Saving the Lives
of Mothers & Children
Rising to the Challenge

Scaling up interventions in the Eastern Mediterranean Region

What does it take and how many lives can be saved?

Introduction

Many elements influence a country's ability to extend health service delivery to mothers and children. These include having a high level of political commitment, changing the ways people seek health care, and adapting social behaviours. At the same time, a number of barriers may impede scale-up, including weak implementation systems, low geographic access and poor quality of services.

However it is clear that one key constraint to scaling up is the lack of financial resources. This document therefore presents a case for investing in maternal and child health, by indicating the price-tag and impact of scaling up the provision of proven and cost-effective maternal, newborn and child health interventions.

The analysis was carried out using the United Nations OneHealth Tool, developed by the UN inter-agency working group on costing (http://www.internationalhealthpartnership.net/en/tools/one-health-tool/). The tool draws upon pre-existing agency-specific tools and combines them in a consistent manner across programmes. OneHealth is primarily developed to support planning processes at country level, specifically to strengthen aspects of costing, budgeting, financing and strategy development of the health sector in developing countries.

The tool translates increases in coverage for health interventions to estimated resource requirements (commodities and health services) as well as links to the different health system building blocks (governance, human resources for health, infrastructure and equipment, health information systems and logistics). It also provides impact estimates in terms of number of deaths averted by scaling up selected interventions, reducing stunting and wasting among children, and projects mortality rates over time.

Each country will have different needs. Governments must therefore decide, in collaboration with partners, which combination of interventions will be best for their countries. However, based on the current evidence, it is possible to recommend a set of interventions and services from which countries should select, all of which have been proven to be "best buys" for achieving MDGs 4 and 5 – i.e. they are both effective and affordable. The precise composition of a "best buy" package will vary from country to country, and will change over time, depending on health burdens, costs and capacities.

What to invest in and how much will it cost?

An analysis was undertaken for each of the ten high burden countries for maternal and under 5 mortality in the region to estimate the likely health impact and progress towards the MDG 4 and 5 targets of scaling up the coverage of key interventions, as well as the financial resources required.

The key intervention packages considered included the following.

- Family planning modern methods
- Skilled birth attendance (including a subset of basic and comprehensive emergency obstetric and newborn care) and antenatal care
- Child vaccines including introduction of new vaccines such as rotavirus and pneumococcal vaccine
- Integrated management of childhood illnesses, including oral rehydration salts and zinc for diarrhea and pneumonia management
- Essential child health nutrition interventions such as counselling for breastfeeding and complementary feeding as well as management of malnutrition
- Water and sanitation (WASH) including the use of improved water source within 30 minutes, hand washing with soap, and hygienic disposal of children's stools

The selection of interventions were based on the main causes of death in each country and grounded in the very latest and strongest evidence in order to identify “best buys” that take account of local problems, priorities and costs.

For each of the countries, two scenarios (A and B) were considered.

Scenario A: Accelerating implementation

This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

Scenario B: Reaching the MDGs

A second scenario was developed with more ambitious targets set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.

In summary, the analysis showed that accelerating implementation (Scenario A) would lead to more than 330 000 additional mothers’ and children’s lives saved over the next few years. Although some countries may find reaching the MDGs by 2015 (Scenario B) very challenging, scaling up effective interventions to almost universal coverage would have an enormous impact and could save the lives of almost one million children under 5 years and close to 20 000 mothers during the period 2013–2015. Details of the analyses for each country are presented in Annex A.

For each country, a cost estimate was developed for both scenario A and B. The cost estimates include maternal, newborn, and child health (MNCH)-specific inputs such as commodity cost (drugs and supplies), outpatient visits, community based management, outreach activities and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global default data on epidemiology, intervention/treatment guidelines and drug prices, using country-specific data when available. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would usually be financed outside the health sector. A summary of the incremental costs and impact across the 10 countries is presented in Table 1.

Table 1. Summary of total andincremental costs and impact across 10 priority countries

Scenario A	2013	2014	2015	Sum 2013–2015
Total cost (US$ millions)	1661	1910	2162	5733
Incremental cost (US$ millions) [1]	352	568	818	1737
Incremental cost per capita US$ (population weighted)	0.92	1.45	2.05	
Incremental child lives saved, 0–4 years (thousands)	57.8	111.1	158.9	327.8
Incremental maternal lives saved (thousands)	1.5	2.3	3.3	7.0
Scenario B	**2013**	**2014**	**2015**	**Sum 2013–2015**
Total cost (US$ millions)	2075	2663	3245	7984
Incremental cost (US$ millions)	752	1324	1923	3999
Incremental cost per capita US$ (population weighted)	1.57	2.71	3.84	
Incremental child lives saved, 0–4 years (thousands)	196.0	340.6	442.2	978.8
Incremental maternal lives saved (thousands)	3.1	6.1	9.7	18.9

The analysis across the 10 countries indicates that scaling up as per scenario A would require additional resources valued at US$ 352 million in 2013 increasing to about US$ 818 million in 2015, in order to achieve the targeted coverage of the identified interventions. This is estimated to save the additional lives of 328 000 children under 5 years and 7000 mothers during the three years 2013–2015.

