Empowering Girls, Securing Futures:
The Investment Case for Preventing Adolescent Pregnancy and Child Marriage in South-East Asia

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UNFPA

Foreword

When a girl becomes pregnant or gets married before she is ready, her present and future radically change – and not for the better. We know too well that early pregnancy truncates a girl's education and imposes serious health risks for both the young mother and her newborn. The lack of power and equality in her marriage leaves her vulnerable to intimate partner violence and its life-threatening consequences, limits her earning potential and perpetuates cycles of disadvantage, further contributing to economic inequality and undermining societal stability.

These are among the reasons why we at UNFPA have always held that investing in girls' education, health, livelihoods and social protection is both right and smart. Such investment not only upholds girls' human rights to education, health, and equality, it also empowers them and reduces early pregnancy and child marriage. It opens doors to a healthy and productive adulthood and is foundational for societies and economies to thrive.

While such benefits have long been discussed, novel economic modelling now allows us to quantify them. **Empowering Girls, Securing Futures: The Investment Case for Preventing Adolescent Pregnancy and Child Marriage in South-East Asia** presents compelling results from five countries in South-East Asia. It finds that investments in interventions proven to support girls' capabilities would yield a benefit-cost ratio of 10 to 1. This is based on the reduction of millions of child marriages and early pregnancies, and a boost in productivity and workforce capacity. By investing in girls, we not only support them but also build stronger, more resilient societies.

At a moment of fiscal constraints and difficult choices in development planning, it is hard to imagine a better investment. The following report issues a clarion call for policymakers, investors, development practitioners, civil society and feminist groups to work together and redouble their efforts to reach girls, especially the most vulnerable. As importantly, by defining interventions that deliver the greatest impacts, the report provides guidance in making the most meaningful investment choices.

Such insights must propel us forward, past the rhetoric, at the speed and scale required. The 2030 deadline for the Sustainable Development Goals is looming. We can no longer afford to fail girls or lose their profound contributions to our societies. By prioritizing their needs and rights, we can ensure their futures—and the future of our world. We must act now, with both urgency and hope, to make a real and lasting difference.

Pio Smith

Pio Smith

Regional Director
UNFPA Asia Pacific Regional Office

Acknowledgements

This publication focuses on new research to estimate the costs and benefits associated with investing in proven, multisectoral interventions that prevent adolescent pregnancy and child marriage. It covers five South-East Asian countries: Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia and the Philippines.

It was developed under the direction of Sylvia Wong, Davide De Beni and Federica Maurizio, with overall guidance by Dr. Aleksandar Sasha Bodiroza of the UNFPA Asia-Pacific Regional Office. UNFPA wishes to thank the following researchers at the Burnet Institute who co-wrote and led the evidence review and modeling for this work: Nick Scott, Elissa Kennedy, Marie Habito and Tharindu Wickramaarachchi. UNFPA further recognizes the efforts of the following colleagues for their significant inputs: Sandra Bernklau, May Tum, Vutha Phom and Dr. Sokun Sok of UNFPA in Cambodia; Dr. Hassan Mohtasham, Dr. Sandeep Nanwani and Dr. Margaretha Sitanggang of UNFPA in Indonesia; Dr. Bakhtior Kadirov and Sabrina Khan of UNFPA in Lao People's Democratic Republic; Dr. Julitta Onabanjo, Tengku Aira Tengku Razif, Mohamad Sufian Mohamad Salleh and Shiau Yun Chong of UNFPA in Malaysia; and Dr. Leila Joudane, Jose Roi Avena, Charl Andrew Bautista, Yoon Young Lee and Lavinia Oliveros of UNFPA in the Philippines.

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Executive summary

In South-East Asia, adolescent pregnancy and child marriage share common drivers, such as social and gender norms that undervalue girls and stigmatize their sexual and reproductive health. The consequences of early pregnancies and marriages during adolescence are far-reaching, altering the life trajectories of girls by truncating education and reducing employment prospects, and weighing on economic and health outcomes.

Governments and development partners have supported many measures to address adolescent pregnancy and child marriage, but without costed calculations to help justify scaling them up. This regional study presents new research and modelling that quantifies both the health and economic benefits of investing in a set of proven interventions over the medium and longer terms. Overall, the study finds compelling evidence of such benefits, which accrue over a lifetime. Returns are even higher when investments are sustained.

The study mapped evidence on adolescent pregnancy and child marriage interventions, paying close attention to better understanding their impacts, scale and costs. It used the findings to develop an investment case for evidence-based interventions that prevent adolescent pregnancy and child marriage among girls aged 15 to 19 years old. The study focused on five countries in South-East Asia with data available at the time of analysis: Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia and the Philippines.

Interventions with sufficient evidence to inform economic modelling included in-school comprehensive sexuality education, conditional cash transfers, educational support, empowerment and life skills development, livelihood training, and community dialogues and mobilization. In aggregate, across all five countries, scaling up all these interventions to reach a 95 per cent coverage rate by 2030 would cost an additional $5 billion more than a business-as-usual scenario from 2024 to 2030.

The health and social impacts of this investment would be profound. By 2030, it would avert 1.4 million unintended pregnancies and 1.1 million child marriages among girls aged 15 to 19. By 2050, the momentum of these investments would generate $13.4 billion in economic benefits, such as greater workforce participation, productivity and earnings, with an overall benefit-cost ratio of 2.7 (Table 1). Maintaining investment in all these interventions to 2050 and considering their lifetime benefits would boost the benefit-cost ratio to 9.8.

In other words, every $1 invested, from now until 2050, would generate a return of nearly $10.

The study emphasizes the importance of a combined package of interventions, tailored to specific country contexts, even where resources are limited. Although some interventions on their own may provide a higher benefit-cost ratio compared to others, scaling up the full package of interventions will always lead to a greater total impact. The study also recognizes that other interventions could be beneficial, based on future research proving their value. A deeper dive into contextual factors, such as female labour force participation, school quality and learning, would support the further targeting and tailoring of measures to reach the most vulnerable girls.

Investments in combined interventions produce positive outcomes both for girls today and the generations that follow, benefitting whole societies and economies. In short, such investment is both the smart and the right thing to do.

Table 1 Summary of full intervention scale-up scenario for each country

Country	Additional cost 2024–2030 (million US$)	Number of unintended pregnancies averted 2024–2030	Number of child marriages averted 2024–2030	Economic benefits by 2050 from 2024–2030 investment (million US$)	Benefit-cost ratio by 2050 from 2024–2030 investment	Benefit-cost ratio from maintaining investments through 2050*
Cambodia	199	106,000	87,000	455	2.3	7.1
Indonesia	2,638	738,000	574,000	7,830	3.0	10.2
Lao People's Democratic Republic	168	268,000	81,000	640	3.8	9.3
Malaysia	394	62,000	122,000	1,586	4.0	14.7
Philippines	1,547	228,000	250,000	2,890	1.9	8.3
Aggregate	4,946	1,402,000	1,114,000	13,401	2.7	9.8

* Interventions maintained to 2050 with lifetime benefits considered.
Values were rounded before addition or division and may lead to discrepancies across rows or columns.

1. BACKGROUND AND OBJECTIVE

In South-East Asia, complex interdependencies between adolescent pregnancy and child marriage require targeted measures. In 2023, UNFPA commissioned a mapping to identify evidence-based interventions to reduce the drivers and rates of unintended adolescent pregnancy and child marriage. The study aimed to synthesize the findings of previous work, define programmes that effectively address adolescent pregnancy and child marriage, and assess impacts and costs. This synthesis made it possible to conduct economic modelling to investigate the return-on-investment of evidence-based interventions.

The following investment case considers evidence-based interventions to prevent adolescent pregnancy and child marriage among girls aged 15 to 19 in Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia and the Philippines.

The investment case estimates:

- The cost of expanding the coverage of a set of evidence-based interventions to reduce adolescent pregnancy or child marriage
- The impact of these interventions on contraceptive use, delayed sexual initiation, school enrolment or marriage rates
- The associated outcomes in terms of averting unintended pregnancies and child marriages as well as corresponding economic benefits, based on recent work where applicable (Kelly and others, 2023; Sheehan and others, 2017; UNFPA, 2021; UNFPA, 2022; Rasmussen and others, 2019)

Previous work estimated the return-on-investment of family planning for all women of reproductive age. It calculated, for example, the return from reaching zero unmet need for contraception and from providing adolescent health services through primary healthcare. Such studies only considered the supply side, however, without examining how increased coverage could be achieved in practice, through specific interventions.

This study includes and extends that work by considering demand generation interventions that could increase modern contraceptive use among adolescents, delay sexual initiation, and reduce adolescent pregnancies. These interventions include in-school comprehensive sexuality education, empowerment and life skills development, and cash transfers to boost school enrolment. The study also expands on previous analyses by looking at adolescent pregnancy and child marriage together and probing the complex interactions between them.

2. METHODS

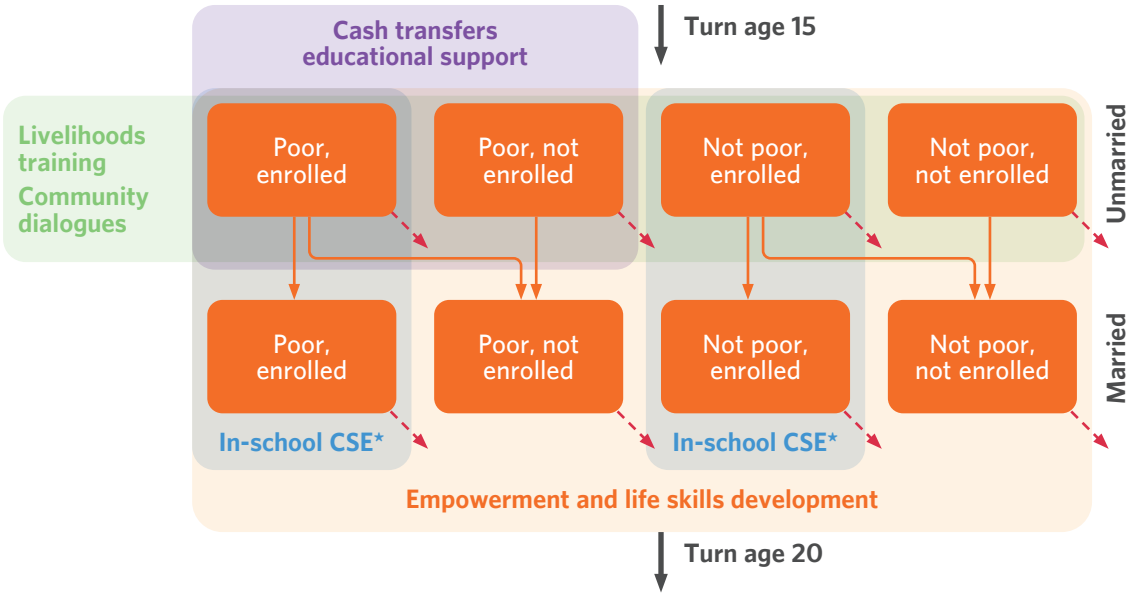
Population groups

The study used independent national models for Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia and the Philippines.

