investment for care provided by midwives

The return on investment (ROI) calculates the **benefit** that care provided by midwives will yield in relation to the **investment cost**. The higher the ROI the greater the benefit earned. The ROI is calculated using the monetized benefits and costs. When the benefit–cost ratio is greater than one, the benefits outweigh the costs. When the benefit–cost ratio is less than one, then the costs exceed the benefits. This section will briefly consider the benefit–cost ratio and the ROI calculation for the costs and economic benefits that have been monetized.

The estimated costs of delivering care provided by midwives and workforce development form the total cost in this framework. Total benefits include those of increased education, workforce participation, social benefits and those connected to reduced fertility. When total costs and total benefits of the defined scenarios of establishing or scaling up care provided by midwives have been estimated, the ROI and benefit–cost ratio of investing in care provided by midwives can be estimated by using the formulas below. (See section 3.2.2 for a description of HSS, which stands for health system strengthening.)

Return on investment (%)

$$\frac{\text{Economic benefits} - (\text{Programme} + \text{intervention} + \text{HSS} + \text{workforce development costs})}{(\text{Programme} + \text{intervention} + \text{HSS} + \text{workforce development costs})} \times 100$$

Benefit–cost ratio:

$$\frac{\text{Economic benefits}}{(\text{Programme} + \text{intervention} + \text{HSS} + \text{workforce development costs})}$$

ROI and benefit–cost ratio are straightforward measures of benefits relative to costs. However, it is essential to recognize that not all data can be monetized, particularly those related to social indicators. Intangible benefits, such as social returns, are equally important and should be reported alongside financial metrics to provide a more comprehensive picture of returns.

The costing approach focuses on the clinical, workforce and system inputs required to deliver effective midwifery care and estimate associated health and economic outcomes. While this captures core service delivery and scale-up requirements, it does not fully quantify all investments needed to ensure rights-based, person-centred and respectful care, including time for counselling and informed choice, continuity of care models, women’s preferences during pregnancy and childbirth, accountability mechanisms, and enabling environments that uphold dignity and autonomy. These dimensions are integral to Midwifery Models of Care. They should be considered alongside the modelled estimates when interpreting results and developing investment cases.

Step Seven:

Contextual considerations: enabling environment and sustainability

In this section, the following steps of analysis are taken:

-  7.1 **Investing in enabling environment**
-  7.2 **Monitoring and evaluations**

It is important to recognize that investment in care provided by midwives requires corresponding investments in the enabling environment. Without such investments, care provided by midwives would not be comprehensive and their effectiveness could be limited. The enabling environment allows midwives to engage in their full scope of practice and reach their full potential. Achieving transformative and sustainable results requires investments that extend beyond interventions and the midwifery workforce.



Overview

Midwives' ability to deliver is determined by the system and the environment within which they function. This section discusses considerations for investment in different service delivery channels, how to foster an enabling environment for midwives to ensure that investments in care provided by midwives are as effective as possible, and which mechanisms can be used for the monitoring and evaluation of investments.

The Midwifery Services Framework (MSF) identifies what is needed for ensuring the success and effectiveness of investments in care provided by midwives. The MSF outlines the process of developing and strengthening the midwifery profession to the extent that it is competent and enabled to meet the SRMNCAH needs of women and newborns, therefore contributing to improving SRMNCAH outcomes (74). The MSF offers a structured tool for implementing midwifery services that align with international standards. It also serves to outline the key considerations for successfully investing in care provided by midwives.

Some of the essential components of the MSF have been covered in detail in the previous sections of the framework, including package of care, considerations on the organization and level of services where interventions are delivered, and workforce development. This section addresses additional essential elements, including an enabling environment for midwifery practice, midwives' associations (MA) and sustainability, monitoring and evaluation. Recognizing that investments, costs and benefits are highly context-specific, this framework does not aim to provide detailed cost analyses. Instead, it highlights key investment areas within each component.