Table 2. Additional cost per capita for scale up as % of total health expenditure

Country	Government expenditure on health as % of general government expenditure (2010)	Total health expenditure (THE) per capita (2010)	General government health expenditure per capita (2010)	Additional cost per capita for MNCH scale-up (2015) in US$		Additional cost per capita for MNCH scale-up (2015) as % of 2010 THE	
				Scenario A	Scenario B	Scenario A	Scenario B
Afghanistan	2	38	4	1.90	4.36	5%	12%
Djibouti	14	92	60	2.42	4.78	3%	5%
Egypt	6	123	46	1.66	1.67	1%	1%
Iraq	9	247	200	2.46	7.08	1%	3%
Morocco	7	148	56	1.80	2.90	1%	2%
Pakistan	4	22	8	1.39	2.81	6%	13%
Somalia	NA	NA	NA	1.70	5.61	NA	NA
South Sudan[2]	10	84	25	1.99	8.61	2%	10%
Sudan	10	84	25	4.76	8.43	6%	10%
Yemen	4	63	15	2.57	5.79	4%	9%

NA No data available

[1] Incremental cost and health impact is estimated in comparison to what would have been the cost and health outcomes if current coverage was kept unchanged but with a growing population.

[2] Expenditure data in 2010 cover both Sudan and South Sudan.