Within each country, the population of interest was girls aged 15 to 19. Data were limited for younger girls, those aged 10 to 14, for reasons including a lack of relevant questions in Demographic and Health Surveys. Fertility rates in any case tend to be low in the 10 to 14 age group in Asia, but no less critical. The population of girls aged 15 to 19 was categorized as either married or unmarried, not poor or poor (below the poverty line) and enrolled in school or not.

Each year, girls turning 15 enter the model (based on demographic projections), and girls turning age 20 leave it. The model includes a pregnancy rate for girls aged 15 to 19 that varies according to marriage, the presence of poverty and school enrolment status. The rate is linked to the unmet need for family planning and the mixed-methods contraceptive failure rate. Over time, the unmarried group can become married, which may lead to some dropping out of school (Figure 1).

Figure 1 Model schematic categorizing girls aged 15 to 19 based on marriage, poverty and school enrolment



* CSE: Comprehensive sexuality education

Note: Each group has a pregnancy rate (red dashed arrow) that varies according to marriage, poverty or school enrolment status. Interventions may be provided to some subpopulation groups – for example, in-school comprehensive sexuality education (CSE) is only provided to those enrolled in school – which influences parameters for rates of pregnancy, marriage and school enrolment, with flow-on effects to other outcomes.

Model inputs and parameters

The model includes time-varying inputs related to demographics, contraceptive use, pregnancy and marriage (Table 2).

Table 2 Categories of parameter inputs required for each country

Category	Parameter
Population	Population sizes and projections
	Poverty rates
	School enrolment rates
Pregnancy parameters	Pregnancy rate (per 1,000 girls 15 to 19)
	Relative rate of pregnancy between unmarried/married groups
	Impact of school enrolment on pregnancy rates
	Impact of poverty on pregnancy rates
Marriage parameters	Percentage of girls aged 15 to 19 who are married
	Impact of poverty on marriage rate
	Impact of school enrolment on marriage rate
	Proportion of marriages due to adolescent pregnancy
	Proportion of girls who drop out of school following marriage
Contraception parameters	Contraception prevalence rate and methods mix (unmarried and married)
	Total need and unmet need for family planning (unmarried and married)
Other parameters	Maternal mortality and stillbirth rates

Interventions

Several interventions directly reduce unmet need for contraceptives (leading to fewer pregnancies), increase school enrolment or decrease the marriage rate (Figure 1). They can also have indirect effects. For example, because rates of marriage and pregnancy are lower among those enrolled in school, interventions that increase school enrolment will also indirectly reduce pregnancies and marriages. Similarly, a proportion of marriages occurs due to adolescent pregnancy; interventions to reduce pregnancy will therefore also indirectly reduce marriage.

Interventions included in the model are in-school comprehensive sexuality education[1], cash transfers[2] and educational support[3] for those below the poverty line, empowerment and life skills development[4] for all girls aged 15 to 19, and livelihood training[5] and community dialogues[6] directed towards unmarried adolescent girls. Additional interventions could be integrated with sufficient evidence of impact and cost effectiveness.

In the model, interventions required parameters for:

- The target population (e.g., married/unmarried, poor/not poor, enrolled/not enrolled)
- Baseline coverage among girls aged 15 to 19 in the target population
- A unit cost (per person reached per year)
- An effect size (e.g., odds ratio or relative risk) for one or more factors:
  - Increased contraceptive prevalence rate
  - Delayed sexual initiation
  - Reduced marriage rate
  - Increased school enrolment

Table 3 summarizes target populations, unit costs and effect sizes as well as a mapping of evidence on adolescent pregnancy and child marriage prevention interventions. Baseline contraceptive use is assumed to be a mix of modern and traditional methods, but any increased demand satisfied is assumed to be modern methods only.

1 The comprehensive sexuality education intervention for the model focused on adolescent pregnancy. It involved teacher training and interactive lessons on human rights, gender norms, relationships, informed decision-making and consent, contraception, body development, peer pressure and parenthood.

2 This would involve conditional or unconditional cash transfers, payment of school fees, or assets such as school supplies to girls living in poverty.

3 Education support entailed tutoring in mathematics, English, computing and financial skills training for girls living in poverty.

4 Empowerment and life skills development interventions aimed to build girls' knowledge, leadership and self-efficacy, and promote positive behaviors and peer support through safe spaces with trained female mentors. Topics include sexual and reproductive health, human rights, gender equality, gender-based violence, child marriage, and other life skills in communications, negotiation, confliction resolution, critical thinking, self-management and leadership. Participants also received vocational training and courses on income generating activities.

5 Livelihoods training involved nurturing career aspirations among girls, exposure to income-earning activities, as well as skills building in computers, entrepreneurship, and other skills.

6 Community dialogues involved frequent group meetings to address social norms underlying child marriage and strategies to prevent it.

Table 3 Summary of target populations, costs and effects for interventions in this analysis

Intervention	Target population (girls aged 15 to 19)	Unit cost per person per year, inflated to 2023 US$	Effects: unmarried			Effects: married		Effects: school enrolment/ retention
			Demand met/ contraceptive prevalence rate	No demand/ delayed sexual initiation	Marriage	Demand met/ contraceptive prevalence rate	No demand/ delayed sexual initiation	
School-based comprehensive sexuality education (CSE)	Enrolled	3.74						
			RR=1.48			RR=1.4		
				OR=2.79				
Empowerment and life skills development	All (enrolled and not enrolled)	40.75						
			RR=1.504			RR=1.504		
					RR=0.69			
								OR=1/0.84
Conditional cash/asset transfers*	Below poverty line	77.78 (Cambodia), 87.50 (Indonesia), 100.00 (Lao People's Democratic Republic), 116.67 (Malaysia)*, 110.53 (Philippines)						
				RR=1.38				
					RR=0.56			
								RR=1/0.46
Educational support	Below poverty line	56.50			RR=0.69			OR=1/0.86
Livelihood training	Unmarried	56.50						
			RR=1.133					
					OR=0.767			OR=1/0.84
Community dialogue	Unmarried	18.00						
			RR=1.31					
					RR=0.33			

Sources: UNFPA and Burnet Institute, 2023a; Taylor and others, 2014; Ramírez-Villalobos and others, 2021; Amin and others, 2016; Bandiera and others, 2012; Mehra and others, 2018; Austrian and others, 2022; Baird, McIntosh and Özler, 2011; Erulkar and Medhin, 2017; Baird and others, 2010; Jensen, 2012; Diez and others, 2020.

Notes: * Intervention was per household; costs per person were calculated across settings by adjusting for household sizes. The benefit-cost ratio of cash transfers is likely underestimated. The full costs are included but not the full benefits since this intervention has impacts beyond adolescent pregnancy and child marriage; these exceed the scope of this analysis (e.g., reducing poverty or improving nutrition and other health outcomes).

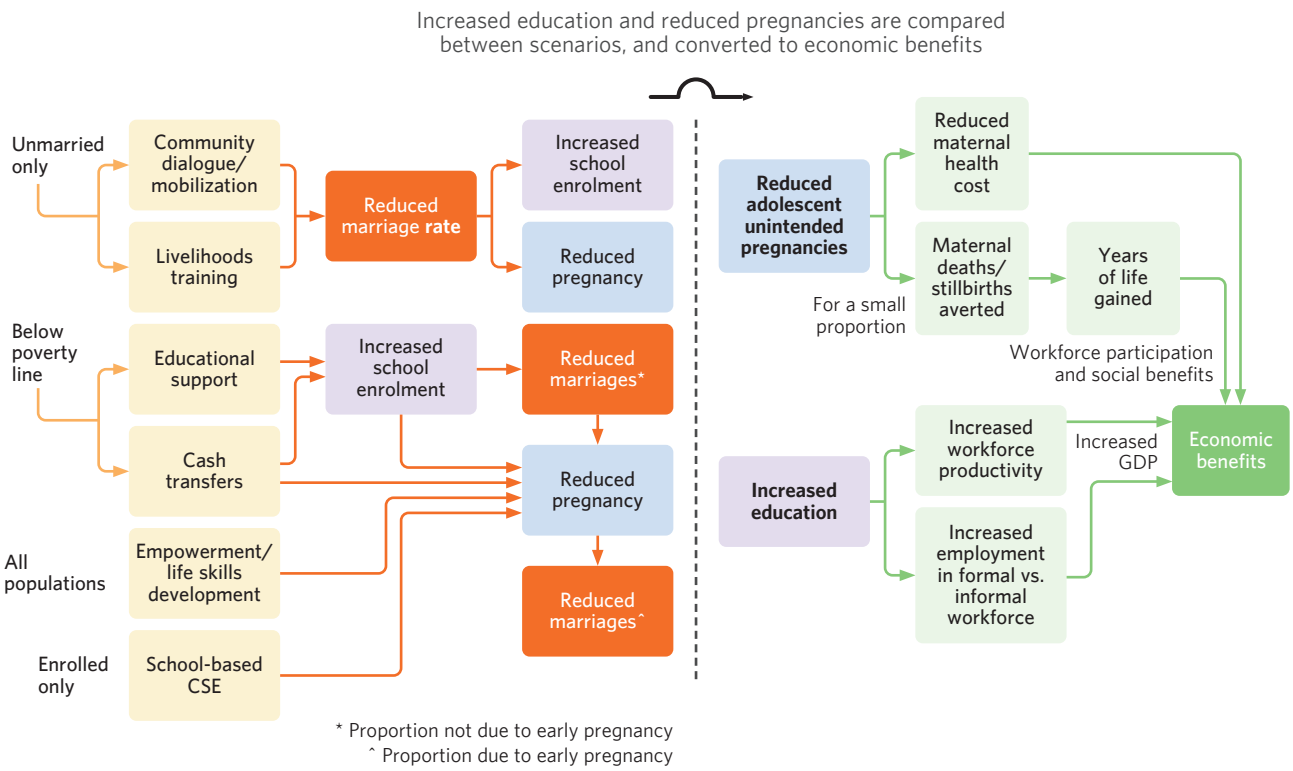
Scenarios

Several scenarios were considered for each country from 2024 to 2030:

1. **Baseline:** assuming no changes in intervention coverage
2. **Individual interventions scaled up:** Each in isolation from 2024, reaching 95 per cent of the target population by 2030
3. **All interventions scaled up:** From 2024, reaching 95 per cent of the target population by 2030.