7.1 Investing in enabling environment for midwives

The ability of midwives to achieve desired health and economic impacts depends significantly on their working conditions and broader socioeconomic environment. Globally, midwives face barriers such as low salaries, harassment, gender discrimination and lack of professional recognition, which hinder their well-being and effectiveness (8, 75). In countries without a strong tradition of professional midwifery, a lack of understanding of what midwifery is and how it can contribute to improved SRMNCAH outcomes can hinder the ability of midwives to effectively engage in their full scope of practice.

An enabling environment for midwives' values and respects both midwives and women. It allows midwives to practice autonomously, access professional development, work in well-resourced systems, and be fairly compensated while ensuring their safety and inclusion in decision-making. Creating such an environment requires addressing unique barriers faced by midwives, promoting the profession, integrating midwives into health systems and advocating for gender equality (31).

Integration of midwives in all levels of the health system and the society is crucial for ensuring successes of care provided by midwives (7). It is important to recognize that midwives not only deliver SRMNCAH care, but are involved in comprehensive interventions related to malaria, tuberculosis, nutrition and humanitarian settings. They contribute to strengthening many aspects of the health system. Creating an enabling environment includes, among other features:

- ▶ **Investments in governance and regulation, e.g. development of standards of practice (SOP), ethical guidelines and licensing, and establishment of regulatory bodies that include midwives.**
- ▶ **Investments in the inclusion of midwives in key decision-making positions.**
- ▶ **Investments to ensure that midwives have autonomy and control over their work, are supported and able to deliver the highest possible quality of care.**

Establishing such mechanisms and structures will also ensure country ownership and sustainability of midwifery practice in long-term.

Midwives' associations (MA) are catalysts for the integration of midwives in the SRMNCAH workforce and achieving universal health coverage through localized, coordinated, responsive and equitable efforts. MAs are professional associations of midwives that are the voices for midwives, supporting them, building professionalism and representing the interests of midwives to governments and other stakeholders (76). MAs form the foundation of a strong midwifery profession and are an integral part of efforts to support midwives' ability to reach their full potential. MAs are, therefore, a crucial investment for enabling success of interventions for scaling up care provided by midwives. Key investments in the enabling environment and midwives' associations are outlined in Table 24.

Table 24. **Key investments in an enabling environment for midwives** (5, 31, 74, 77)

Component	Key investments
Midwifery Models of Care	▶ Promote MMoC to ensure equitable, person-centred, respectful, integrated and high-quality care, provided and coordinated by midwives along the continuum of care
Gender equality	▶ Engage in strategies for empowerment and respect for midwives, women and birthing people ▶ Invest in decent employment and working conditions for midwifery
Infrastructure and equipment	▶ Equip facilities for midwives to practice their full scope of practice and offer high-quality services ▶ Establish and/or develop an effective referral system, including transportation and communication ▶ Investment in equipment and procedures for better health information management
Safe and respectful environment	▶ Implement policies and programmes to address social and cultural norms that hinder midwives from offering essential services ▶ Allocate resources for secure facilities and safe travel options for midwives ▶ Develop strategies for supporting social and mental well-being of midwives
Professional status and agency	▶ Define a clear scope of practice for midwives ▶ Ensure midwives have autonomy and control over their work ▶ Invest in strategies to ensure midwives are supported by the health system the same way as other cadres ▶ Promote financial fairness and payment parity with health professionals of similar skill level, or doing work of equal value ▶ Engage in community sensitization and advocacy for ensuring social awareness and recognition of midwifery