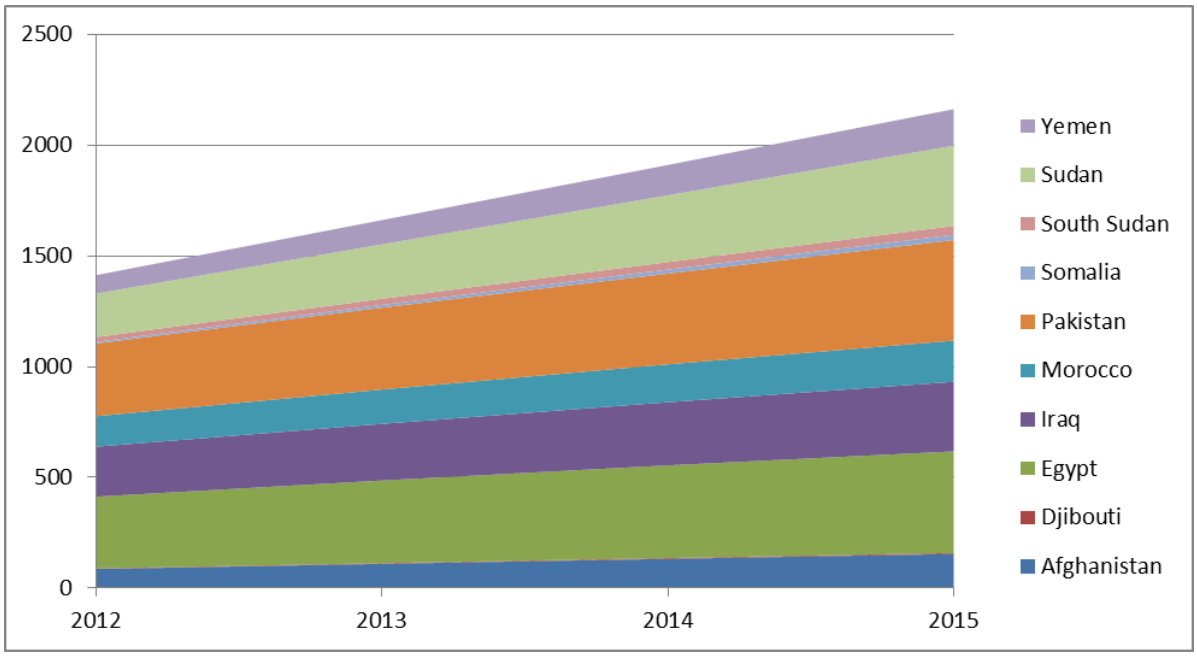


Figure 1a. Scenario A total annual estimated cost 2012–2015, in US$ millions

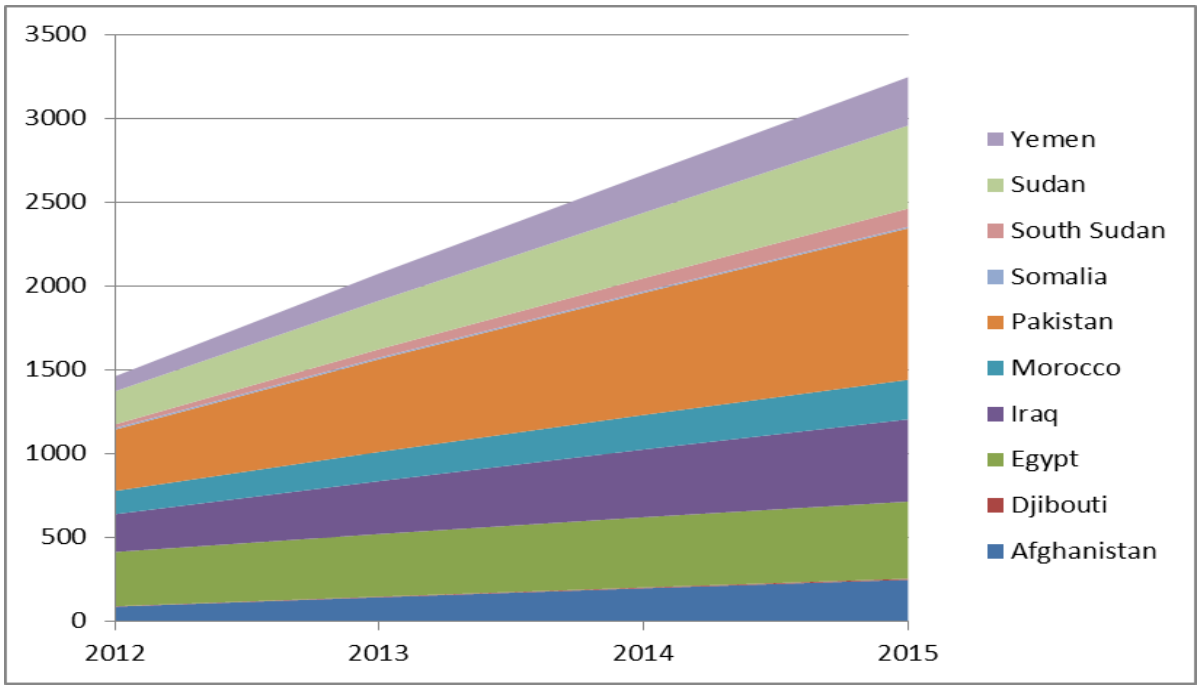


Figure 1b. Scenario B total annual estimated cost 2012–2015, in US$ millions

The analysis for Scenario B indicates that additional resource allocation to MNCH would need to increase by about US$ 752 million in 2013, US$ 1324 million in 2014 and US$ 1923 million in 2015. This is estimated to save the additional lives of close to a million under-5 children and 19 000 mothers during three years 2013–2015. This is equivalent to an additional cost per capita that ranges between US$ 1.67 to US$ 8.61 in 2015 (see Table 2). While these amounts may seems large, they are comparable to an increase of current total health spending between 1% and 13% across 7 countries for which there are data available (Table 2).

The analysis indicates that the main cost drivers for the additional investment need (scenario B) are commodities for MNCH (varies for the countries between 25% and 74%) and health system service delivery costs, mostly for staff time (between 22% and 72%), as shown in Figure 2.

MNCH programme administration cost accounts for a smaller proportion of the estimated additional need (between 2% and 12%). It should be noted that the health system delivery costs, accounting for the majority (47%) of the total additional costs needed 2013–2015, is a shared resource in the system.

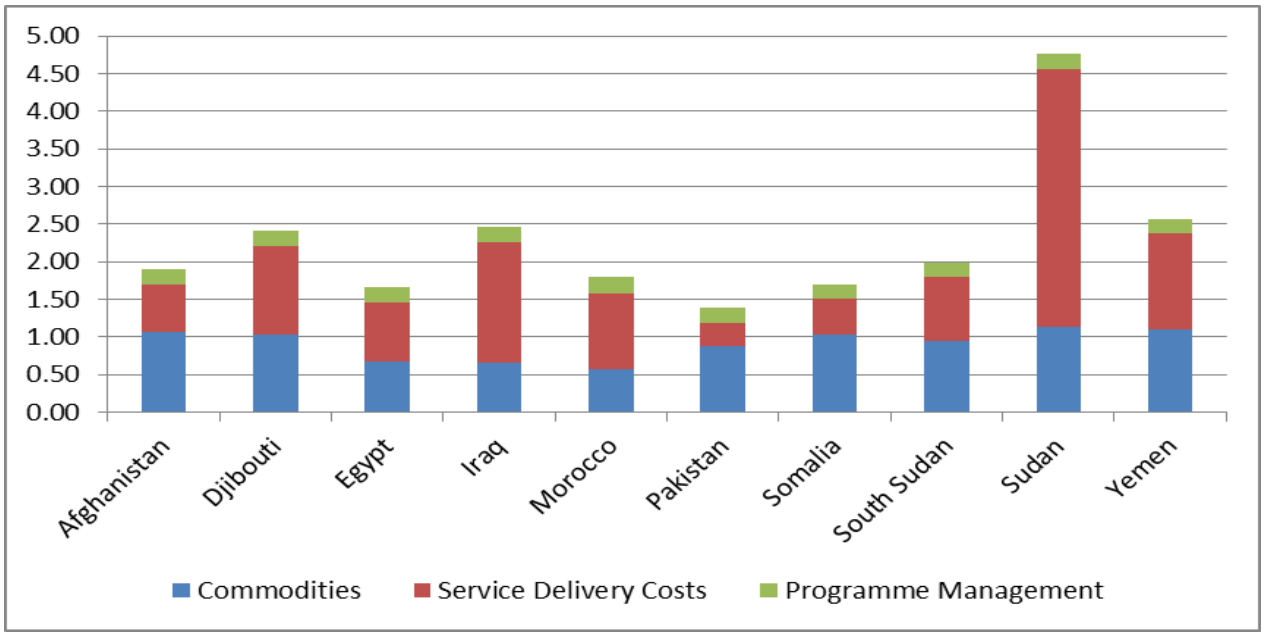


Figure 2a. Scenario A additional cost per capita in 2015 (US$), broken down by cost category