Figure 2 models the relationships among interventions, improved outcomes (reduced adolescent pregnancy and child marriage, and increased school enrolment) and economic benefits.

Figure 2 The health and economic benefits of interventions



Health outcomes

For each scenario, and for both individual and all interventions, the main outcomes compared to the baseline are the number of unintended adolescent pregnancies and child marriages averted from 2024 to 2030 among girls aged 15 to 19. Secondary outcomes include lower numbers of maternal deaths and stillbirths as a result of fewer unintended pregnancies and increased school enrolment.

Costs

The economic costs of interventions were considered from the perspective of service provision from 2024 to 2030. Presented in 2023 United States dollars and discounted at 3 per cent per annum, the cost for each year was calculated as the unit cost multiplied by coverage. The costs of contraception for each scenario were estimated using an ingredients-based approach, based on an estimated number of users and a methods mix. For married and unmarried population groups, costs were based on estimates of the number of users, the methods mix and the unit cost per person per year for each method (calculated from the "Lived Saved Tools" or LiST, including commodities and consumables, human resources, training and overhead costs).

Economic benefits

Health benefits from unintended adolescent pregnancies and child marriages averted were converted to economic benefits across the following domains (Kelly and others, 2023; Sheehan and others, 2017; UNFPA, 2021; UNFPA, 2022; Rasmussen and others, 2019):

1. **Direct costs averted:** Reduced cost of antenatal and delivery care due to averting unintended pregnancies.
2. **Education and workforce productivity:** The average increase in years of school completed due to averting unintended pregnancies, leading to increased future productivity and lifetime earnings.
3. **Workforce participation:** Increased participation due to gains in years of life, based on fewer unintended pregnancies multiplied by the maternal mortality ratio, and reduced time out of the workforce due to unintended pregnancies.
4. **Workforce productivity:** Prevention of child marriages leading to greater education, which increases productivity and earnings as well as the likelihood of being in formal instead of informal employment.
5. **Social:** Disability-adjusted life years averted are converted to economic benefits, from mortality (a small percentage of unintended pregnancies) averted. In other words, this would be the benefits from years of life gained from maternal deaths averted when unintended pregnancies are also averted (based on the maternal mortality ratios).

Total economic benefits were calculated based on the difference in outcomes between the scaled-up and baseline scenarios. Benefits were calculated up to 2050 for the cohort receiving the interventions from 2024 to 2030.

A sensitivity analysis further assessed the benefit-cost ratio based on maintaining interventions at a 95 per cent coverage rate until 2050 and considering lifetime benefits or the entire future trajectories of girls receiving interventions from 2024 to 2050.

3. NATIONAL RESULTS

3.1 Cambodia

In Cambodia, 19 per cent of girls aged 15 to 19 are married (National Institute of Statistics, Ministry of Health and ICF, 2023) The adolescent pregnancy rate is 48 per 1,000 girls aged 15 to 19. The unmet need for family planning is 18.8 per cent, and among unmarried and married adolescents, the contraception prevalence rates are 28.8 per cent and 40.9 per cent, respectively (ibid.).

The baseline scenario was estimated to cost $58.7 million from 2024 to 2030 (discounted), with 178,789 unintended pregnancies and 172,938 child marriages (Table 4, Figures 3 and 4). When interventions were scaled up in isolation, they influenced different outcomes, depending on the target population and effect parameters (Table 4).

- Total impact: Empowerment and life skills development had the greatest total impact in preventing unintended pregnancies; it was second best in preventing child marriages. This result was influenced by its effectiveness and availability to everyone in the model. Community dialogues had the greatest impact in preventing child marriages in our model.

- Affordability: In-school comprehensive sexuality education had the lowest total costs, followed by educational support. Empowerment and life skills development had the highest total costs, largely due to its greater target population.

- Maintaining individual interventions through 2050 would result in benefit-cost ratios ranging from 4.2 for livelihood training to 20.4 for community dialogues.

Scaling up all interventions together from 2024 to 2030 would cost an additional $198.5 million compared to the baseline. This would avert 105,646 unintended pregnancies, 87,417 child marriages, 208 maternal deaths and 1,099 stillbirths. By 2050, the economic benefit would be $455.1 million, with a benefit-cost ratio of 2.3. Maintaining all interventions until 2050 and considering lifetime benefits would increase the ratio to 7.1.

Table 4 Cambodia: Results summary from scenarios

Scenario	Total intervention cost 2024-2030* (US$)	Number of unintended pregnancies	Number of child marriages			
Baseline	58,725,534	178,789	172,938			
	Total additional intervention cost 2024-2030 (US$)	**Unintended pregnancies averted 2024-2030**	**Child marriages averted 2024-2030**	**Economic benefits by 2050 from 2024-2030 investment (US$)**	**Benefit-cost ratio by 2050 from 2024-2030 investment**	**Benefit-cost ratio from maintaining investments through 2050****
In-school comprehensive sexual education	4,799,918	8,028	269	20,763,792	4.3	10.5
Cash transfers#	13,256,349	2,844	7,875	35,358,349	2.7	14.0
Empowerment and life skills development	93,264,206	81,505	24,957	244,723,412	2.6	7.3
Educational support	6,608,523	470	5,016	11,380,742	1.7	6.2
Livelihood training	60,745,737	8,427	18,019	60,456,332	1.0	4.2
Community dialogues	26,117,915	21,165	54,944	131,134,700	5.0	20.4
Full scale-up^	198,512,779	105,646	87,417	455,119,230	2.3	7.1

* Costs include interventions as well as contraception.

** Interventions maintained to 2050 with lifetime benefits considered.

The benefit-cost ratio of cash transfers is likely underestimated. Full costs are included but not full benefits, since this intervention has impacts beyond adolescent pregnancy and child marriage that were beyond the scope of this analysis (e.g., reducing poverty, improving nutrition and other health outcomes).

^ A full scale-up is not equal to the sum of individual scale-up scenarios due to model dynamics and interactions among interventions.

Figure 3 Cambodia: Impacts of scaling up all interventions together compared to the baseline