System-level integration	▶ Ensure integration of midwives across and through all levels of health system and other relevant sectors (e.g. education system) ▶ Ensure involvement of midwives in decision-making ▶ Ensure midwives are included in positions of leadership and power, including government and policymaking
Governance	▶ Investment in setting standards for practice, education and training ▶ Create mechanisms to control the quality of care ▶ Implement laws and protocols to define and support MMoC and leadership ▶ Establish mechanisms for licensing and re-licensing
Professional career development	▶ Establish on-site and remote mentorship programmes to improve care quality and offer peer support ▶ Invest in opportunities for ongoing professional development and training and various career pathways
Midwives' associations (MA)	
Establishment	▶ Provide foundational investments in organizational infrastructure and administration ▶ Invest in legal and regulatory services to formally establish the association as a registered entity ▶ Invest in strategies of recruitment and engagement to attract midwives and to establish a network of active members ▶ Establish programmes for ongoing education and training, potentially forming partnerships with educational institutions
Capacity	▶ Provide core funding and capacity-building so MAs can grow their organizational and technical capacities
Leadership	▶ Provide funding for salaries ▶ Create leadership and mentoring opportunities to facilitate sustainability over time
Continuing education	▶ Fund MAs to become continuing education providers ▶ Increase self-financing capacity
Midwives' role in humanitarian and crisis preparedness	▶ Fund MAs to develop education and training programmes for humanitarian and climate change preparedness and response ▶ Ensure sufficient resources for midwives in a crisis



7.2 Monitoring and evaluation

Establishing robust monitoring and evaluation (M&E) mechanisms is essential to ensuring accountability, improving quality of care and assessing the impact of investments. Continuous M&E supports the adaptation of care provided by midwives to local needs while generating outcome data that can advocate for further investments. Strengthening M&E systems will not only enhance the evidence base for MMoC but also ensure that interventions remain adaptable, sustainable and aligned with local health priorities. Costs of M&E activities were previously estimated as a part of programme costs in section 3.2.

Key investments in monitoring and evaluation:

1. **Strengthen data collection systems:** Enhance the collection of epidemiological, demographic, service performance and workforce data to inform decision-making.
2. **Integrate comprehensive SRMNCAH indicators:** Include SRMNCAH indicators in national health surveys to capture relevant data.
3. **Develop targeted M&E mechanisms:** Establish systems to monitor midwife-delivered service provision, track progress, identify gaps and advocate for further investments.
4. **Train healthcare workers:** Build capacity among healthcare workers in data collection, analysis and processing to ensure high-quality data.
5. **Establish clear reporting structures:** Design robust mechanisms to communicate M&E findings effectively to policymakers and funders.
6. **Leverage data for advocacy:** Utilize M&E data to demonstrate the value of MMoC and support arguments for continued investment.

A comprehensive monitoring plan should be developed and implemented, ideally by the same stakeholder group responsible for planning and developing the investment case (37). Monitoring efforts can draw on a range of data sources, including nationally representative household surveys, quality assessments and service performance tracking systems. Progress towards achieving the desired results should be assessed annually, with periodic reviews and adjustments to targets as needed to align with the intended impacts. An example monitoring framework is presented in Table 25.

Table 25. **Example monitoring framework**

Indicator	Value (baseline year)	Value (year)	Variance from target >100% met / exceed target 90–99% on track 70–89% gaining traction 50–69% building momentum 0–49% delayed No data	Comments / adjustments needed
Maternal mortality ratio	176 (2024)	150 (2030)	Gaining traction	
Modern contraceptive prevalence (mCPR)	65% (2024)	69% (2030)	On track	

Adapted from: Developing Investment Cases for Transformative Results (37)

Annex:

Example of a terms of reference

The following example of a Terms of Reference is adapted from the UNFPA resource *Developing Investment Cases for Transformative Results Toolkit* (37). It can be modified by countries to fit their needs.

1. Objective and scope

The investment case will provide a clear and up-to-date analysis of care provided by midwives including needs, gaps and options for scaling efforts to meet these needs in a sustainable manner, including funding flows and financial gaps. The output document will be used to engage with government and other stakeholders to advocate for investments in midwifery and accelerate progress towards improved SRMNCAH and achievement of the Sustainable Development Goals by 2030.