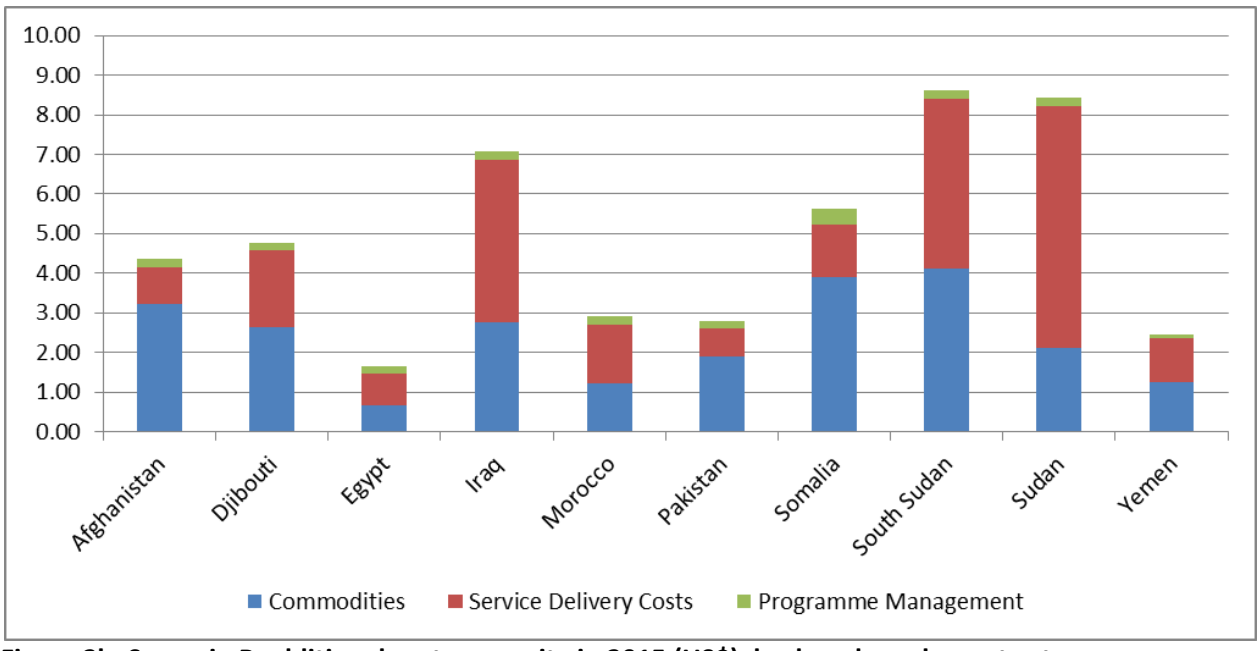


Figure 2b. Scenario B additional cost per capita in 2015 (US$), broken down by cost category

In summary there is a need to increase spending on maternal and child health and while external assistance will be important, a share of the costs would need to be financed by domestic resources. Currently spending on health per capita varies from US$ 22 to US$ 247 across 9 of the 10 countries for which there are data, and the government spending on health as a proportion of total government spending is very low in some countries (ranging from 2% to 14%).

There is furthermore a scope for increasing efficiency in spending available resources. Cost-effective interventions for improving the health of mothers and their children have been identified but despite

widely available evidence, the scarce resources are often not allocated where they will have the biggest impact.

Finally, the figures presented here are based on average national data. Often this masks huge differences in coverage, spending and outcomes between rural and urban areas and socioeconomic groups. There is an urgent need to further disaggregate data in order to direct resources where they are most needed and will have the biggest impact.

Key messages

Our analysis focuses on the ten countries in WHO's Eastern Mediterranean Region which have the greatest number of maternal and child deaths. It indicates where and how the most lives can be saved over the few years remaining up to the MDG deadline.

We identified the "best buys" for maternal and child health: those health interventions which are most effective and affordable, and will make the biggest difference in these countries.

- "Best buys" include: family planning, pregnancy care and skilled attendance at birth and immediately after; vaccines; treatment for the main childhood diseases (notably pneumonia and diarrhoea); improving nutrition including breastfeeding; and access to clean water and sanitation.

Extending maternal, newborn and child health (MNCH) health services towards universal coverage in all ten countries, with a combined population of more than 420 million, would require close to an additional US$4 billion between now and 2015.

- On average, for the 10 countries, this would cost an additional US$ 1.6 per capita in 2013 increasing to US$ 3.8 by 2015.
- In some countries, scaling up coverage to reach 95% of mothers and children with essential health services and reach the MDG targets would only take an additional 1% (Egypt) or 2% (Morocco) increase in current health spending.
- Almost half of the needed investment is in health system strengthening – offering benefits not just to mothers and children but the population at large – over the next three years and beyond.

The health situation varies across this diverse range of countries, as does health system capacity.

- Current government expenditure on health ranges from 2% of the national budget (Afghanistan) to 14% (Djibouti) of the national budget; in financial terms, varying between US$4 per capita (Afghanistan) to more than US$200 per capita (Iraq), which signals a 50-fold difference.
- Total health expenditure per person per year, including funding by households and individuals, ranges from US$22 per person per year (Pakistan) to more than 10 times that (US$247, Iraq).
- Each country will need a slightly different mix of the priority interventions, and each will have a different price tag.

Even modest increases in coverage of effective interventions can save hundreds of thousands of lives.

- If all 10 countries achieved 95% coverage (Scenario B) by 2015, an additional 1 million lives of children under the age of 5 years and 20 000 mothers would be saved over a period of three years, compared to a scenario where no additional investments were made.
- If more modest progress were achieved (as described under Scenario A), more than 330 000 lives of mothers and children would be saved up to 2015. This would break down, on average across the 10 countries, to spending an additional less than US$ 1 per capita in 2013, increasing to about US$ 2 in 2015.

Limitations

It should be noted that these estimated have been calculated as a desk exercise and do not take into account existing plans and targets at country level. The modelling has two main limitations due to the modelling approach used and due to a lack of country-specific data.

With regard to the impact estimations it should be noted that the modelling does not include impact calculations for all relevant interventions, nor does it address mortality due to causes such as injury and other health conditions such as tuberculosis or influenza. As such, the impact estimates should be interpreted as a conservative estimate of what could be attained from scaling up. **In reality the health impact achieved from the defined coverage levels may be greater than what is modelled here.**

Moreover, for many interventions, data on current coverage may be non-existent, or of poor quality. For certain interventions a current coverage of 0% was assumed in the absence of data. This is likely to result in overestimated incremental costs and overestimated impact compared to status quo. **As such, actual costs may be lower than presented here.**

The costing is based on defaults and assumes that interventions are delivered at certain levels of care in accordance with global defaults. Actual points of delivery would vary across country settings, resulting in either higher or lower costs than what is presented here. Similarly, adjusting intervention-specific inputs such as drugs and commodities to more country-specific data would result in different estimates. In addition, the costs do not include inflation. Finally, the cost analysis does not include certain costs such as the potential waste of commodities, and health system investments that would be needed for service delivery including strengthening the supply chain to provide new vaccines and other commodities.

