ICPD 30

International Conference on Population and Development

UNFPA

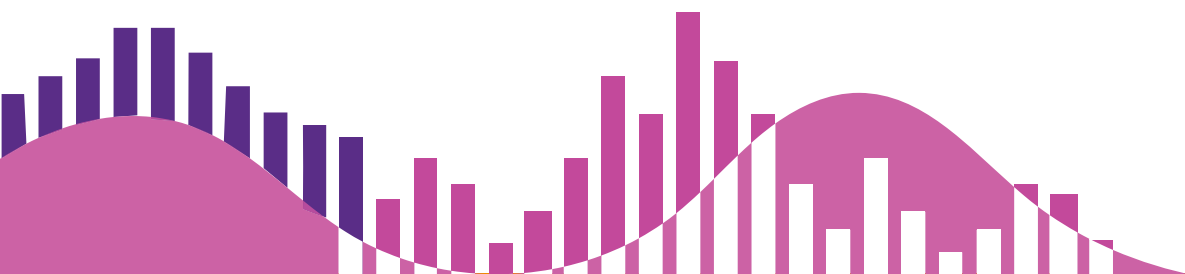# The case for investment in the three transformative results in the Arab region

ZERO
Unmet need for family planning

ZERO
Preventable maternal deaths

ZERO
Gender-based violence and harmful practices

by 2030

Acknowledgments

ZERO
Unmet need for
family planning

ZERO
Preventable
maternal deaths

ZERO
Gender-based
violence and
harmful practices

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Key messages

Ending unmet need for family planning and preventable maternal deaths

The economic return of investing in ending unmet need for family planning and preventable maternal deaths was estimated across 12 countries (Algeria, Djibouti, Egypt, Iraq, Jordan, Morocco, Palestine, Somalia, Syria, Sudan, Tunisia, and Yemen) in the Arab region that had been included in the publication conducted at the global level (Costing the Three Transformative Results, 2020).

- Overall, for every $1 spent in ending unmet need for family planning and preventable maternal deaths in 12 countries in the Arab region, $5 in returns can be expected.
- In order for these 12 countries to end unmet need for family planning and end preventable maternal deaths by 2030, an investment of an additional $7.0 billion is needed from 2022 to 2030.
- From 2022 to 2030, this investment is estimated to prevent:
    o 25.7 million unintended pregnancies
    o 73,300 maternal deaths
    o 406,000 stillbirths, and
    o 247,000 newborn deaths
- From 2022 to 2050, this investment is estimated to:
    o Generate $34.4 billion in economic benefits

Ending female genital mutilation

The economic return of investing in female genital mutilation (FGM) was estimated across 6 countries (Djibouti, Egypt, Iraq, Somalia, Sudan, and Yemen) with high FGM burden in the Arab region that had been included in the research publication conducted at the global level.

- Overall, for every $1 spent in ending FGM in six high-burden countries in the Arab region, $5.02 in returns can be expected.
- In order for these six countries to end FGM by 2030, an investment of an additional $600 million is needed from 2022 to 2030.
- From 2022 to 2030, this investment is estimated to prevent 2.3 million cases of FGM.
- From 2022 to 2050, this investment is estimated to generate $3.1 billion in economic benefits.

Ending child marriage

The economic return of investing in ending child marriage was estimated across seven countries (Djibouti, Egypt, Iraq, Morocco, Somalia, Sudan, and Yemen) in the Arab region that had been included in the research publication conducted at the global level.

- Overall, for every $1 spent in ending child marriage in seven countries in the Arab region, $35.10 in returns can be expected.
- In order for these seven countries to end child marriage by 2030, an investment of an additional $3.5 billion is needed from 2022 to 2030.
- From 2022 to 2030, this investment is estimated to prevent 4,130,000 child marriages
- From 2022 to 2050, this investment is estimated to:
    o Prevent 20,358,000 child marriages
    o Increase school completions by 73,473,000
    o Generate $503.6 billion in economic benefits

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Unmet need for
family planning

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Background

UNFPA's Global Strategic Plan was developed to accelerate attainment of three critical human-centered transformative goals, which are aligned to the Sustainable Development Goals (SDGs) and the Plan of Action of the International Conference for Population and Development (ICPD). UNFPA Arab States Regional office is similar to other UNFPA regional offices working to achieve the transformative results and meet the SDG targets. There is great variation in the maternal mortality ratio in this region, with an average ratio of 151/100,000 live births. An estimated 15% of women and girls between 15-49 years in the Arab states have an unmet need for family planning. As 2030 approaches, there is an increased sense of urgency for resources to be committed and immediate action taken to implement the required programmes to achieve these transformative results. In recognition of this, UNFPA Arab States Regional Office (ASRO) developed the Regional Intervention Action Plan (RIAP) which facilitates the operationalization of the transformative goals. In 2019 UNFPA and partners released a preliminary cumulative global price tag to achieve the three transformative results by 2030. It was estimated that achieving the three transformative results by 2030 in priority countries would cost approximately $264 billion[1]. Following that, UNFPA estimated the benefit-cost ratios for the transformative results related to ending unmet need for family planning, preventable maternal deaths, female genital mutilation and child marriage[2]. This research publication showed that investing in UNFPA's transformative results brings powerful returns by 2050:

- for every $1 spent on ending unmet need for family planning and ending preventable maternal deaths, $8.4 in returns can be expected,
- for every $1 spent on ending female genital mutilation, $10.1 in returns can be expected, and
- for every $1 spent on ending child marriage, $33.6 in returns can be expected.

Purpose

The purpose of this investment case is to estimate the benefits and costs of achieving the transformative results related to ending unmet need for family planning and preventable maternal death, and eliminating female genital mutilation and child marriage in the Arab region. This work builds on and is consistent with the methodology used in the research publication conducted at the global level, but is solely for the countries included in the Arab region.