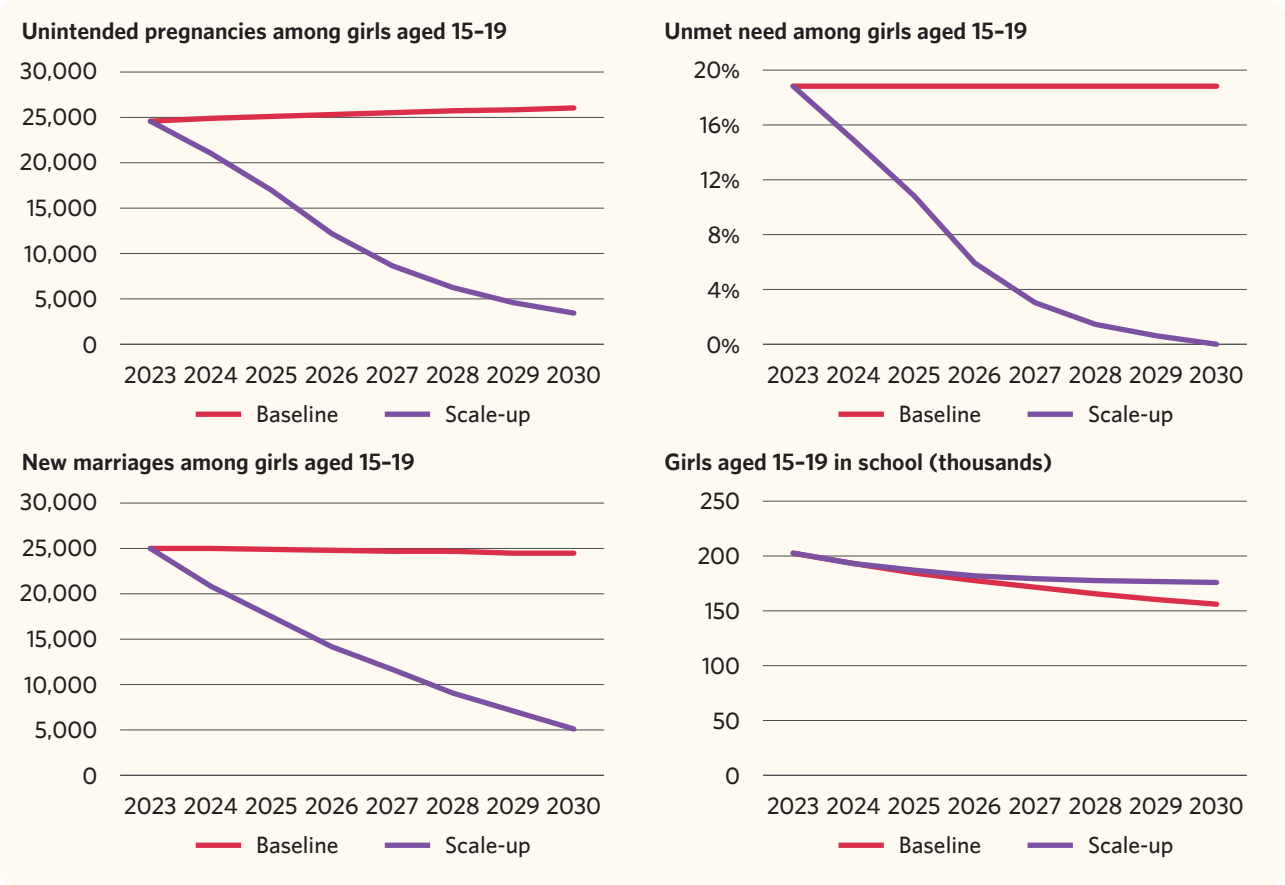
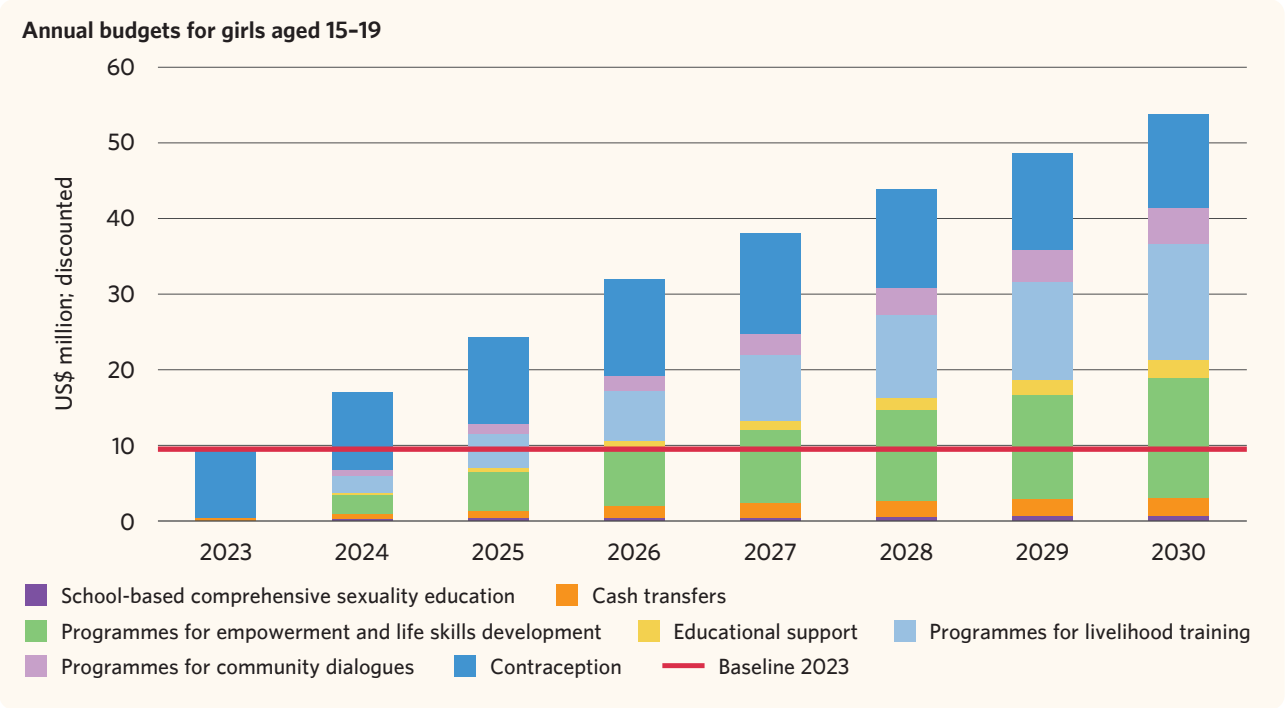


Figure 4 Cambodia: Annual cost of the baseline and full intervention scale-up scenarios



Total costs are in 2023 United States dollars, discounted at 3 per cent per annum

3.2 Indonesia

In Indonesia, 16 per cent of girls aged 15 to 19 are married (National Population and Family Planning Board, 2018). The adolescent pregnancy rate is 30.5 per 1,000 girls aged 15 to 19 (Kelly and others, 2023). There is an 8.5 per cent unmet need for family planning, and among unmarried and married adolescents, the contraceptive prevalence rates are 4.4 per cent and 45.2 per cent, respectively (National Population and Family Planning Board, 2018).

The baseline scenario was estimated to cost $604.5 million from 2024 to 2030 (discounted), with 1,305,091 unintended pregnancies and 1,106,164 child marriages (Table 5, Figures 5 and 6). When interventions were scaled up in isolation, they influenced different outcomes, depending on the target population and effect parameters (Table 5).

- Total impact: Empowerment and life skills development had the greatest total impact in terms of preventing unintended pregnancies; it was second best in preventing child marriages. This result was influenced by both its effectiveness and availability to everyone in the model. Community dialogues had the greatest impact on preventing child marriages in our model.

- Affordability: Educational support had the lowest total costs, followed by in-school comprehensive sexuality education. Empowerment and life skills development had the highest total cost, largely due to its greater target population.

- Maintaining individual interventions through 2050 would result in benefit-cost ratios ranging from 5.8 for livelihood training to 46.0 for community dialogues.

Scaling up all interventions together would cost an additional $2.6 billion from 2024 to 2030, compared to the baseline. This would avert 738,268 unintended pregnancies, 573,788 child marriages, 1,786 maternal deaths and 7,368 stillbirths. By 2050, the economic benefit would be $7.8 billion, with a benefit-cost ratio of 3.0. Maintaining all interventions until 2050 and considering lifetime benefits would increase the ratio to 10.2.

Table 5 Indonesia: Results summary from scenarios

Scenario	Total intervention cost 2024–2030* (US$)	Number of unintended pregnancies	Number of child marriages			
Baseline	604,696,204	1,305,091	1,106,164			
	Total additional intervention cost 2024–2030 (US$)	**Unintended pregnancies averted 2024–2030**	**Child marriages averted 2024–2030**	**Economic benefits by 2050 from 2024–2030 investment (US$)**	**Benefit-cost ratio by 2050 from 2024–2030 investment**	**Benefit-cost ratio from maintaining investments through 2050****
In-school comprehensive sexual education	55,678,720	68,367	1,421	317,198,336	5.7	12.2
Cash transfers#	204,302,391	36,368	57,385	642,949,826	3.1	11.5
Empowerment and life skills development	1,097,788,094	561,541	162,199	3,723,644,054	3.4	9.6
Educational support	46,236,818	2,308	38,656	284,113,428	6.1	21.1
Livelihood training	961,221,709	30,862	118,935	1,101,181,524	1.1	5.8
Community dialogues	310,049,283	75,108	357,285	2,425,490,096	7.8	46.0
Full scale-up^	2,638,139,758	738,268	573,788	7,830,440,682	3.0	10.2

* Costs include interventions as well as contraception.

** Interventions maintained to 2050 with lifetime benefits considered.

The benefit-cost ratio of cash transfers is likely underestimated. Full costs are included but not full benefits, since this intervention has impacts beyond adolescent pregnancy and child marriage that were beyond the scope of this analysis (e.g., reducing poverty, improving nutrition and other health outcomes).

^ A full scale-up is not equal to the sum of individual scale-up scenarios due to model dynamics and interactions among interventions.

Figure 5 Indonesia: Impacts of scaling up all interventions together compared to the baseline