2. Activities

To reach the defined objectives, consultants will undertake activities including the following:

- ▶ Analyse the national SRMNCAH landscape, including global and national policy shifts and their implications.
- ▶ Analyse the current funding situation of SRMNCAH care through analysis of funding flows for SRMNCAH, and more specifically midwifery care.
- ▶ Determine projected scenarios at national and subnational level to address inequalities in access and utilization of SRMNCAH and midwifery services specifically in the country.
- ▶ Develop strategies for workforce development suitable to national and subnational needs to meet the required workforce to deliver the projected care provided by midwives.
- ▶ Outline potential innovative strategies and options to meet needs, to increase and sustain funding for care provided by midwives in the country.
- ▶ Clarify the economic benefits of investing in care provided by midwives in the mid- and long-term; estimate the ROI of investing in care provided by midwives for the country.
- ▶ Develop a road map for financing care provided by midwives at the national level, taking into consideration the fiscal space in the country and identifying who, when, how and what impacts the decision-making of domestic resource allocation for midwifery services and commodities.
- ▶ Develop an implementation plan of the investment in care provided by midwives towards financial sustainability, including a monitoring and evaluation framework.

The consultant team (national and international) will work in close collaboration with representatives from main stakeholders involved in SRMNCAH and midwifery care, depending on the level of midwifery in the country. Several consultative meetings should be held to ensure inclusion of all key players, including the Ministry of Health and the Ministry of Finance and Economic Planning.

3. Expected outcomes and deliverables

- ▶ Produce an inception report illustrating how the consultancy will be conducted.
- ▶ Conduct a situation analysis of the national SRMNCAH landscape, including health outcomes, workforce, distribution.
- ▶ Document data on current financing and funding commitments to SRMNCAH and more specifically midwifery care, critical funding gaps and strategies to reduce the funding gap.
- ▶ Develop an investment case on care provided by midwives, outlining the required investments, potential financing strategies, the modelled scenarios and expected results, such as lives saved and ROI.
- ▶ Develop an implementation plan of the investment in care provided by midwives towards financial sustainability, including a monitoring and evaluation framework.

4. Methodology

The prospective team of consultants will be composed of the lead consultant, who, if international, is supported by the national consultant throughout the entire process. They will outline methodologies to achieve the abovementioned deliverables. The methodology should at a minimum include several steps:

- ▶ Conduct a desk review of available documentation on relevant national data. This may include reports from the Ministry of Health, policies and strategies related to health financing, reports on family planning, the Human Resource Tracking Tool, National Health Accounts, Demographic and Health Surveys, etc.
- ▶ Carry out primary qualitative data collection through key stakeholders' interviews
- ▶ Provide in-depth analysis of SRMNCAH and midwifery funding trends, including current and projected funding requirements.

5. Activities and deliverables

An example is provided in Table 26.

Table 26. **Example activities and deliverables for consultants**

Activity	Deliverable
Preparation	
Review relevant data sources and prepare inception report for review. Inception report should include: ► availability of data and tools for primary data collection ► workplan (activities and timeline)	Draft inception report
Submit final inception report integrating comments received	Final inception report
Data collection	
Literature review of the available data on family planning financing strategies, commodity needs, SRMNCAH and midwifery donor landscape, and government-led initiatives to address resource gaps	Map of existing data on SRMNCAH and midwifery financing and existing gaps
Consultation workshop with stakeholders	Views and perspectives of stakeholders on midwifery
Interview with key stakeholders	Individual concerns and insights from stakeholders
Data entry and processing	Data set
Data analysis and reporting	
Analyse data and prepare draft report, share for input	Draft report
Integrate comments into draft report	Draft report incorporating comments
Draft report shared for validation	Draft report
Final report	Final report

Adapted from: Developing Investment Cases for Transformative Results (37)