Scope

While the Arab region includes 15 UNFPA country offices that cover 22 countries and territories in the region, this investment case only covers the 12 countries included as part of the research publication conducted at the global level on the economic returns of investing in the transformative results. It is also recognized that several countries in the Arab region are in contexts requiring humanitarian and emergency responses. The countries included in the Arab states investment case include: Algeria, Djibouti, Egypt[3], Iraq[3,4], Jordan, Morocco, Palestine[5], Somalia[5], Syria[5], Sudan[5], Tunisia, and Yemen[5].

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1   https://www.unfpa.org/publications/costing-three-transformative-results
2   https://www.unfpa.org/publications/investing-three-transformative-results-realizing-powerful-returns
3   Included in the Syria Regional Refuge Response Plan due to significant refuge population (Source: https://humanitarianaction.info/article/response-plans-overview-2023)
4   2022 Humanitarian Response Plan, but not 2023 due to "*diminishing humanitarian response and increased efforts to achieve durable solutions with and through development partners have lifted the country our o the list of the most severe humanitarian situations*"
5   2023 Humanitarian Response Plan developed by UN agencies

This regional investment case uses assumptions for developing settings. In general, costs are estimated as the sum of intervention costs for each transformative result from 2022 to 2030, using the same setof interventions required for ending unmet need for family planning and preventable maternal deaths[6], ending female genital mutilation, and ending child marriage by 2030 from the original 2019 global estimate. These costs are based on unvalidated estimates of health status, intervention coverage, etc. using globally available data for each country, and did not involve any country-led review of input assumptions for costs and impact. Estimate of benefits (i.e., the sum of the gains from investment from 2020 to 2050 in monetary terms) are captured through 2050 in terms of the costs averted due to successful interventions (e.g., preventing FGM averts costs related to obstetric complications) and socioeconomic returns (i.e., economic benefits and social benefits). Economic benefits are discounted at 3% per year and presented in 2020 US dollars.

Methodology

A.   Investing in ending unmet need for family planning and preventable maternal deaths

Scenarios

To estimate the benefit-cost ratio of investing in ending unmet need for family planning and preventable maternal deaths across the 12 Arab states, two scenarios were compared:

- **Baseline/business-as-usual,** where intervention coverage starts at the most recent estimates and is maintained at the same level over 2022 to 2030.
- **Full scale-up,** where intervention coverage increases linearly between 2022 to 2030 to achieve a 95 per cent coverage rate for maternal health care and zero unmet need for family planning by 2030.

Increasing access to family planning methods can raise the contraceptive prevalence rate and prevent unintended pregnancies, which not only results in fewer maternal deaths, stillbirths and neonatal deaths, but also reduces the cost of maternal health services. Investment in maternal health interventions not only decreases maternal mortality but also diminishes maternal morbidity and health complications associated with childbirth, which can cut health costs and avert economic events such as loss of income.

Investment

The cost of ending unmet need for family planning was estimated using the number of modern contraceptive method users from 2022 to 2030 and the unit cost per modern method user by scenario[7] These costs are based on estimates of total expenditure on family planning programmes by country published by the Track 20 project, Kaiser Family Foundation, Netherlands Interdisciplinary Demographic Institute, UNFPA and the WHO to estimate expenditures on family planning by country, which was converted to estimates of expenditure per modern method user for each country. Impacts from investment in family planning were estimated in the form of pregnancies averted, maternal deaths averted, and maternal years lived with disability averted. The Lives Saved Tool was used to estimate the cost (i.e., the cost of providing the intervention as well as costs related to infrastructure and programme management for administrative, research, training, and monitoring and evaluation) and impact (i.e., maternal and neonatal deaths averted, and stillbirths prevented) of ending preventable maternal deaths. These costs and impact estimates were obtained from the global investment case with slight modifications made to remove the cost of and maternal lives saved from the provision of safe abortion in the 11 Arab State countries where abortion is illegal. In each of these countries, the cost and impact of postabortion case management was also included.

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6   Excluding abortion which is illegal in most countries in this region
7   The cost per modern method user was estimated based on estimates of the total expenditure of family planning programmes by countries published by FP2020.

Benefits

The economic benefits of investing in family planning and maternal health interventions were considered across four domains following the framework used in "Investing in Maternal Health and Family Planning in Small Island Developing States" (UNFPA 2021):

- **Health benefits:** years of life gained from maternal deaths, stillbirths and neonatal deaths prevented
- **Workforce participation:** increases from more years of life and unintended pregnancies averted
- **Labour force productivity benefits:** average increases in years of school completed due to unintended pregnancies being averted among adolescents, which contributes to raised productivity and earnings in the workforce
- **Social benefits:** preventing maternal deaths, stillbirths and newborn deaths reduces lost years of life and maternal years lived with disability

Benefits were considered up to 2050, but only for the population cohort receiving the interventions from 2022 to 2030, not for their progeny. Some benefits are not captured immediately. For example, averting unintended pregnancies among adolescents leads to more education and increased earnings, but only once these adolescents enter the workforce.

Health benefits: years of life gained

The Lives Saved Tool (LiST) was used to estimate maternal deaths, stillbirths and child deaths averted in each year from 2022 to 2030 as a result of increased coverage of maternal health interventions. Greater family planning coverage was assumed to result in averting maternal deaths, which were calculated according to maternal mortality rates among current pregnancies, including a reduction in mortality over time due to scaling up maternal health interventions[8].

Economic benefit calculations were based on total years of life gained in each calendar year rather than from the number of deaths averted. A population model converted annual deaths averted to annual age-specific years of life gained. The population model was stratified in single-year age brackets. 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 entered the model at age zero, and maternal deaths averted entered the model according to the age-distribution of all pregnancies. As there is some debate about years of life gained from averting stillbirths[9], for this analysis year of life gained were considered for 50% of stillbirths averted, which is the global estimated percentage of stillbirths that are intrapartum[10].

In each year, the total number of people in the population model represents the years of life gained in the year they would otherwise have lived, which was used to calculate workforce and social benefits. The model captures the longer-term benefits of deaths averted in the 2022 to 2030 timeframe.

Workforce participation economic benefits

Economic benefits from increased workforce participation were calculated from years of life gained. For people aged 18-65 years, average salary was estimated as gross domestic product (GFP) per worker and then scaled for workforce participation rates among women (for maternal deaths averted) or for the whole population (for child deaths averted).