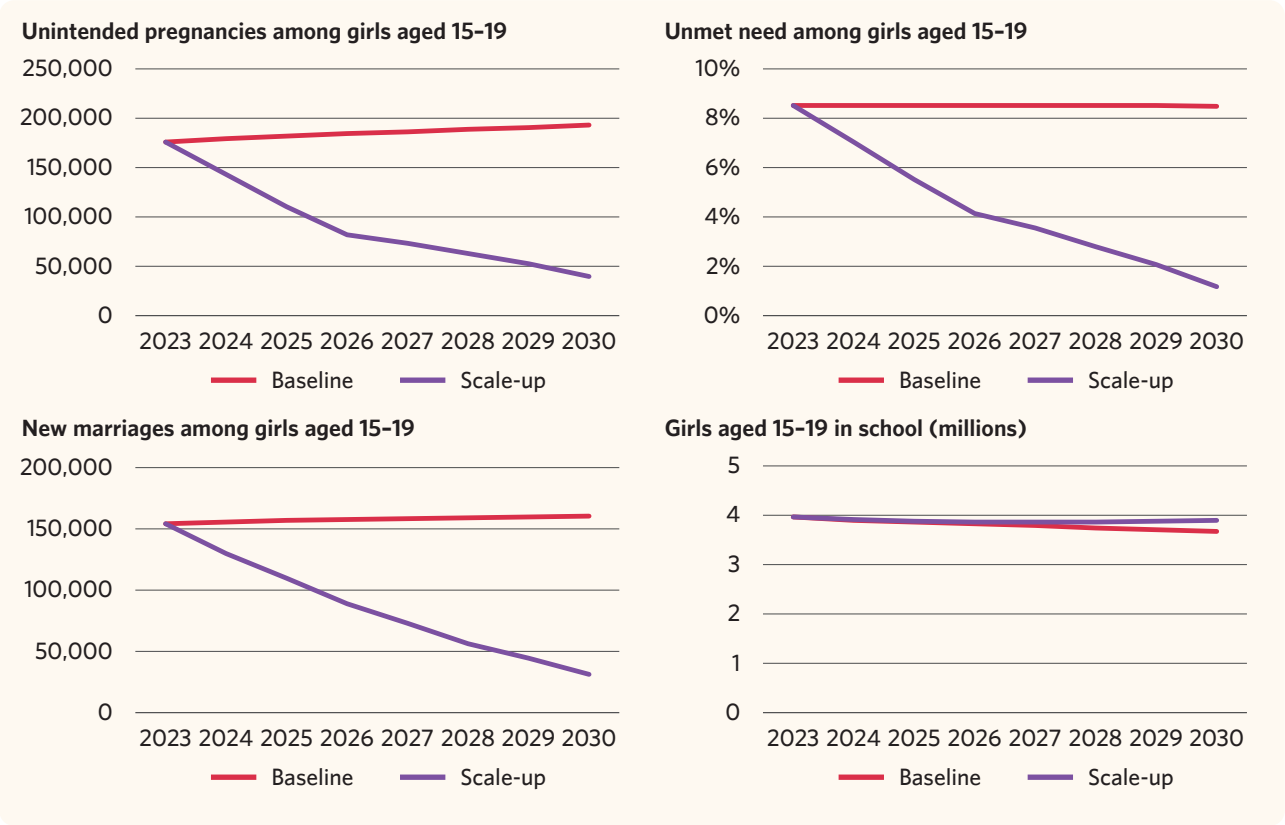
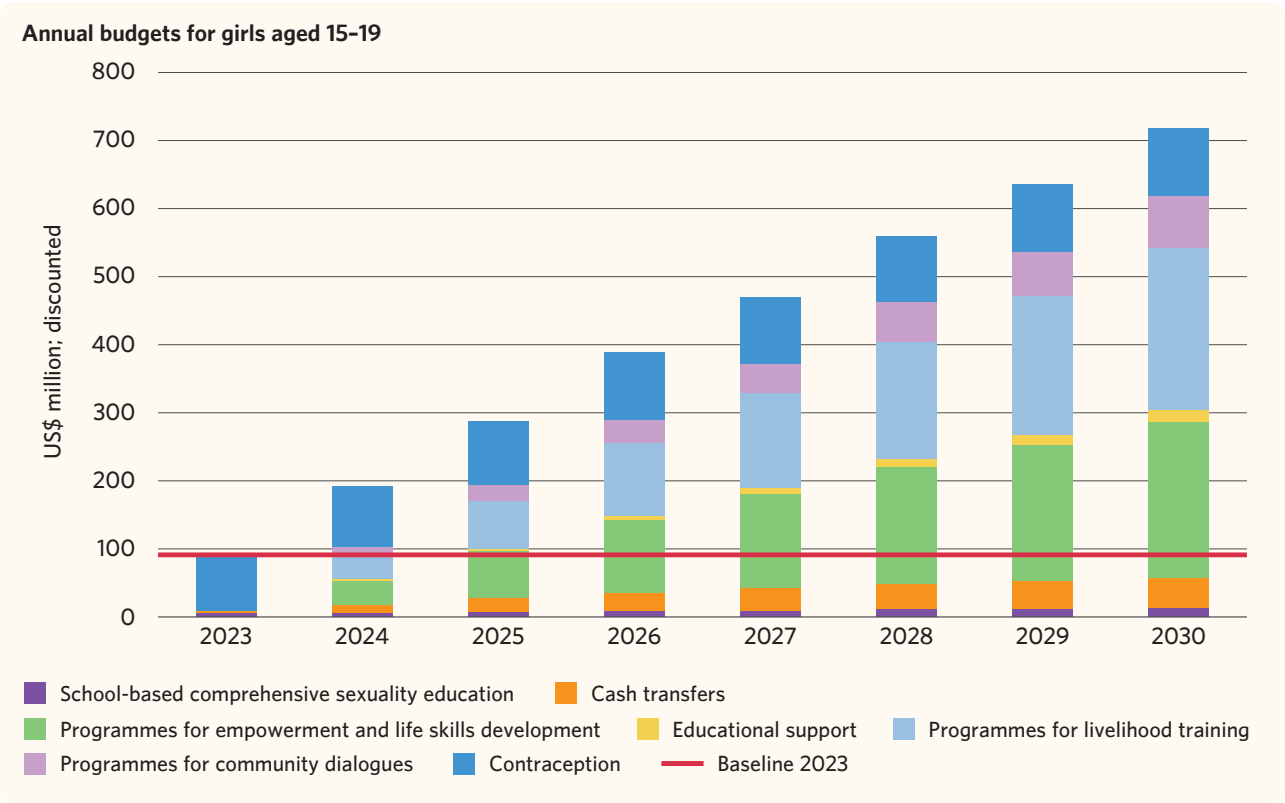


Figure 6 Indonesia: Annual cost of the baseline and full intervention scale-up scenarios



Total costs are in 2023 United States dollars, discounted at 3 per cent per annum

3.3 Lao People's Democratic Republic

In Lao People's Democratic Republic, 30.5 per cent of girls aged 15 to 19 are married. The adolescent pregnancy rate is 76 per 1,000 girls aged 15 to 19 (WHO, 2023). The unmet need for family planning is 17.6 per cent, and among unmarried and married adolescents, the contraceptive prevalence rates are 14.1 per cent and 32.0 per cent, respectively (Lao Statistics Bureau, 2018).

The baseline scenario was estimated to cost $44.7 million from 2024 to 2030 (discounted), with 454,430 unintended pregnancies and 144,182 child marriages (Table 6 and Figures 7 and 8). When interventions were scaled up in isolation, they influenced different outcomes, depending on their target population and effect parameters (Table 6).

- Total impact: Empowerment and life skills development had the greatest total impact in terms of preventing unintended pregnancies; it was second best for preventing child marriages. This result was influenced by both its effectiveness and availability to everyone in the model. Community dialogues had the greatest impact on preventing child marriages in our model.

- Affordability: In-school comprehensive sexuality education had the lowest total cost followed by educational support. Empowerment and life skills development had the highest total cost, largely due to its greater target population.

- Maintaining individual interventions through 2050 would result in benefit-cost ratios ranging from 4.0 for educational support to 29.8 for in-school comprehensive sexuality education.

Scaling up all interventions together would cost an additional $168 million from 2024 to 2030 compared to the baseline. This would avert 267,501 unintended pregnancies, 81,141 child marriages, 431 maternal deaths and 4,815 stillbirths. By 2050, the economic benefit would be $640 million, with a benefit-cost ratio of 3.8. Maintaining all interventions until 2050 and considering lifetime benefits would increase the ratio to 9.3.

Table 6 Lao People's Democratic Republic: Results summary from scenarios

Scenario	Total intervention cost 2024–2030* (US$)	Number of unintended pregnancies	Number of child marriages			
Baseline	44,652,990	454,430	144,182			
	Total additional intervention cost 2024–2030 (US$)	Unintended pregnancies averted 2024–2030	Child marriages averted 2024–2030	Economic benefits by 2050 from 2024–2030 investment (US$)	Benefit-cost ratio by 2050 from 2024–2030 investment	Benefit-cost ratio from maintaining investments through 2050**
In-school comprehensive sexual education	5,073,094	40,166	141	67,927,606	13.4	29.8
Cash transfers#	34,315,183	24,962	18,978	88,978,397	2.6	9.2
Empowerment and life skills development	64,542,387	200,111	19,588	373,159,370	5.8	13.7
Educational support	13,063,735	7,828	11,507	23,664,319	1.8	4.0
Livelihood training	39,354,439	15,348	14,287	58,661,765	1.5	5.0
Community dialogues	14,769,800	38,562	43,790	88,900,045	6.0	20.7
Full scale-up^	167,996,820	267,501	81,141	639,789,431	3.8	9.3

* Costs include interventions as well as contraception.

** Interventions maintained to 2050 with lifetime benefits considered.

The benefit-cost ratio of cash transfers is likely underestimated. Full costs are included but not full benefits, since this intervention has impacts beyond adolescent pregnancy and child marriage that were beyond the scope of this analysis (e.g., reducing poverty, improving nutrition and other health outcomes).

^ A full scale-up is not equal to the sum of individual scale-up scenarios due to model dynamics and interactions among interventions.

Figure 7 Lao People's Democratic Republic: Impacts of scaling up all interventions together compared to the baseline