In summary, the estimates should be interpreted as indicative only. For the purpose of national level planning, budgeting and resource mobilization, more detailed analysis undertaken at country level with inputs reflecting actual national plans and strategies would be required. Existing strategic plans and their costing should be reviewed with reference to the MDG targets.[3]

[3] For more information on the methodology used for the cost and impact analysis, contact:
WHO, Karin Stenberg (stenbergk@who.int)

Annex A
Country analysis of cost and impact

Afghanistan

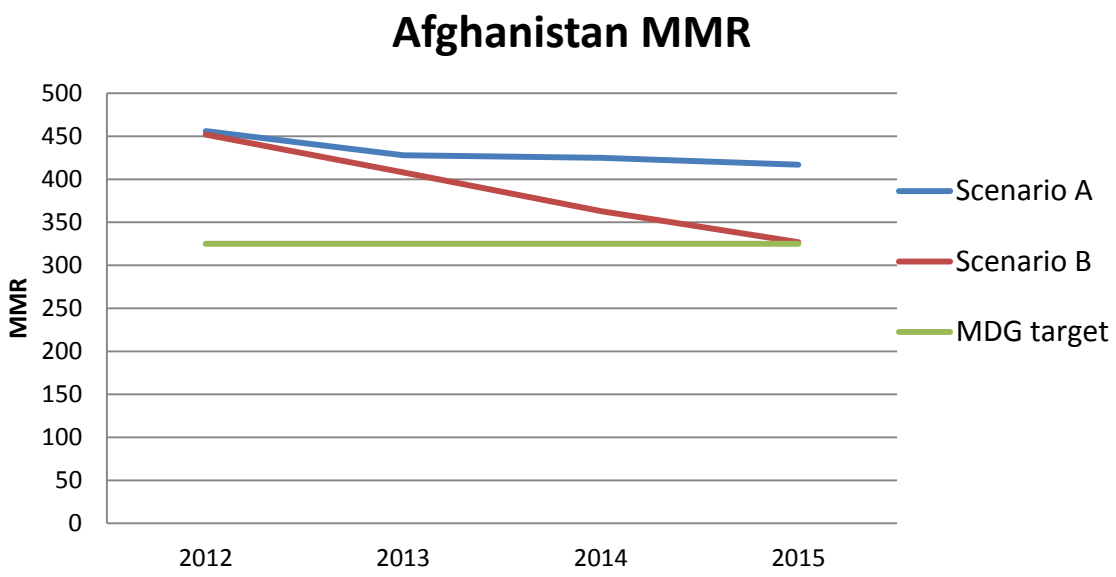
Scaling up interventions

An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. The following two scenarios were developed.

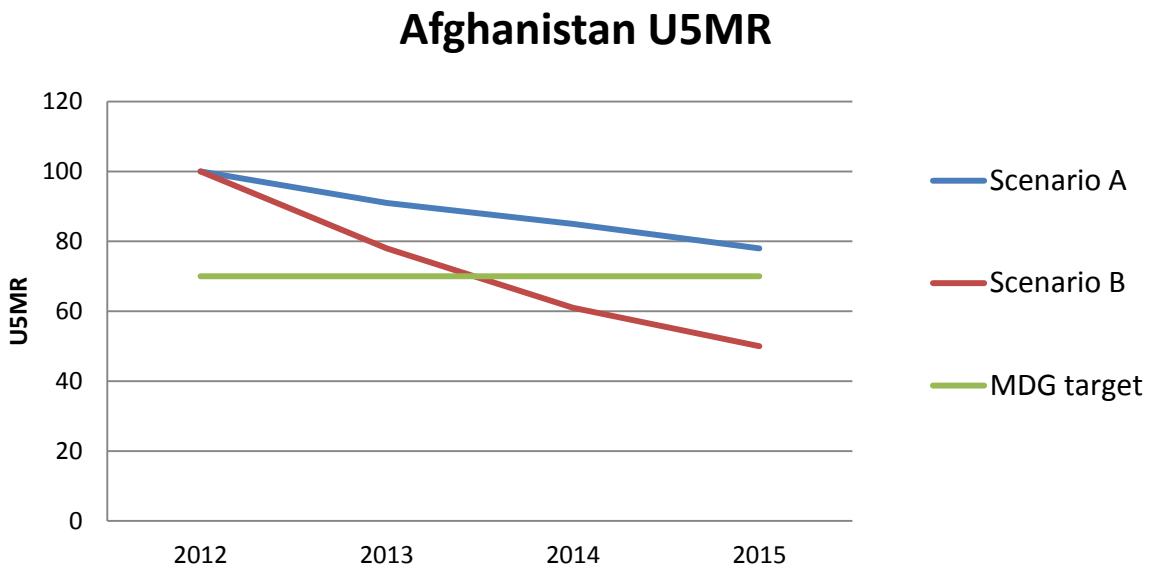
A: Accelerating implementation
This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

B: Reaching the MDGs
In the case of Afghanistan, the model predicts that scenario "A" would not be sufficient to reach MDGs 4 and 5. A second scenario was developed with more ambitious targets[4] set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.

The model indicates that the MDG 4 target could be reached, and the MDG5A target would be nearly reached, if maternal, child and newborn interventions are accelerated as shown below.



[4] Except for family planning where the original scenario A target was used, since there are limits as to how quickly the use of contraceptives can be scaled up.



The key intervention packages were scaled up as follows.