The model assumed that averting unintended pregnancies among women older than age 18 could increase workforce participation. It assumed that for the proportion of women participating in the workforce, unintended pregnancy would remove them for three months, based on maternity leave policies[11]. This economic benefit was calculated as 0.25 multiplied by GDP per worker.

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8   Except safe abortion services in all countries except Tunisia
9   Jamison et al 2006
10   Lawn et al 2016
11   AECID, 2014

Labour force productivity benefits

Reductions in unintended pregnancies from family planning services were assumed to increase average schooling obtained by girls[12].The model used estimates of the age distribution of pregnancies to calculate the share of all unintended pregnancies averted among girls under age 18. This share was assumed to lead to an average increase in education based on the expected schooling disruption as a result of pregnancy and birth. More schooling leads on average to increased lifetime earnings; each additional year in education is associated with a median 8.8% increase in per capita income[13]. GDP per worker was used as a proxy for the average wage, which was multiplied by the percentage income increase to obtain an economic benefit for each working year. These benefits were applied from the year girls turned 18 until retirement age, scaled for workforce participation rates among women.

Social benefits

Social benefits from any year of life saved, regardless of age, were calculated following methods from Stenberg et al. (2014) in which the benefit was computed as 0.5 times the average GDP per capita. The social benefit computation used the average GDP per capita for all the original 120 countries, in line with Stenberg et al. (2014). Social benefits were also calculated from estimates of years lived with disability averted.

GDP per capita is assumed to increase by 2.1, 2.5 and 1.6 per cent per year for low (Somalia, Sudan, Syria, Yemen), lower-middle (Algeria, Djibouti, Egypt, Morocco, Palestine, Tunisia), upper-middle (Iraq, Jordan) income countries, respectively[14].

B.   Investing in ending female genital mutilation

Estimating the economic benefits of investing in preventing FGM in the Arab region built upon previous work to calculate the costs of scaling up prevention programmes and the expected number of cases averted in 31 high-burden countries. These estimates informed an ambitious scale-up scenario where direct or indirect prevention programmes and legal protection, care and other services reached all communities where surveys found support for FGM surpassing 50 per cent. As part of this analysis, cases averted were estimated compared to a scenario with no programme scale-up. For the Arab countries where FGM occurs (i.e., Djibouti, Egypt, Iraq, Somalia, Sudan, and Yemen) estimates of cases averted will be converted into obstetric care costs averted, estimates of healthy life years gained and associated economic and social benefits.

Benefits from averting cases will be considered across four domains:

- **Lower disability associated with having had FGM**
- **Economic benefits from increased workforce participation,** due to gains in healthy years of life
- **Social benefits from lower rates of stillbirths and neonatal mortality,** leading to fewer lost years of life and maternal years lived with disability
- **Health care costs averted** for FGM including additional costs for immediate health consequences as well as other issues through the life cycle, including those requiring reproductive urogynecology and psychosocial care.

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12   Stenberg et al., 2014
13   Psacharopoulos and Patrinos, 2018
14   Sweeny, K., Friedman, H. S., Sheehan, P., Friedman, M., & Shi, H. (2019). A health system–based investment case for adolescent health. Journal of Adolescent Health, 65(1), S8-S15.

Health benefits: years of life gained

Women and girls subjected to FGM experience effects including dyspareunia or sexual disfunction, anxiety, higher rates of urinary tract infections and bacterial vaginosis, and obstetric complications. We will estimate the loss of healthy years of life due to FGM involved applying a disability weight to each year lived with FGM (and disability weight varying by the different types of FGM). Averting FGM is also assumed to avert associated stillbirths and neonatal deaths; these deaths will be converted to healthy years of life gained using healthy life expectancy estimates.

The lifetime number of births per woman with female genital mutilation and associated higher rates of additional stillbirths and neonatal deaths due to it were estimated. This involved applying stillbirth death rates and infant mortality rates with and without FGM to cases that could be averted. Averting cases was assumed to avert associated stillbirths and neonatal deaths. The deaths were converted to healthy years of life gained using healthy life expectancy estimates. Years of life gained were considered for 50% of stillbirths averted, which is the global estimate for stillbirths assumed to occur intrapartum.

Economic benefits

The economic benefits of averting FGM come from increased workforce participation; these were calculated based on years of life gained. Years of life gained were multiplied by average salary, estimated as GDP per the labour force, and scaled for workforce participation.

Social benefits

Social benefits followed a similar calculation to one in Stenberg et al. (2014) and for other transformative results in which the benefit will be computed as 0.5 times the population-weighted average GDP per capita across the original 120 countries included in the global investment case to calculate years lived without a disability.

Health care costs averted

Additional health care costs for women with FGM (i.e., additional costs for immediate health consequences as well as other issues through the life cycle, including those requiring reproductive urogynecology and psychosocial care) were estimated based on work by the World Health Organization and its partners.

It is recognized that benefits of programmes implemented from 2022 to 2030 will stretch beyond this period. For example, pregnancies among women who undergo FGM in 2022-2030 would in many cases take place from 2030 to 2050 since those who did not receive FGM are likely to have many of their working age years between 2030 to 2050. Accordingly, benefits were considered through 2050 but only for populations receiving interventions from 2022 to 2030.

Other inputs for the analysis are described in Table 1 and Table 2.