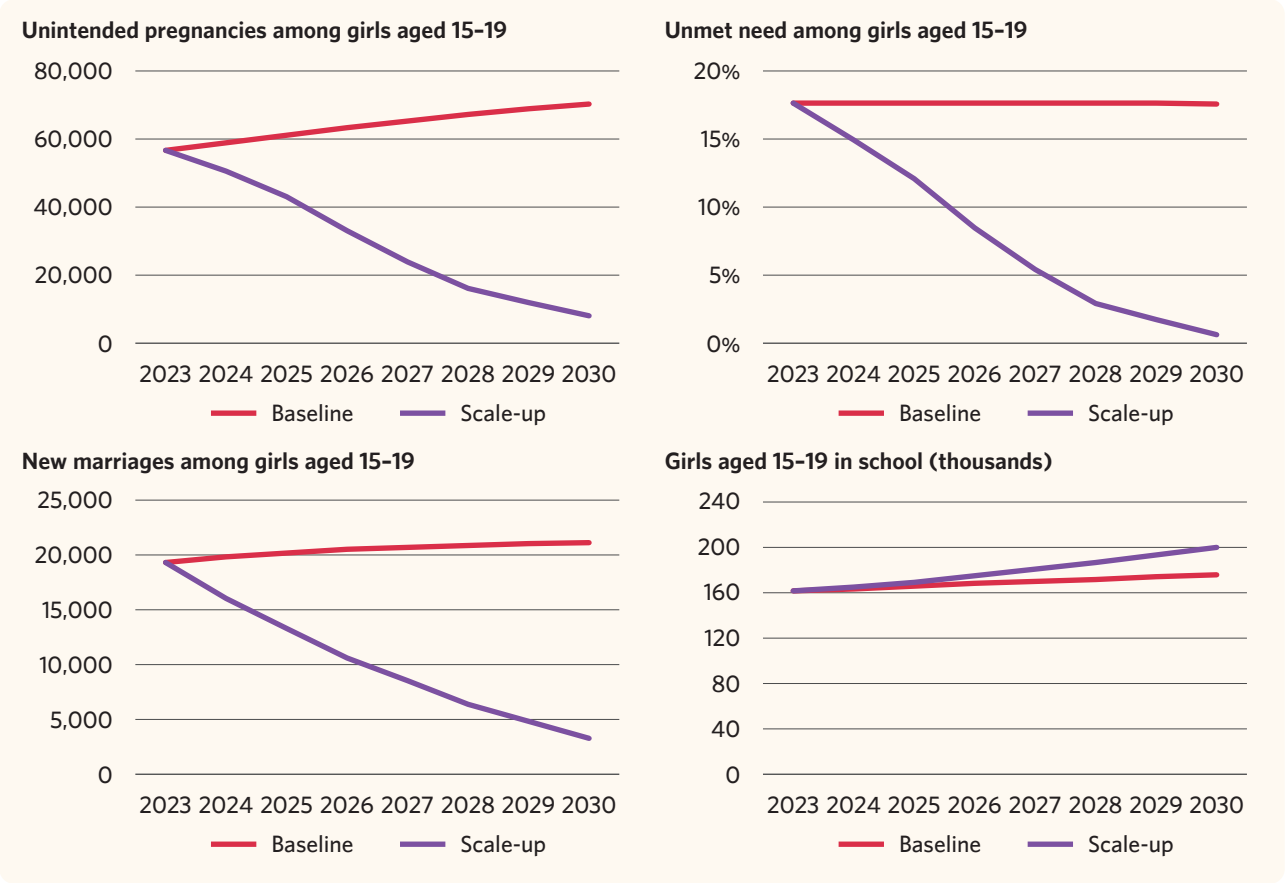
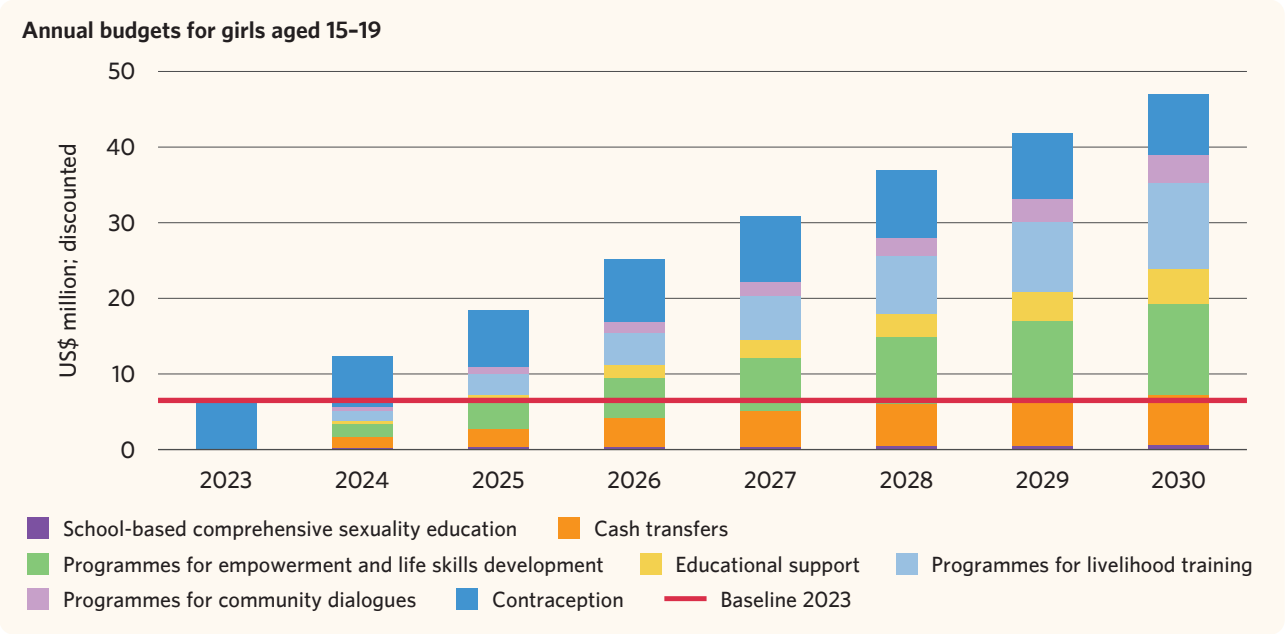


Figure 8 Lao People's Democratic Republic: Annual cost of the baseline and full intervention scale-up scenarios



Total costs are in 2023 United States dollars, discounted at 3 per cent per annum

3.4 Malaysia

In Malaysia, an estimated 20 per cent of girls aged 15 to 19 are married (UNICEF, 2020). The adolescent pregnancy rate is 28 per 1,000 girls aged 15 to 19 (Nagandla and Kumar, 2020). There is an 8.2 per cent unmet need for family planning, and among unmarried and married adolescents, the contraceptive prevalence rates are 1.5 per cent and 40.7 per cent, respectively (Ova, 2023 and UNFPA, 2022).

The baseline scenario was estimated to cost $95.9 million from 2024 to 2030 (discounted), with 176,267 unintended pregnancies and 250,419 child marriages (Table 7 and Figures 9 and 10). When interventions were scaled up in isolation, they influenced different outcomes, depending on the target population and effect parameters (Table 7).

- Total impact: Empowerment and life skills development had the greatest total impact in terms of preventing unintended pregnancies; it was second best in preventing child marriages. This was influenced by both its effectiveness and availability to everyone in the model. Community dialogue had the greatest impact on preventing child marriages in our model.

- Affordability: Educational support had the lowest total cost followed by in-school comprehensive sexuality education. Empowerment and life skills development had the highest total cost, largely due to its greater target population.

- Maintaining individual interventions through 2050 would result in benefit-cost ratios ranging from 6.2 for in-school comprehensive sexuality education to 90.0 for community dialogues.

Scaling up all interventions together would cost an additional $394 million from 2024 to 2030 compared to the baseline. It would avert 61,784 unintended pregnancies, 121,829 child marriages, 17 maternal deaths and 309 stillbirths. By 2050, the economic benefit would be $1.6 billion, with a benefit-cost ratio of 4.0. Maintaining all interventions until 2050 and considering lifetime benefits would increase the ratio to 14.7.

Table 7 Malaysia: Results summary from scenarios

Scenario	Total intervention cost 2024–2030* (US$)	Number of unintended pregnancies	Number of child marriages			
Baseline	95,874,078	176,267	250,419			
	Total additional intervention cost 2024–2030 (US$)	**Unintended pregnancies averted 2024–2030**	**Child marriages averted 2024–2030**	**Economic benefits by 2050 from 2024–2030 investment (US$)**	**Benefit-cost ratio by 2050 from 2024–2030 investment**	**Benefit-cost ratio from maintaining investments through 2050****
In-school comprehensive sexual education	6,607,736	2,879	70	20,059,714	3.0	6.2
Cash transfers#	21,566,014	2,824	6,110	91,359,472	4.2	16.2
Empowerment and life skills development	173,938,965	53,167	35,478	685,685,940	3.9	12.7
Educational support	3,799,183	166	4,628	54,123,602	14.2	49.0
Livelihood training	148,409,157	2,016	26,344	267,224,863	1.8	8.6
Community dialogues	45,159,697	5,181	79,546	715,427,040	15.8	90.0
Full scale-up^	393,987,732	61,784	121,829	1,586,255,167	4.0	14.7

* Costs include interventions as well as contraception.

** Interventions maintained to 2050 with lifetime benefits considered.

The benefit-cost ratio of cash transfers is likely underestimated. Full costs are included but not full benefits, since this intervention has impacts beyond adolescent pregnancy and child marriage that were beyond the scope of this analysis (e.g., reducing poverty, improving nutrition and other health outcomes).

^ A full scale-up is not equal to the sum of individual scale-up scenarios due to model dynamics and interactions among interventions.

Figure 9 Malaysia: Impacts of scaling up all interventions together compared to the baseline