References

1. United Nations Inter-agency Group for Child Mortality Estimation (UN IGME). Levels & Trends in Child Mortality. New York: United Nations Children's Fund (UNICEF); 2023.
2. World Health Organization. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. Geneva: World Health Organization; 2023.
3. Kruk ME, Gage AD, Arsenault C, Jordan K, Leslie HH, Roder-DeWan S, et al. High-quality health systems in the Sustainable Development Goals era: time for a revolution. *The Lancet Global Health*. 2018;6(11):e1196-e252.
4. Nove A, Friberg IK, de Bernis L, McConville F, Moran AC, Najjemba M, et al. Potential impact of midwives in preventing and reducing maternal and neonatal mortality and stillbirths: a Lives Saved Tool modelling study. *The Lancet Global Health*. 2021;9(1):e24-e32.
5. World Health Organization. Transitioning to midwifery models of care: global position paper. Geneva: World Health Organization 2024.
6. International Confederation of Midwives. Philosophy and Model of Midwifery Care. ICM; 2014.
7. Sandall J, Fernandez Turienzo C, Devane D, Soltani H, Gillespie P, Gates S, et al. Midwife continuity of care models versus other models of care for childbearing women. *Cochrane Database of Systematic Reviews*. 2024 (Issue 4. Art. No.: CD004667.).
8. United Nations Population Fund. The State of World's Midwifery 2021. New York: UNFPA; 2021.
9. International Labour Organization. International Standard Classification of Occupations: ISCO-08. 2008.
10. International Confederation of Midwives. Essential Competencies for Midwifery Practice. The Hague: International Confederation of Midwives. ICM; 2024.
11. Core Document. Definition of the midwife and scope of practice of the midwife. International Confederation of Midwives; 2023.
12. Renfrew MJ, McFadden A, Bastos MH, Campbell J, Channon AA, Cheung NF, et al. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet*. 2014;384(9948):1129-45.
13. International Confederation of Midwives. Global Standards for Midwifery Education. ICM; 2021.

14. Altman MR, Murphy SM, Fitzgerald CE, Andersen HF, Daratha KB. The cost of nurse-midwifery care: use of interventions, resources, and associated costs in the hospital setting. *Women's Health Issues*. 2017;27(4):434-40.
15. McLean KA, Souter VL, Nethery E. Expanding midwifery care in the United States: Implications for clinical outcomes and cost. *Birth*. 2023;50(4):935-45.
16. Callander EJ, Creedy DK, Gamble J, Fox H, Toohill J, Sneddon A, et al. Reducing caesarean delivery: An economic evaluation of routine induction of labour at 39 weeks in low-risk nulliparous women. *Paediatric and Perinatal Epidemiology*. 2020;34(1):3-11.
17. Koto PS, Fahey J, Meier D, LeDrew M, Loring S. Relative effectiveness and cost-effectiveness of the midwifery-led care in Nova Scotia, Canada: a retrospective, cohort study. *Midwifery*. 2019;77:144-54.
18. Mortensen B, Lieng M, Diep LM, Lukasse M, Atieh K, Fosse E. Improving Maternal and Neonatal Health by a Midwife-led Continuity Model of Care - An Observational Study in One Governmental Hospital in Palestine. *EClinicalMedicine*. 2019;10:84-91.
19. Thiessen K, Nickel N, Prior HJ, Banerjee A, Morris M, Robinson K. Maternity Outcomes in Manitoba Women: A Comparison between Midwifery-led Care and Physician-led Care at Birth. *Birth*. 2016;43(2):108-15.
20. Breman RB, Phillippi JC, Tilden E, Paul J, Barr E, Carlson N. Challenges in the Triage Care of Low-Risk Laboring Patients: A Comparison of 2 Models of Practice. *The Journal of Perinatal & Neonatal Nursing*. 2021;35(2):123-31.
21. Bagheri A, Simbar M, Samimi M, Nahidi F, Alavimajd H, Sadat Z. Comparing the Implications of Midwifery-Led Care and Standard Model on Maternal and Neonatal Outcomes during Pregnancy, Childbirth and Postpartum. *Journal of Midwifery and Reproductive Health*. 2021;9(3):2863-72.
22. Martin-Arribas A, Escuriet R, Borràs-Santos A, Vila-Candel R, González-Blázquez C. A comparison between midwifery and obstetric care at birth in Spain: across-sectional study of perinatal outcomes. *International Journal of Nursing Studies*. 2022;126:104129.
23. Fikre R, Gubbels J, Teklesilasie W, Gerards S. Effectiveness of midwifery-led care on pregnancy outcomes in low-and middle-income countries: a systematic review and meta-analysis. *BMC Pregnancy and Childbirth*. 2023;23(1):386.
24. Attanasio LB, Alarid-Escudero F, Kozhimannil KB. Midwife-led care and obstetrician-led care for low-risk pregnancies: a cost comparison. *Birth*. 2020;47(1):57-66.
25. Hailemeskel S, Alemu K, Christensson K, Tesfahun E, Lindgren H. Midwife-led continuity of care improved maternal and neonatal health outcomes in north Shoa zone, Amhara regional state, Ethiopia: A quasi-experimental study. *Women and Birth*. 2022;35(4):340-8.
26. Homer CS, Friberg IK, Dias MAB, ten Hoop-Bender P, Sandall J, Speciale AM, et al. The projected effect of scaling up midwifery. *The Lancet*. 2014;384(9948):1146-57.