Table 1. Global parameters and assumptions used for economic benefit calculations

Key indicator	Value	Source / comments
Proportion of stillbirths that are intrapartum	0.50	Lawn et al.
Social benefit of life year	0.5 GDP per capita; population weighted over 120 countries in entire analysis	Stenberg et al[9]., based on 1.5 times GDP per capita for statistical value of a life year, subtracting 1.0 times GDP per capita assumed to be economic benefits
Discounting	3% per annum	
Disability weight (Type 1 FGM)[15]	0.02	DW for dyspareunia/sexual disfunction[1]
Disability weight (Type 2 FGM)	0.13	Proxy is DW for moderate anxiety
Disability weight (Type 3 FGM)	0.32	Proxy obstructed labour

Table 2. Country-specific parameters and assumptions used for economic benefit calculations

Parameters	Source	Note
GDP per capita	WDI database	Indicator of 'GDP per capita (current US$)'; value in 2020, or most recent available value were used where data in 2020 were unavailable.[2]
Proportion of women who participate in workforce	WDI database	Indicator of 'Labor force participation rate, female (% of female population ages 15+) (national estimate)'; value in 2019/2020, or most recent available value were used where data in 2020 were unavailable; where national estimate was unavailable, modelled ILO estimate in most recent year was used.
Labour force participation rate	WDI database	Indicator of 'Labor force participation rate, total (% of total population ages 15+) (national estimate)'; value in 2020/2019, or most recent available value were used where available.
Neonatal mortality rate	WDI database	Mortality rate, neonatal (per 1,000 live births) in 2019.
Stillbirth rate (stillbirths per 1,000 total births (live and stillbirths))	WHO/The global health observatory	Value in 2019
Healthcare costs per incident case per year	Tordrup, D., C. Bishop, N. Green and others, 2022. "Economic Burden of Female Genital Mutilation in 27 HighPrevalence Countries." BMJ Global Health 7: e004512. Website: doi:10.1136/ bmjgh-2020-004512.	

C. Investing in ending child marriage

Interventions to prevent child marriage involve greater access to education, especially programmes that reduce dropouts due to early marriage, as well as specific measures to delay marriage. Reducing child marriage rates was assumed to result in an increase in average years of schooling and secondary school completion. The length of schooling leads on average to higher lifetime earnings; each additional year of education boosts income. Since the employment benefits of greater education are long term, benefits were considered up to 2050.

The economic benefits from eliminating child marriage largely arise from increased schooling, leading to greater productivity and formal employment. Estimation of the benefit-cost of ending child marriage will focus on 7 countries in the ASRO16, with modelling to select an optimal set of interventions (i.e., the least cost for the greatest benefit) for each country.
Two scenarios were compared:

- **Baseline/business as usual** where intervention coverage starts at the most recent estimates of child marriage trends based on cohabitation rates from household survey data, which are maintained over 2022 to 2030.
- **Full scale-up** where interventions increase linearly over 2022 to 2030 to achieve an average 5 per cent child marriage rate for 17-year-olds by 2030.

Investments

The cost of preventing child marriage involves funding two sets of intervention programmes. One set provides economic incentives, life skills and community mobilization programmes to reducing child marriage. The other is a set of education programmes designed to keep girls in school - including improved access to school, providing "girl friendly" schools, better teaching and economic incentives to stay at school.

Benefits

Reducing child marriage rates is assumed to result in an increase in average years of schooling and secondary school completion. The length of schooling leads on average to higher lifetime earnings; each additional year of education boosts income. Since the employment benefits of greater education are long term, benefits were considered up to 2050 to capture them.

The economic benefits of investing in child marriage prevention arise from:

- **Education:** Measures to reduce school dropouts are assumed to effectively prevent child marriage and keep more girls in school.
- **Formal employment participation and productivity:** Increased formal employment and greater productivity arise from higher levels of education and secondary school completion and the private returns to schooling that accumulate with more education.

16   Djibouti, Egypt, Iraq, Morocco, Somalia, Sudan, and Yemen

The positive effects on employment were modelled through more accessible education programmes that reduce dropouts due to early marriage as well as specific interventions to delay marriage. Reduction of child marriage rates are the result of an increase in average years of schooling and secondary school completion. Completing secondary schooling is associated with a significant reduction in the probability of being in informal employment, being unemployed, or being not in the labor force relative to being in formal employment. The impact of education on the labor market state for females is significantly larger than that for males. Consequently, in the model, three factors affect the productivity of employees: increased years of schooling and hence higher secondary school completion rates, better quality schooling, and the shift from informal to formal employment.

More and better schooling can much improve the position of girls in lower income countries. But they also highlight the fact that, because their current level of education, formal employment, and productivity are so low, persistent application of the education interventions will be necessary to achieve large scale social change

As the length of schooling increases so does the average increase in lifetime earnings, with each additional year in education associated with greater per capita income. A higher level of schooling also leads to more employment in the formal sector. These are the largest components of the economic benefits from reduced child marriage. Since higher levels of education lead to increased earnings only for those who enter the workforce, labour force participation trends was estimated using age and sex specific rates for each country.

Modelling framework

The modelling framework had several components. First, it used parameters from the literature to estimate the impact of interventions on the child marriage rate as well as intervention costs. Three interventions have direct impacts, and five have indirect impacts through educational interventions that improve school attendance through reduced dropout rates. The optimal suite of interventions reduce drop out to 5% by 2030. Next, these results were included in an education model to establish the impact of reduced child marriage on educational outcomes, notably early dropouts, years of schooling and the completion of secondary schooling. For girls who stay longer in school due to educational interventions, the model assumed that reduced dropout rates occurred in the same proportion among those who would otherwise have been married or unmarried out of school, with country-specific dropout rates estimated. Finally, results from the education model were used in an employment model based on Sheehan et al. (2017) to estimate the economic benefits of better educational outcomes for girls, namely, country-specific higher productivity and access to formal employment, leading to higher GDP per labour force participant.

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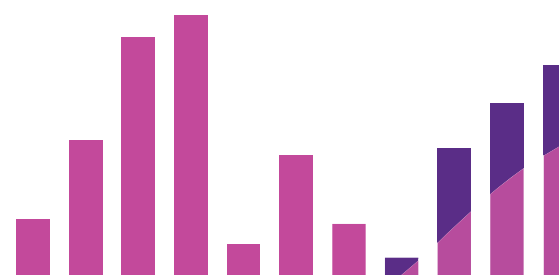
Results & discussion

A. Investing in ending unmet need for family planning and preventable maternal deaths

An additional $7.0 billion would be required over 2022-2030 for the 12 included Arab states to reach zero unmet need for family planning and 95% coverage of 29 essential maternal health interventions by 2030. The extra investment could:

- Prevent 25.7 million unintended pregnancies over 2022-2030
- Prevent 73,300 maternal deaths, 406,000 stillbirths and 247,000 newborn deaths over 2022-2030
- Generate $34.4 billion in economic benefits by 2050
- Deliver $5.0 in returns for every $1 spent

Approximately 36% of such benefits would come from averting unintended pregnancies, and 64% from avoiding maternal deaths, stillbirths and newborn deaths. Economic benefits from better health mostly come from increased workforce participation but social and educational benefits are also significant (Figure 1).