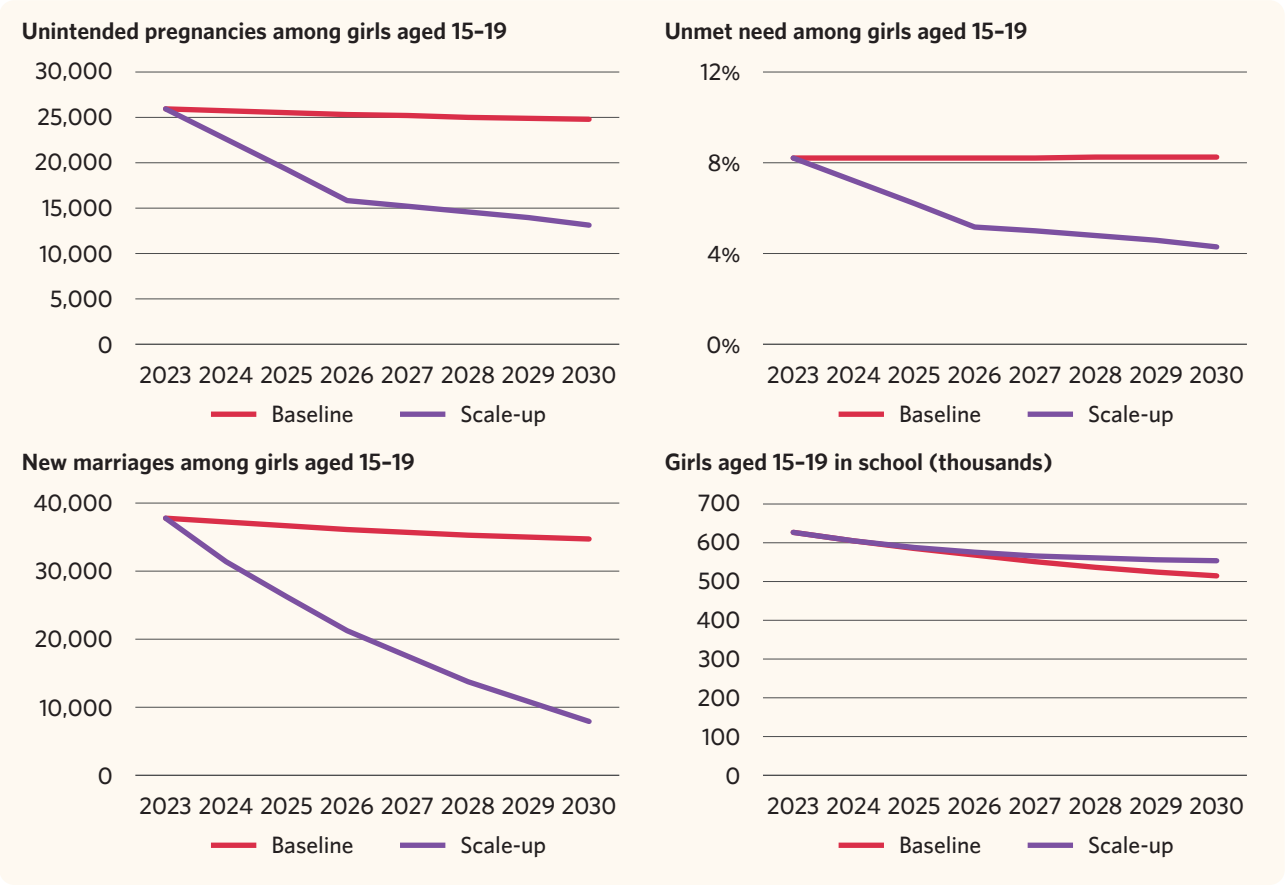
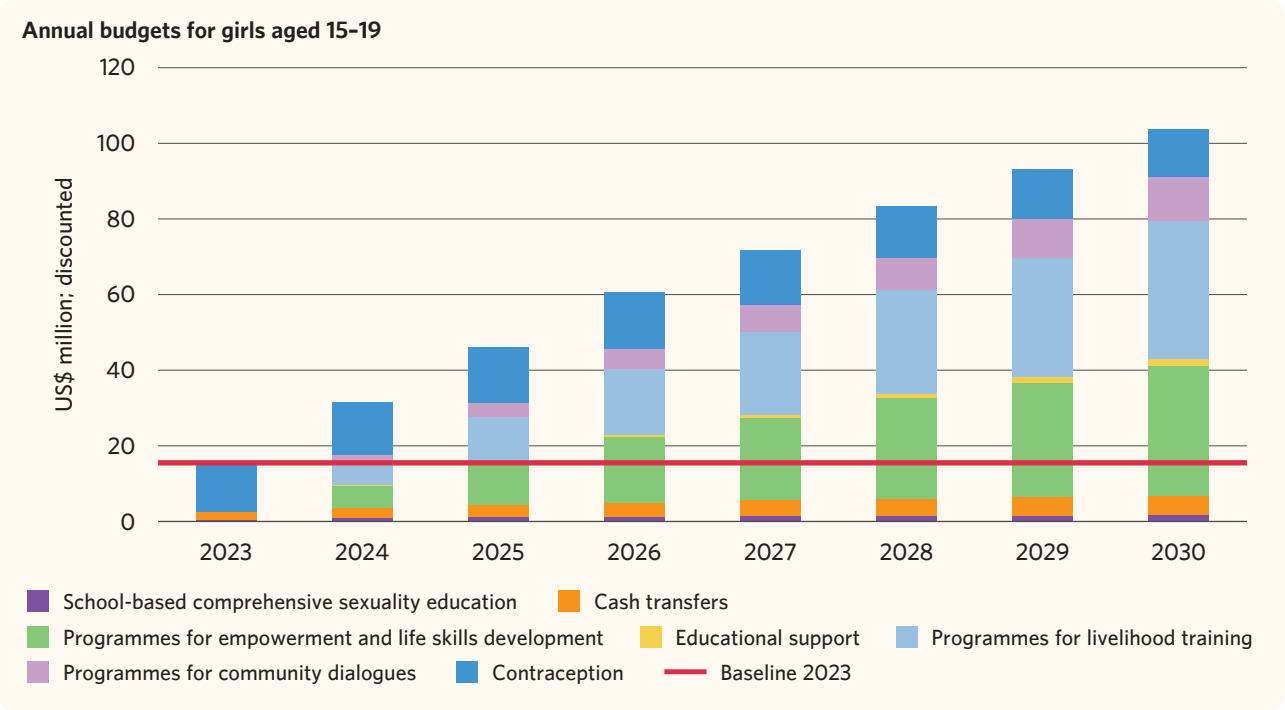


Figure 10 Malaysia: Annual cost of the baseline and full intervention scale-up scenarios



Total costs are in 2023 United States dollars, discounted at 3 per cent per annum

3.5 Philippines

In the Philippines, 5.5 per cent of girls aged 15 to 19 are either married or in union. The adolescent pregnancy rate is 25 per 1,000 girls aged 15 to 19 (UNFPA, 2020). Among married women in this age group, there is a 28.3 per cent unmet need for family planning. Among sexually active unmarried or married adolescents, the contraceptive prevalence rates are 34.5 per cent or 22.5 per cent, respectively (ICF PSAPa, 2022).

The baseline scenario was estimated to cost $581.4 million from 2024 to 2030 (discounted), with 494,220 unintended pregnancies and 465,784 child marriages (Table 8 and Figures 11 and 12). When interventions were scaled up in isolation, they influenced different outcomes, depending on the target population and effect parameters.

- Total impact: Empowerment and life skills development had the greatest total impact in terms of preventing unintended pregnancies; it was second best for preventing child marriages. This result was influenced by both its effectiveness and availability to everyone in the model. Community dialogues had the greatest impact in preventing child marriages in our model.

- Affordability: Educational support had the lowest total cost, followed by in-school comprehensive sexuality education. Empowerment and life skills development had the highest total cost, largely due to its greater target population.

- Maintaining individual interventions through 2050 would result in benefit-cost ratios ranging from 4.6 for in-school comprehensive sexuality education to 23.4 for community dialogues.

Scaling up all interventions together would cost an additional $1.5 billion from 2024 to 2030, compared to the baseline. This would avert 228,366 unintended pregnancies, 250,180 child marriages, 263 maternal deaths and 1,827 stillbirths. By 2050, the economic benefit would be $2.9 billion, with a benefit-cost ratio of 1.9. Maintaining all interventions until 2050 and considering lifetime benefits would increase the ratio to 8.3.

Table 8 Philippines: Results summary from scenarios

Scenario	Total intervention cost 2024–2030* (US$)	Number of unintended pregnancies	Number of child marriages			
Baseline	581,435,805	494,220	465,784			
	Total additional intervention cost 2024–2030 (US$)	Unintended pregnancies averted 2024–2030	Child marriages averted 2024–2030	Economic benefits by 2050 from 2024–2030 investment (US$)	Benefit-cost ratio by 2050 from 2024–2030 investment	Benefit-cost ratio from maintaining investments through 2050**
In-school comprehensive sexual education	68,459,260	26,763	1,097	114,621,592	1.7	4.6
Cash transfers#	134,471,884	4,179	33,308	281,619,247	2.1	9.4
Empowerment and life skills development	639,437,627	125,740	69,047	1,021,659,804	1.6	6.6
Educational support	29,062,913	1,465	24,027	152,812,631	5.3	17.4
Livelihood training	473,582,737	22,432	49,755	512,630,356	1.1	5.6
Community dialogues	241,840,927	53,894	150,150	1,078,484,790	4.5	23.4
Full scale-up^	1,547,114,092	228,366	250,180	2,889,630,495	1.9	8.3

* Costs include interventions as well as contraception.

** Interventions maintained to 2050 with lifetime benefits considered.

The benefit-cost ratio of cash transfers is likely underestimated. Full costs are included but not full benefits, since this intervention has impacts beyond adolescent pregnancy and child marriage that were beyond the scope of this analysis (e.g., reducing poverty, improving nutrition and other health outcomes).

^ A full scale-up is not equal to the sum of individual scale-up scenarios due to model dynamics and interactions among interventions.

Figure 11 Philippines: Impacts of scaling up all interventions together compared to the baseline