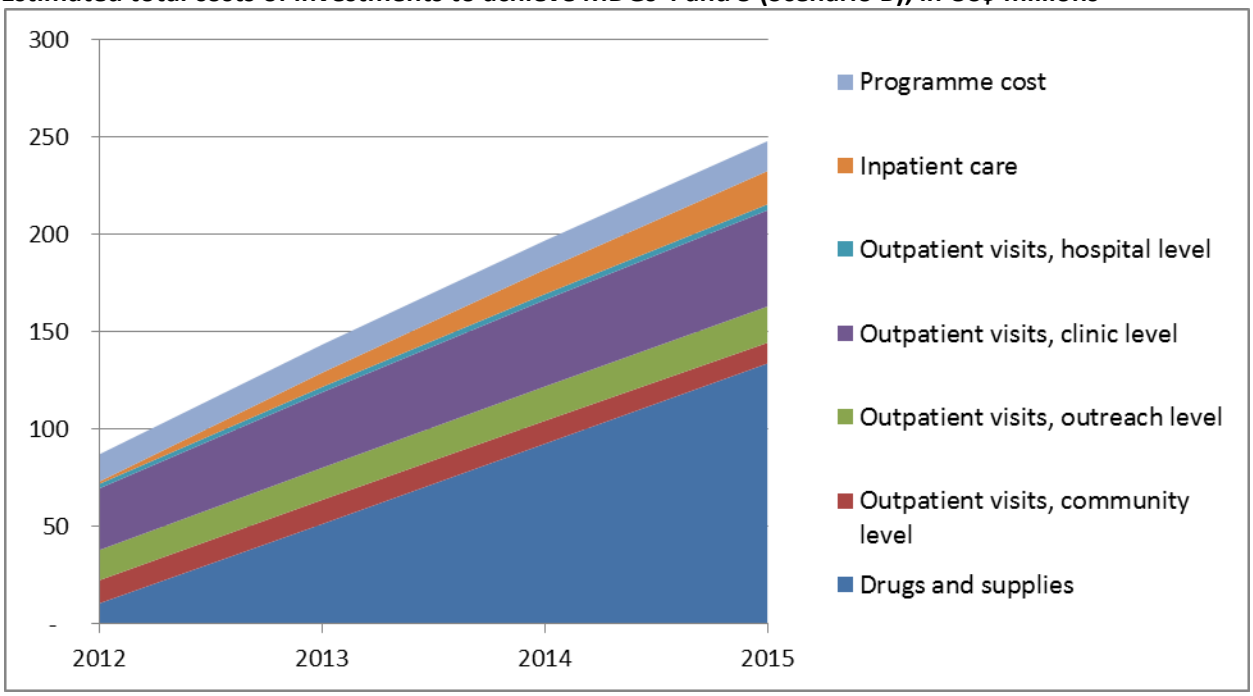
- Family planning is scaled up from 20 to 26% (A and B)
- Skilled birth attendance including antenatal care increase from 35 to 70% (A) and 95% (B)
- Child vaccines are scaled up from an average 66% coverage to 98% (A and B) and rotavirus and pneumococcal vaccines were introduced up to a coverage of 20% (A) and 95% (B)
- Interventions included in the integrated management of childhood illnesses (IMCI) were scaled up, including treatment of diarrhoea with oral hydration salts (scaled up from 45% to 70% in scenario A and to 95% in scenario B) and zinc (increased from its current low level to 20% in scenario A and 95% in scenario B) and treatment of pneumonia increased from 68% to 80% (A) and 95% (B).
- Essential child health nutrition interventions such as counselling for breastfeeding and complementary feeding were scaled up to 95 and 70% respectively in scenario A and both interventions at 95% in scenario B, and management of malnutrition was increased up to 10% from current low levels
- Water and sanitation (WASH) scaled up to 50%–70% (A) and 95% (B) including the use of improved water source within 30 minutes, hand washing with soap, and hygienic disposal of children's stools.

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (medicines and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	110	133	155	397
Total cost per capita	3.06	3.58	4.06	
Incremental cost (millions)	29	51	72	153
Incremental cost per capita	0.81	1.38	1.90	
Incremental child lives saved	12 343	21 289	31 268	64 900
Incremental maternal lives saved	464	508	643	1615
U5MR (2015 target = 70)	91	84	77	
MMR (2015 target = 325)	417	414	404	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	143	197	248	588
Total cost per capita	3.98	5.30	6.48	
Incremental cost (millions)	63	116	167	346
Incremental cost per capita	1.75	3.13	4.36	
Incremental child lives saved	30 541	53 638	69 326	153 505
Incremental maternal lives saved	587	1201	1689	3477
U5MR (2015 target = 70)	78	61	50	
MMR (2015 target = 325)	408	363	327	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



Djibouti

Scaling up interventions

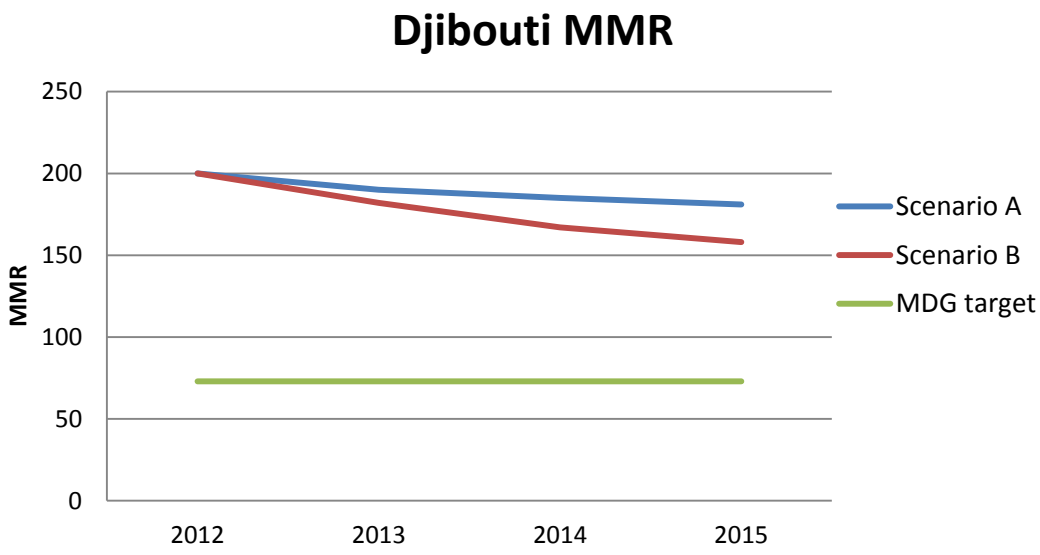
An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.