The estimated benefit-cost ratio of 5.0 is slightly lower than the global estimate of 8.4 for family planning and maternal health interventions (Figure 1). This is because in the 12 Arab states considered, workforce participation rates among women were below global averages, and hence workforce economic benefits were lower. A limitation of this and previous analyses is that the economic benefits of informal or unpaid work are not captured.
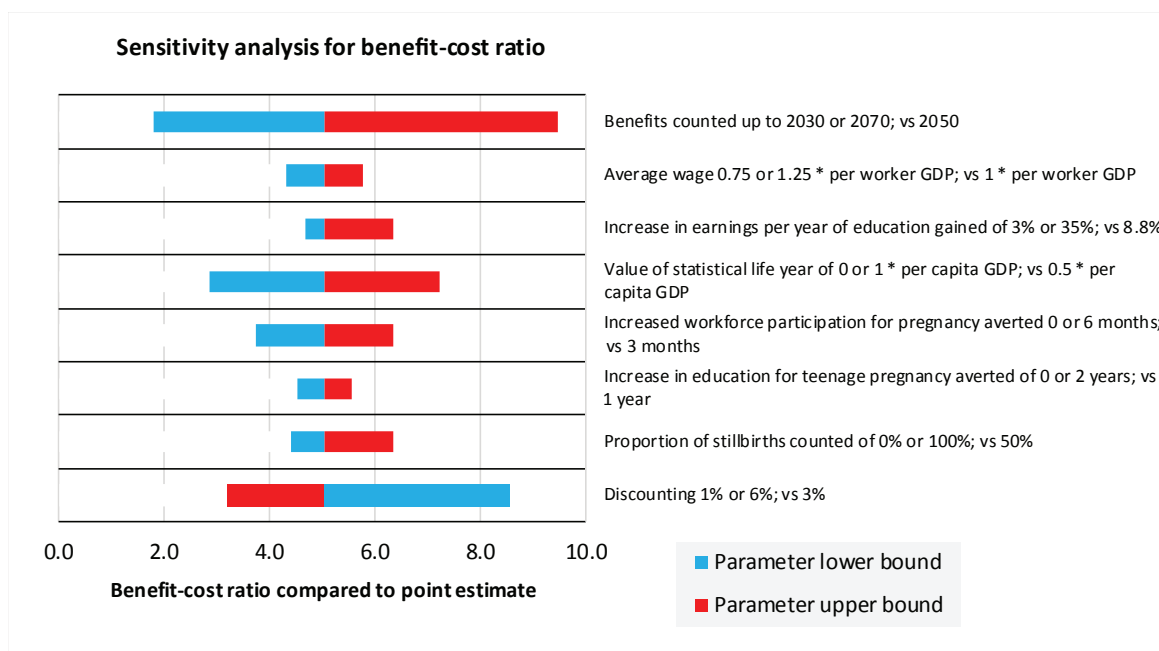
Lives saved from the scale-up of interventions continue to accrue economic benefits well into the future, with the length of the evaluation period having the greatest impact on benefit-cost ratios; in a sensitivity analysis a longer evaluation period led to better calculated value (Figure 2).

Figure 1. Total additional costs and economic benefits from scaling up the coverage of family planning and maternal health interventions from 2019 levels to reach 95 per by 2030, and zero unmet need for family planning, 3% per annum discounting
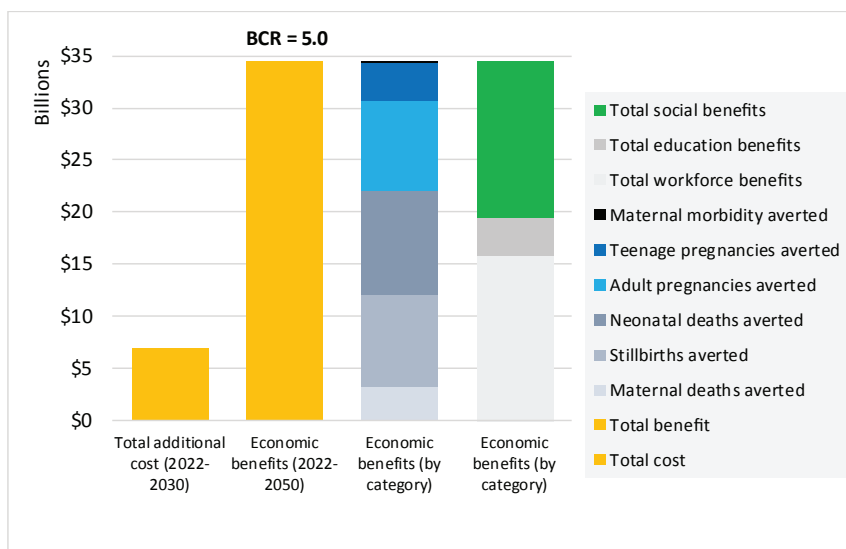
Benefits are shown in total (purple), as well as decomposed by health area (blue) or benefit area (green). Values are aggregated for Algeria, Djibouti, Egypt, Iraq, Jordan, Morocco, Palestine, Somalia, Syria, Sudan, Tunisia, and Yemen. Costs and benefits are in 2020 US$ with future years discounted at 3% per annum.