27. McRae DN, Janssen PA, Vedam S, Mayhew M, Mpofu D, Teucher U, et al. Reduced prevalence of small-for-gestational-age and preterm birth for women of low socioeconomic position: a population-based cohort study comparing antenatal midwifery and physician models of care. *BMJ Open*. 2018;8(10):e022220.
28. Reeve C, Banfield S, Thomas A, Reeve D, Davis S. Community outreach midwifery-led model improves antenatal access in a disadvantaged population. *Aust J Rural Health*. 2016;24(3):200-6.
29. Callander EJ, Scarf V, Nove A, Homer C, Carrandi A, Abdullah AS, et al. Midwife-led birthing centres in Bangladesh, Pakistan and Uganda: an economic evaluation of case study sites. *BMJ Global Health*. 2024;9(3):e013643.
30. Menezes MO, Knobel R, Andreucci CB, Magalhães CG, Amorim MMR, Katz L, et al. Prenatal care for normal-risk pregnant women by obstetric nurses and midwives: cost-effectiveness from the perspective of the Supplementary Health System in Brazil. *Cad Saude Publica*. 2021;37(8):e00076320.
31. International Confederation of Midwives. Building the Enabling Environment for Midwives: a call to actions for policy makers. The Hague: ICM; 2021.
32. Boukhalfa C, Ouakhzan B, Masbah H, Acharai L, Zbiri S. Investing in midwifery for sustainable development goals in low-and middle-income countries: a cost-benefit analysis. *Cost Effectiveness and Resource Allocation*. 2024;22(1):1.
33. Friedman HS, Liang M, Banks JL. Measuring the cost-effectiveness of midwife-led versus physician-led intrapartum teams in developing countries. *Women's Health*. 2015;11(4):553-64.
34. Janssen PA, Mitton C, Aghajanian J. Costs of Planned Home vs. Hospital Birth in British Columbia Attended by Registered Midwives and Physicians. *PLOS One*. 2015;10(7):e0133524.
35. Stenberg K, Axelson H, Sheehan P, Anderson I, Gülmezoglu AM, Temmerman M, et al. Advancing social and economic development by investing in women's and children's health: a new Global Investment Framework. *The Lancet*. 2014;383(9925):1333-54.
36. High-Level Commission on Health Employment and Economic Growth. Working for health and growth: investing in the health workforce. Geneva: World Health Organization; 2016.
37. United Nations Children's Fund. Developing Investment Cases for Transformative Results. New York: UNFPA; 2021.
38. United Nations Children's Fund. South Sudan: Investment Cases Towards Ending Unmet Need for Family Planning, Preventable Maternal Deaths, and Gender-based Violence. UNFPA; 2021.
39. Nove A, Moyo NT, Bokosi M, Garg S. The Midwifery Services Framework: The process of implementation. *Midwifery*. 2018;58:96-101.