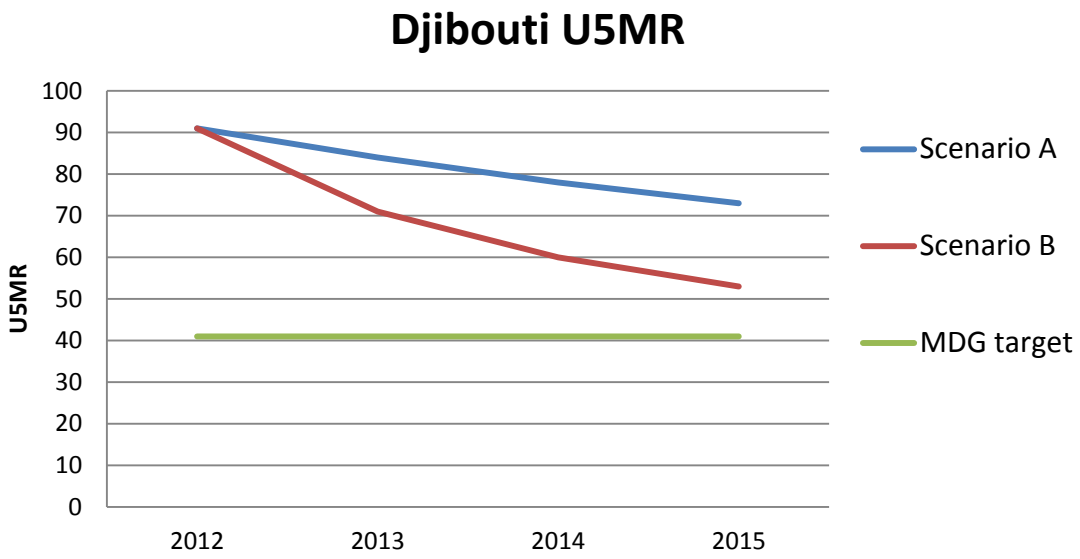
A: Accelerating implementation

This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

B: Reaching the MDGs

In the case of Djibouti, the model predicts that scenario "A" would not be sufficient to reach MDGs 4 and 5. A second scenario was developed with more ambitious targets set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015. The model indicates that the MDG4 target would nearly be reached but MDG 5 would still be a long way to go.





The key intervention packages were scaled up as follows.

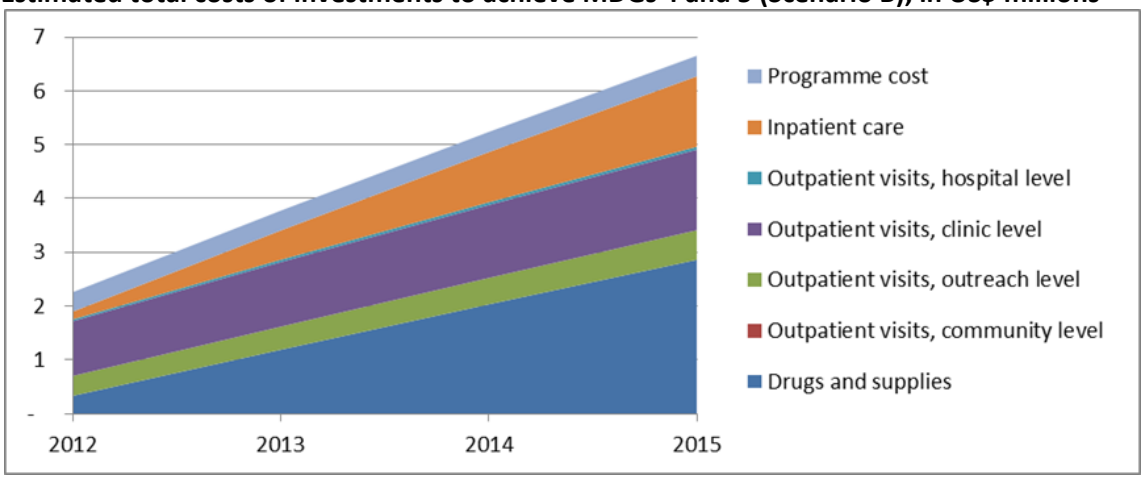
- Family planning is scaled up from 23 to 29 % (A and B).
- Skilled birth attendance including antenatal care increase from 60% to 90% (A) and 95% (B).
- Child vaccines are kept at a coverage of about 90% and rotavirus and pneumococcal vaccines introduced up to a coverage of 20% in scenario A. All vaccines were scaled up to 95% in scenario (B) including pneumococcal and rotavirus vaccines.
- Interventions included in the integrated management of childhood illness (IMCI) were scaled up, including diarrhoea treatment with oral hydration salts (scaled from 49% to 70% in scenario A and up to 95% in scenario B) and zinc (scaled up to 20% in scenario A and to 95% in scenario B) and the treatment of pneumonia increased from 43% to 60% (A) and 95% (B).
- Essential child health nutrition interventions such as counselling for breastfeeding and complementary feeding scaled from 2% and 15%, respectively, up to 23% and 40% in scenario A and to 95% in scenario B, and the management of malnutrition was scaled up to 10 % from current low levels (A and B).
- Water and sanitation (WASH) were scaled up including the use of improved water source within 30 minutes (from 88% to 95% in both scenario A and B), hand washing with soap scaled up from 17% to 30% in scenario A and 95% in scenario B, and hygienic disposal of children's stools from 41% to 55% (A) and to 95% (B).