Figure 2. Sensitivity analysis of parameters for benefit-cost ratios for 12 Arab states

Sensitivity analysis for benefit-cost ratio

Benefits counted up to 2030 or 2070; vs 2050

Average wage 0.75 or 1.25 * per worker GDP; vs 1 * per worker GDP

Increase in earnings per year of education gained of 3% or 35%; vs 8.8%

Value of statistical life year of 0 or 1 * per capita GDP; vs 0.5 * per capita GDP

Increased workforce participation for pregnancy averted 0 or 6 months; vs 3 months

Increase in education for teenage pregnancy averted of 0 or 2 years; vs 1 year

Proportion of stillbirths counted of 0% or 100%; vs 50%

Discounting 1% or 6%; vs 3%

Benefit-cost ratio compared to point estimate

■ Parameter lower bound
■ Parameter upper bound

Values are aggregated for Algeria, Djibouti, Egypt, Iraq, Jordan, Morocco, Palestine, Somalia, Syria, Sudan, Tunisia, and Yemen.

B.   Investing in ending female genital mutilation

This analysis examines the cost and potential impact and associated economic and social benefits of programming to reduce FGM in high burden countries with sufficient data to run the analysis. In the Arab region, this includes Djibouti, Egypt, Iraq, Somalia, Sudan, and Yemen. An additional 600 million dollars would be required in order to scale up the FGM programmes to reach all communities with majority positive views of FGM with direct or indirect programming. This additional investment could:

- Avert an estimated 2.3 million cases of FGM
- Generate $3.1 billion in economic benefits by 2050
- Produce a benefit cost ratio of 5.02, meaning for every dollar spent, this would generate a benefit of $5.02

Approximately 47% of such benefits would come from averting FGM and associated morbidity, and 47% from avoiding stillbirths and newborn deaths that occur at higher rates in births to women who have had FGM, and the remaining 6% from healthcare costs averted. Economic benefits from better health mostly come from increased social benefits (84%) due to the neonatal deaths and stillbirths and morbidity averted, but workforce benefits are also significant (10%) (Figure 3).

The estimated benefit-cost ratio of 5.02 is lower than the global estimate of 10.1 for FGM interventions. This is because in the six Arab states considered, workforce participation rates among women were below global averages, and hence workforce economic benefits were lower. A limitation of this and previous analyses is that the economic benefits of informal or unpaid work are not captured. Additionally, fertility rates for some of these countries are lower than others included in the global analysis.

Given the uncertainty around many of the parameters in this analysis, sensitivity analysis was performed on key data inputs (Figure 4). In all cases, the BCR was still greater than 1, indicating higher returns than the investment. The biggest variation in results was seen in the use of the long-term disability weight: a low versus high long term disability weight found a BCR range from 3 to 13, implying that a greater common understanding of the impact of FGM on girls and women would benefit from more research.

Figure 3. Total additional costs and economic benefits from scaling up the coverage of FGM prevention programmes to reach all majority approval communities directly or indirectly by 2030, 3% per annum discounting
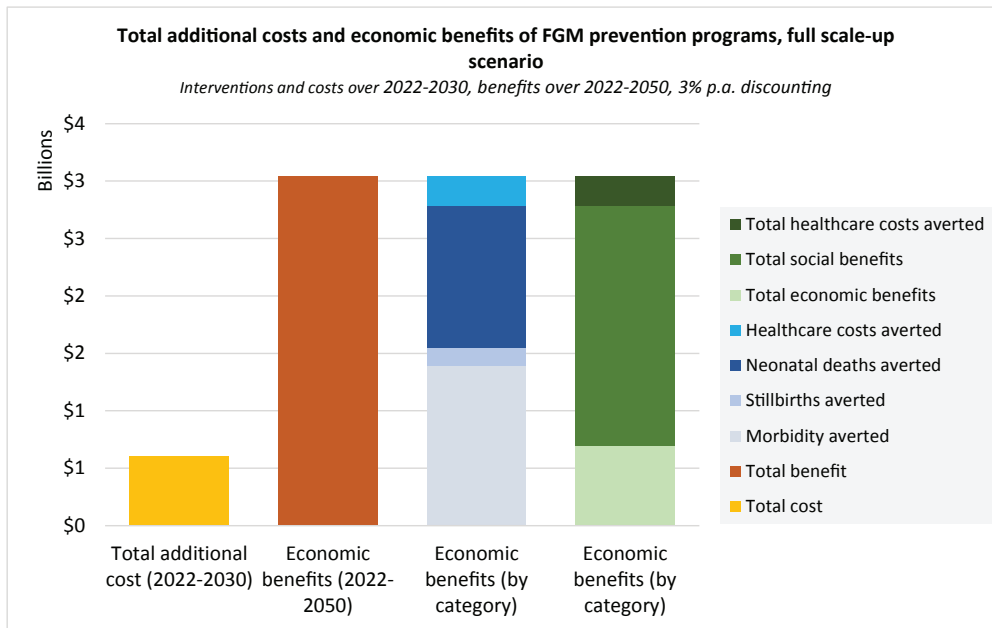
Total additional costs and economic benefits of FGM prevention programs, full scale-up scenario
Interventions and costs over 2022-2030, benefits over 2022-2050, 3% p.a. discounting

Figure 4. Sensitivity analysis of parameters for benefit-cost ratios for 6 Arab states