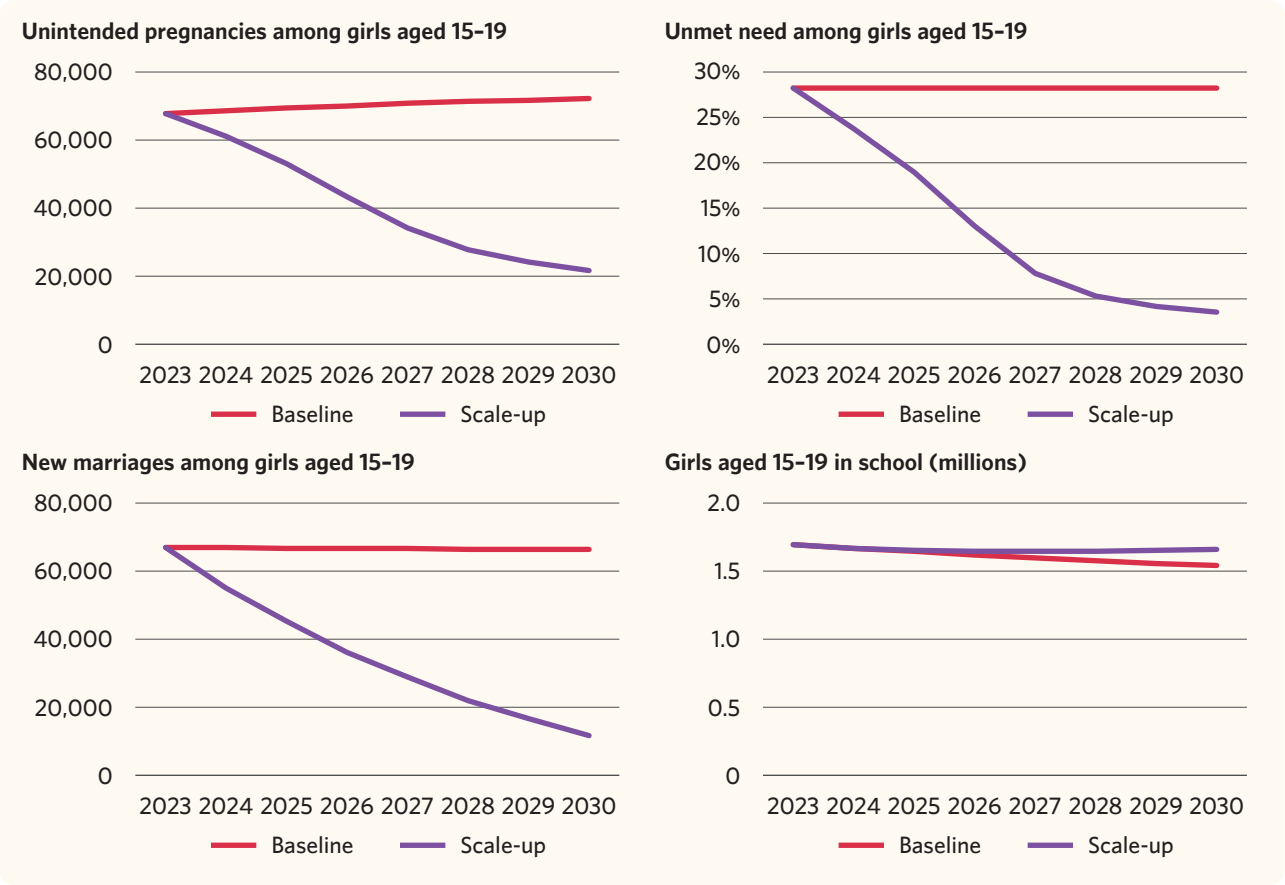
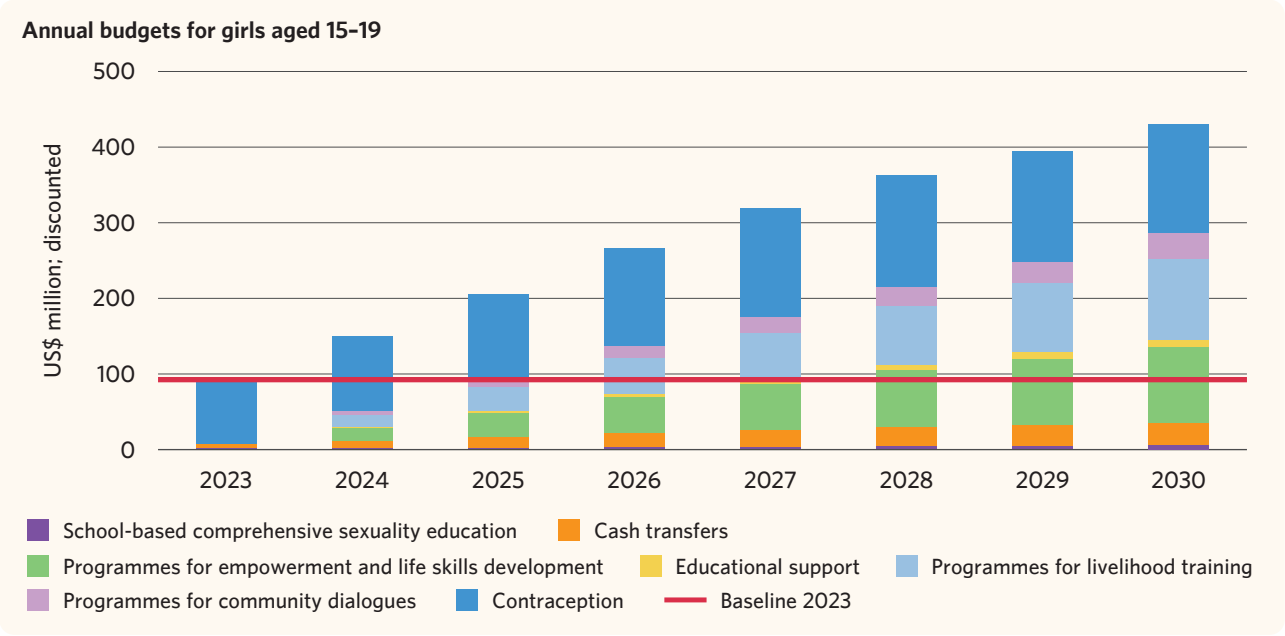


Figure 12 Philippines: Annual cost of the baseline and full intervention scale-up scenarios



Total costs are in 2023 United States dollars, discounted at 3 per cent per annum

4. DISCUSSION

Across all five countries, scaling up interventions as a complete package and reaching 95 per cent coverage by 2030 would collectively cost an estimated additional $5 billion more than business-as-usual from 2024 to 2030. This would avert 1,402,000 unintended pregnancies and 1,114,000 child marriages among girls aged 15 to 19. The investment over this period would generate $13.4 billion in economic benefits by 2050, with an overall benefit-cost ratio of 2.7. Maintaining interventions until 2050 and considering lifetime benefits would increase the ratio to 9.8.

The interventions considered in this analysis target different subpopulations, such as those below the poverty line or enrolled in school, which influences the total cost and benefits. For example, empowerment and life skills development had the greatest total cost because it is modelled to be available to all girls aged 15 to 19. Targeting may also influence impact. Since rates of child marriage and unintended pregnancies are higher for those below the poverty line, for example, the model captures the fact that cash transfers and educational support are directed to those most at risk. Some adolescents may benefit from additional interventions that are not reflected in the model; these may become more apparent as new evidence emerges.

When interventions were scaled up in isolation from 2024 to 2030, the greatest longer-term return-on-investment in each country by 2050 came from community dialogues, except in Lao People's Democratic Republic, where it was derived from in-school comprehensive sexuality education. The evidence suggested that community dialogues could have a significant impact on reducing marriage rates (RR=0.33) as well as increasing contraceptive prevalence (RR=1.31) among adolescents. It is important to note that this intervention is usually implemented as part of a package and may intersect synergistically with other interventions already underway, such as education.

The intervention with the next best return-on-investment varied by country but was either in-school comprehensive sexuality education or educational support for adolescents below the poverty line. Educational support boosts school enrolment (OR=1/0.86) and reduces marriage rates (RR=0.69); in-school comprehensive sexuality education increases contraceptive use (RR=1.48) and delays sexual initiation (OR=2.797). Livelihood training had the lowest benefit-cost ratio as the evidence mapping identified slightly smaller effect parameters; however, the ratio was still greater than 1 (i.e., returning more than $1 to the economy for every $1 invested).

There was some variation among countries in the benefit-cost ratio of scaling up all interventions, ranging from 1.9 in the Philippines to 3.8 in Lao People's Democratic Republic and 4.0 in Malaysia by 2050. This resulted from differences in baseline school enrolment, pregnancy and marriage rates, as well as GDP per capita and workforce participation rates. For example, Lao People's Democratic Republic has both the highest adolescent pregnancy and child marriage rates, and hence the greatest opportunity in terms of the relative impact of interventions. In contrast, the Philippines has both the lowest adolescent pregnancy and child marriage rates, resulting in relatively lower (but still favourable) potential impacts from the package of interventions.

Malaysia has the lowest adolescent pregnancy and child marriage rates but the highest GDP per capita, which greatly influences economic benefits and workforce productivity calculations. This resulted in the highest benefit-cost ratio. The case makes a strong argument for closing gaps in upper-middle-income countries. Cambodia, on the other hand, has the lowest GDP per capita, and its rates of pregnancy and child marriage are around the middle of the other countries; this resulted in the second-lowest benefit-cost ratio for the full scale-up scenario.

As this was a regional analysis, interventions were defined broadly and will need to be interpreted within each country based on different sociocultural factors and programmes already in place. For example, additional country-specific studies would allow the inclusion of different subsets of interventions and the use of more specific definitions for the content of interventions such as comprehensive sexuality education and empowerment and life skills development programmes. For this study, effect sizes and costs have been applied based on "average" programmes, such as those in published studies from a variety of different settings.

Previous work has estimated the return on investment of scaling up family planning and maternal health interventions in some countries considered in this analysis. Two recent studies calculated high benefit-cost ratios by reaching zero unmet need for family planning and 95 per cent coverage of maternal health by 2030, respectively. The ratios were 17.2 for Indonesia and 18.0 for the Philippines (UNFPA and Burnet Institute, 2022, 2023b). These studies, however, considered different interventions and target populations than this study, including the supply side and all women of reproductive age. This study focused on increased demand for contraception and delayed sexual debut specifically among girls aged 15 to 19, resulting in lower benefit-cost ratios in comparison yet still leading to positive impacts.

Limitations

There are some important limitations to this analysis.

- **Intervention effects:** The effect sizes came from a review of global literature. The model largely drew parameters from studies conducted in countries outside those considered in this analysis. There may be cultural or other factors that would influence intervention impacts when translated across settings. Impacts also largely depend on the quality of implementation.

- **Other interventions:** These may also reduce adolescent pregnancy and child marriage but were not included in this analysis due to limited quantitative evidence of cost and effectiveness. This does not imply that they are not effective or cost-effective, but rather that they should be revisited in the future when further evidence is available.

- **Intervention coverage:** Baseline coverage estimates were generally not available and so were assumed to be zero. If current coverage is not zero, then scale-up impacts would be lower than estimated.

- **Unit costs for interventions:** These were based on cost and cost-effectiveness analyses in other low-resource settings. It is not clear whether unit costs would be higher or lower in the countries in this analysis. Setting-specific costing studies should be conducted to inform potential implementation. Unit costs for contraceptive methods were estimated using an ingredients-based approach and are unvalidated.

- **Cash transfers:** The full cost of cash transfers was considered but not the full benefits. This intervention may reduce poverty, improve nutrition and deliver other socioeconomic benefits but these were beyond the scope of this analysis.

- **Education costs:** The benefits of greater education were included but not the cost of providing education based on increased enrolment.

- **Epidemiological data:** Data on pregnancy and marriage rates, contraceptive use and unmet need for family planning were taken from population surveys, which have their own biases. Assumptions about changing fertility rates could influence the pregnancy rate of the population cohort considered and impact estimates of benefit-cost ratios.

- **Subnational variation:** The analysis was conducted at a national level and does not capture geographical heterogeneity. Any implementation of interventions should consider equity among population groups and regions.

- **Economic benefit calculations:** Economic benefits are only considered up to 2050 and likely underestimate the benefit-cost ratio over longer time horizons.

5. CONCLUSIONS

This analysis presents a scientific argument for the health and economic benefits of investing in in-school comprehensive sexuality education, cash transfers, educational support, empowerment and life skills development, livelihood training and community dialogues. In aggregate across countries, every $1 invested in scaling up these interventions to reach 95 per cent coverage by 2030 could return $2.7 to the economy by 2050. If they are maintained, the benefit-cost ratio rises to 9.8. The total magnitude of impact is greatest when the full package of interventions is implemented.

Securing resources to invest in these interventions, even within constrained fiscal environments, represents a strategic decision for governments. By optimizing existing budget allocations, exploring innovative financing solutions, and strengthening collaborations with development partners and private sector actors, governments can mobilize the necessary funding to implement these impactful programmes. Such investments deliver large economic benefits while reducing future public spending on costly corrective measures. Most crucially, they enhance the well-being and future prospects of millions of adolescent girls.

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