40. United Nations Population Fund. Realizing Powerful Returns. Investing in three transformative results. New York: UNFPA; 2022.
41. Every Woman Every Child. Global strategy for women's, children's and adolescents' health (2016–2030). New York: Every Woman Every Child; 2015.
42. Kanyangarara M, Chou VB, Creanga AA, Walker N. Linking household and health facility surveys to assess obstetric service availability, readiness and coverage: evidence from 17 low- and middle-income countries. *J Glob Health*. 2018;8(1):010603.
43. Bollinger LA, Sanders R, Winfrey W, Adesina A. Lives Saved Tool (LiST) costing: a module to examine costs and prioritize interventions. *BMC Public Health*. 2017;17:21-8.
44. Stenberg K, Watts R, Bertram MY, Engesveen K, Maliqi B, Say L, et al. Cost-effectiveness of interventions to improve maternal, newborn and child health outcomes: a WHO-CHOICE analysis for Eastern sub-Saharan Africa and South-East Asia. *International journal of health policy and management*. 2021;10(11):706.
45. Avenir Health. OneHealth Intervention Input Assumptions Manual. 2016.
46. Islam A, Begum F, Williams A, Basri R, Ara R, Anderson R. Midwife-led pandemic telemedicine services for maternal health and gender-based violence screening in Bangladesh: an implementation research case study. *Reproductive Health*. 2023;20(1):128.
47. Neo Y, Callander E, Mol BW, Hodges R, Palmer KR. A cost-minimisation population-based analysis of telehealth-integrated antenatal care. *The Lancet Regional Health – Western Pacific*. 2024;52.
48. Niu B, Mukhtarova N, Alagoz O, Hoppe K. Cost-effectiveness of telehealth with remote patient monitoring for postpartum hypertension. *The Journal of Maternal-Fetal & Neonatal Medicine*. 2022;35(25):7555-61.
49. Georgieva-Tsaneva G, Serbezova I, Beloeva S. Application of Virtual Reality, Artificial Intelligence, and Other Innovative Technologies in Healthcare Education (Nursing and Midwifery Specialties): Challenges and Strategies. *Education Sciences*. 2025;15(1):11.
50. Dussault G, Buchan J, Sermeus W, Padaiga Z. Assessing future health workforce needs: World Health Organization Copenhagen; 2010.
51. World Health Organization. Health labour market analysis guidebook. 2021.
52. Cometto G, Witter S. Tackling health workforce challenges to universal health coverage: setting targets and measuring progress. *Bulletin of the World Health Organization*. 2013;91:881-5.
53. Walsh FJ, Musonda M, Mwila J, Prust ML, Vosburg KB, Fink G, et al. Improving Allocation And Management Of The Health Workforce In Zambia. *Health Affairs*. 2017;36(5):931-7.
54. Berman L, Prust ML, Maungena Mononga A, Boko P, Magombo M, Teshome M, et al. Using modeling and scenario analysis to support evidence-based health workforce strategic planning in Malawi. *Human Resources for Health*. 2022;20(1):34.