Sensitivity analysis for benefit-cost ratio

The case for investment in the three transformative results
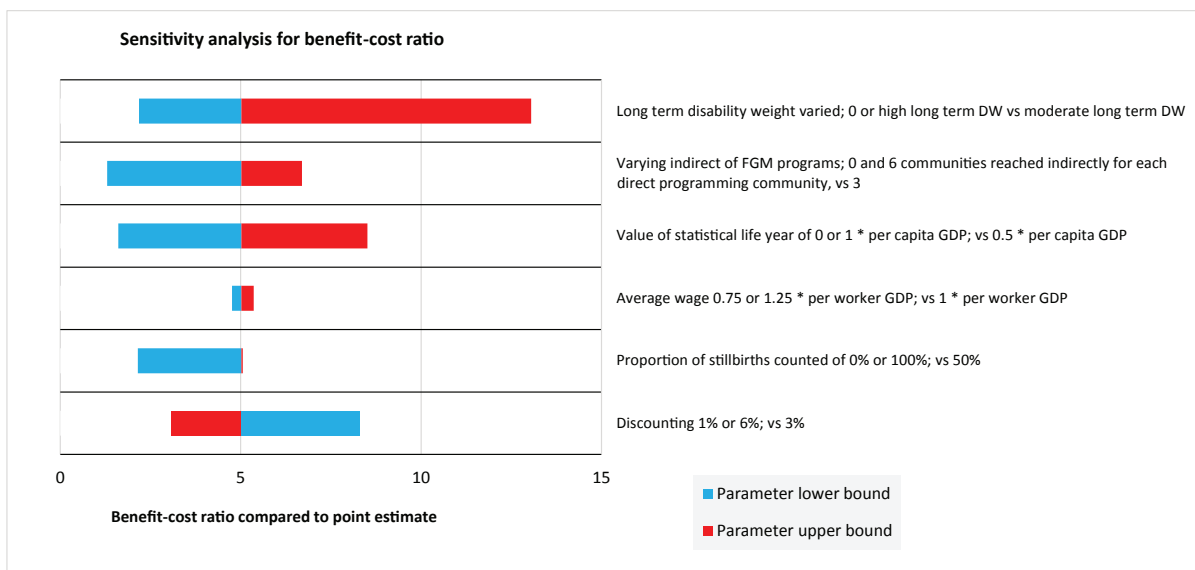
C. Investing in ending child marriage

An additional $3.5 billion would be required over 2022-2030 for the seven included Arab states to effectively eliminate child marriage (5% or below for 17-year-olds) by 2030.

Investment in interventions to reduce child marriage are projected to

- Avert 4,130,000 child marriages between 2022-2030 and 20,358,000 between 2022-2050
- Increase school completions by 73,473,000 by 2050
- Generate $503.6 billion in economic benefits by 2050
- Produce a benefit cost ratio of 35.1, meaning for every dollar spent, this would generate a benefit of $35.10

Eighty per cent of the benefits are anticipated to come in education interventions aimed at keeping girls in schools and 20% from interventions aimed directly at preventing child marriage. The economic benefits arise from increasing the rates of school completions and commensurate productivity and formal employments benefits (Figure 5, Figure 6).

The benefit cost ratio (BCR) of 35.1 by 2050 is extremely high and increases from 2.0 by 2030 and 14.7 by 2040. This increase is due to the cumulative increases in school completions and the associated cumulative increases in productivity for each cohort. The BCR is slightly higher than the aggregate figure for 70 low- and middle-income countries in previous studies as greater scope for increased rates of school completion exist in the 7 study countries.

Figure 5. Total additional costs and economic benefits from ending child marriage by 2030, 3% per annum discounting
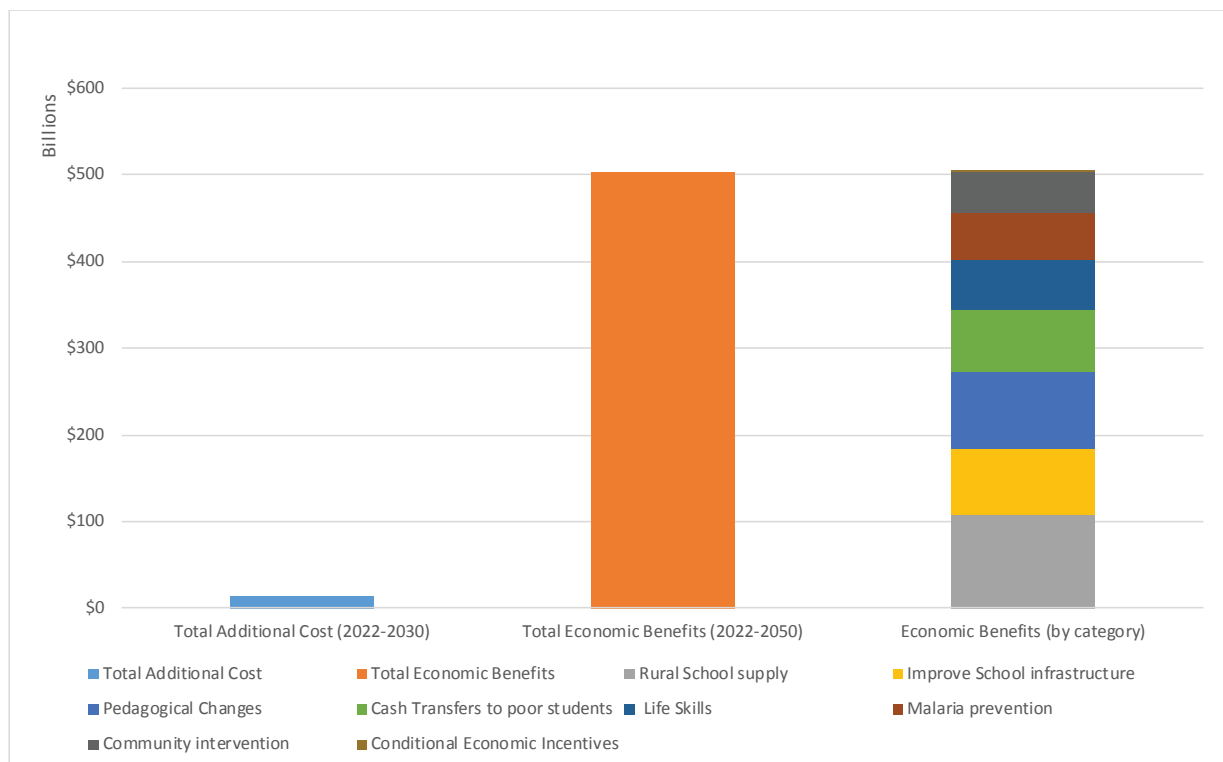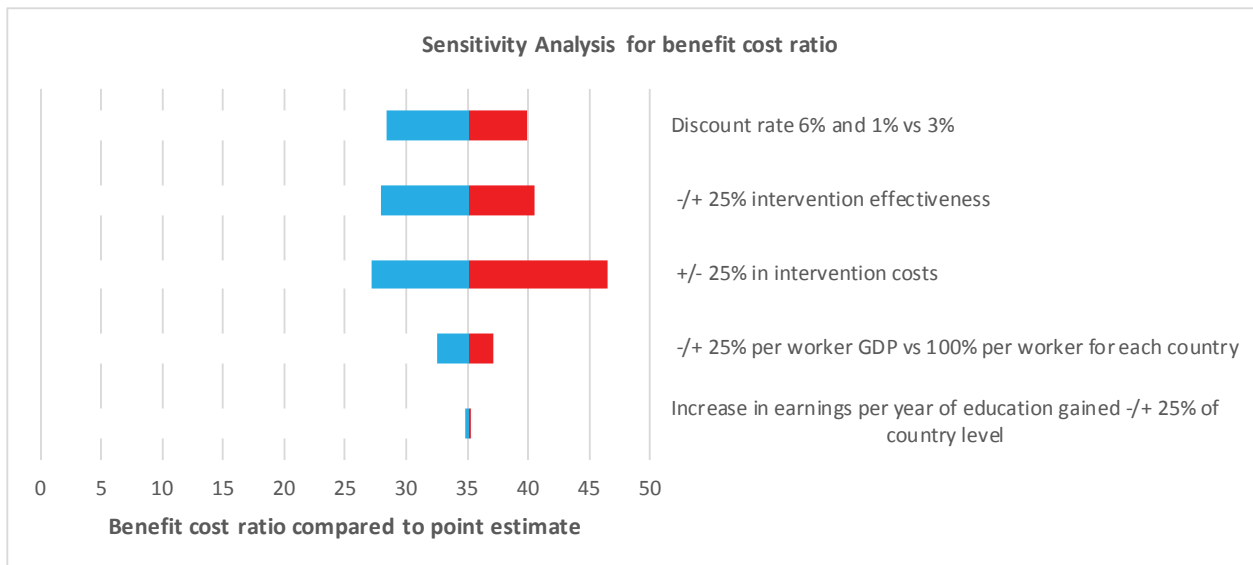
Figure 6. Sensitivity analysis of parameters for benefit-cost ratios for 7 Arab states. Values are aggregated for Djibouti, Egypt, Iraq, Morocco, Somalia, Sudan and Yemen