55. Friedman H, Liang M. Costs of pre-service midwifery education. *State of the World's Midwifery*. 2011.
56. Corporation IF. The business of health in Africa: partnering with the private sector to improve people's lives. Washington (District of Columbia): International Finance Corporation. 2007.
57. Avenir Health. OneHealth Tool: A Tool to Support the Costing, Budgeting, Financing, and National Strategies Development of the Health Sector in Developing Countries, with a Focus on Integrating Planning and Strengthening Health Systems. Technical Notes. 2012.
58. World Health Organization. Constraints to scaling up the health millennium development goals: costing and financial gap analysis: background document for the taskforce on innovative international financing for health systems: working group 1: constraints for scaling up costs. World Health Organization; 2010.
59. Psacharopoulos G, Patrinos HA. Returns to investment in education: a decennial review of the global literature. *Education Economics*. 2018;26(5):445-58.
60. Lawn JE, Blencowe H, Waiswa P, Amouzou A, Mathers C, Hogan D, et al. Stillbirths: rates, risk factors, and acceleration towards 2030. *Lancet*. 2016;387(10018):587-603.
61. Jamison DT, Shahid-Salles SA, Jamison J, Lawn JE, Zupan J. Incorporating deaths near the time of birth into estimates of the global burden of disease. *Global burden of disease and risk factors: The International Bank for Reconstruction and Development/The World Bank*; 2006.
62. Chaaban J, Cunningham W. Measuring the economic gain of investing in girls: the girl effect dividend. *World Bank policy research working paper*. 2011(5753).
63. Viscusi WK, Aldy JE. The value of a statistical life: a critical review of market estimates throughout the world. *Journal of risk and uncertainty*. 2003;27:5-76.
64. Sheehan P, Sweeny K, Rasmussen B, Wils A, Friedman HS, Mahon J, et al. Building the foundations for sustainable development: a case for global investment in the capabilities of adolescents. *The Lancet*. 2017;390(10104):1792-806.
65. Phillips J, Millum J. Valuing Stillbirths. *Bioethics*. 2015;29(6):413-23.
66. UNFPA Arab States. Demographic Dividend 2020 [cited 25 April 2024]. Available from: <https://arabstates.unfpa.org/en/topics/demographic-dividend-6>.
67. Ashraf QH, Weil DN, Wilde J. The Effect of Fertility Reduction on Economic Growth. *Popul Dev Rev*. 2013;39(1):97-130.
68. Miller S, Abalos E, Chamillard M, Ciapponi A, Colaci D, Comandé D, et al. Beyond too little, too late and too much, too soon: a pathway towards evidence-based, respectful maternity care worldwide. *The Lancet*. 2016;388(10056):2176-92.

69. Souza JP, Gülmezoglu AM, Lumbiganon P, Laopaiboon M, Carroli G, Fawole B, et al. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004-2008 WHO Global Survey on Maternal and Perinatal Health. *BMC Medicine*. 2010;8(1):71.
70. World Health Organization. WHO recommendations: intrapartum care for a positive childbirth experience. Geneva: World Health Organization; 2018.
71. Haider MR, Rahman MM, Moinuddin M, Rahman AE, Ahmed S, Khan MM. Ever-increasing Caesarean section and its economic burden in Bangladesh. *PLOS one*. 2018;13(12):e0208623.
72. Gibbons L, Belizán JM, Lauer JA, Betrán AP, Merialdi M, Althabe F. The global numbers and costs of additionally needed and unnecessary caesarean sections performed per year: overuse as a barrier to universal coverage. *World health report*. 2010;30(1):1-31.
73. Borghi J, Fox-Rushby J, Bergel E, Abalos E, Hutton G, Carroli G. The cost-effectiveness of routine versus restrictive episiotomy in Argentina. *Am J Obstet Gynecol*. 2002;186(2):221-8.
74. Nove A, Hoope-Bender PT, Moyo NT, Bokosi M. The Midwifery services framework: What is it, and why is it needed? *Midwifery*. 2018;57:54-8.
75. Filby A, McConville F, Portela A. What Prevents Quality Midwifery Care? A Systematic Mapping of Barriers in Low and Middle Income Countries from the Provider Perspective. *PLOS One*. 2016;11(5):e0153391.
76. International Confederation of Midwives. Policy Brief: Investing in Midwives' Associations. The Hague: ICM; 2024.
77. International Confederation of Midwives. Building the Enabling Environment for Midwives: a call to action for policymakers. The Hague: ICM; 2021.





United Nations Population Fund

730 Third Avenue, New York, NY 10017

1-212-297-5000 • www.unfpa.org • @UNFPA

© UNFPA, March 2026