Sensitivity Analysis for benefit cost ratio

Discount rate 6% and 1% vs 3%

-/+ 25% intervention effectiveness

+/- 25% in intervention costs

-/+ 25% per worker GDP vs 100% per worker for each country

Increase in earnings per year of education gained -/+ 25% of country level

Benefit cost ratio compared to point estimate

Limitations

This investment case has several limitations:

- The assumptions used in this investment case assume those for a developing setting. It is recognized that the Arab region includes several countries also classified as emergency and humanitarian settings, which requires additional health system investment not reflected in this analysis. In such settings, the target population for interventions and programming might be different from that in a developing setting, the coverage of interventions might also be lower due to disruption of services or higher due to additional investment in services, the impact of interventions in these settings might not be comparable to those in developing settings due to potential quality issues associated with the delivery of the intervention, and interventions in these settings might have different cost profiles. As such, it is noted that this investment case does not reflect the full cost of investment in the transformative results in the emergency and humanitarian settings that might be the case for several countries in the Arab region and that the impacts of these interventions may reflect higher values than would be achieved in emergency and humanitarian settings.

- The costs of interventions to end unmet need for family planning and preventable maternal deaths were calculated using an ingredients-based approach and were not validated in each country included in the investment case. Also, the same intervention effect sizes were used for each country based on global literature, while in reality there may be some variations among countries. This investment case assumed that there is sufficient health workforce and health system in the countries to deliver the maternal health interventions, and did not include opportunity costs within the health sector. Finally, the additional benefits from investing in family planning are not captured here (e.g., poverty, hunger, environment, etc.).

- This analysis relied on proxies for FGM disability weights since there are no consensus estimates for these. Proxies were determined with the UNFPA FGM programme team for the year at which the operation was performed, followed by a moderate disability weight for the rest of the time through 2050. In addition, the analysis on ending FGM was relatively conservative as it did not include several outcomes (e.g., higher rates of sexually transmitted infections and HIV, and missed school as well as school withdrawal rates and difficulty re-entering education associated with FGM) due to insufficient data.

- There are a limited number of studies on which to base the cost and effectiveness of interventions to prevent child marriage. In addition, interventions evaluated in one context may not have the same results in others – including among countries in the Arab region.

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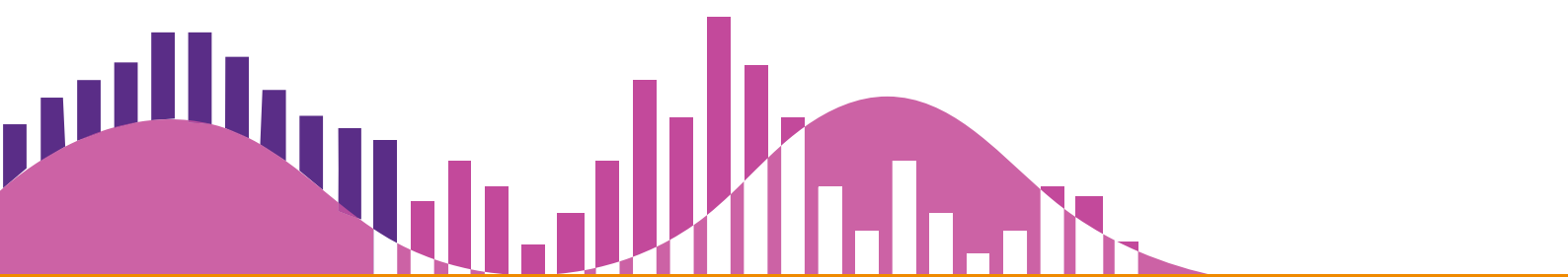The World Bank, 2021. World Development Indicators. Website: **databank.worldbank.org/source/world-development-indicators**.

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