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	3	4	4	11
Total cost per capita	3.22	3.92	4.60	
Incremental cost (millions)	1	2	2	5
Incremental cost per capita	1.16	1.70	2.42	
Incremental child lives saved	179	337	475	991
Incremental maternal lives saved	3	5	6	14
U5MR (2015 target = 41)	84	78	73	
MMR (2015 target = 73)	187	182	176	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	4	5	7	16
Total cost per capita	4.10	5.58	6.96	
Incremental cost (millions)	2	3	5	10
Incremental cost per capita	2.04	3.36	4.78	
Incremental child lives saved	519	816	990	2325
Incremental maternal lives saved	6	10	13	29
U5MR (2015 target = 41)	72	61	54	
MMR (2015 target = 73)	178	161	151	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



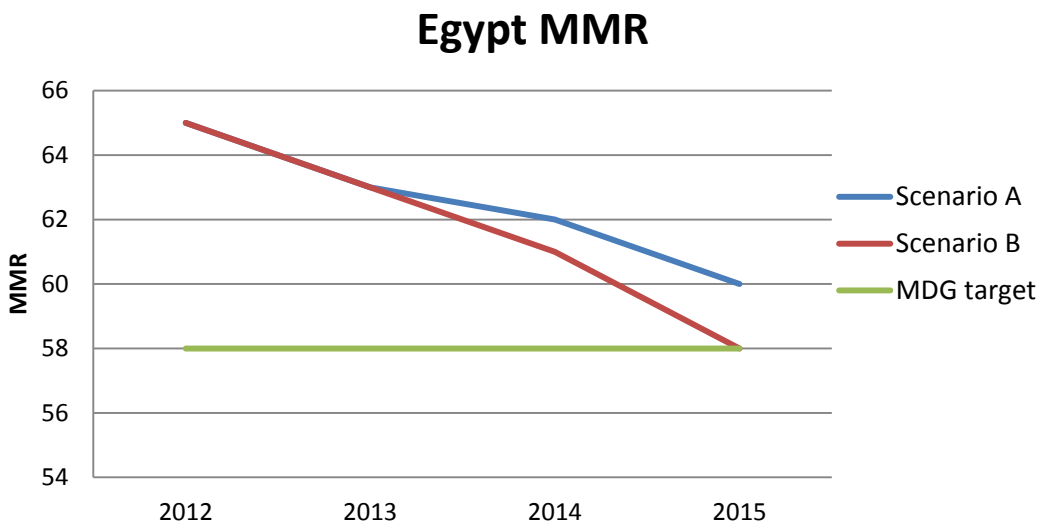
Egypt

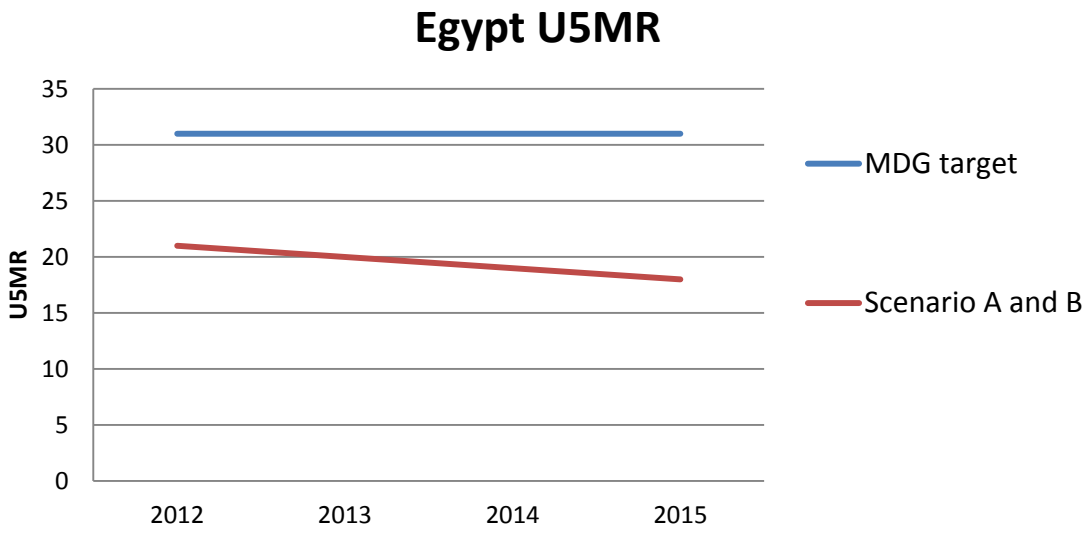
Scaling up interventions

An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.

A: Accelerating implementation
This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

B: Reaching the MDGs
In the case of Egypt, the model predicts that scenario "A" would be sufficient to reach the target for MDG 4 (already achieved). A second scenario was developed for reaching MDG 5 with more ambitious targets[5] set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDG 5 by 2015.





The key intervention packages were scaled up as follows.

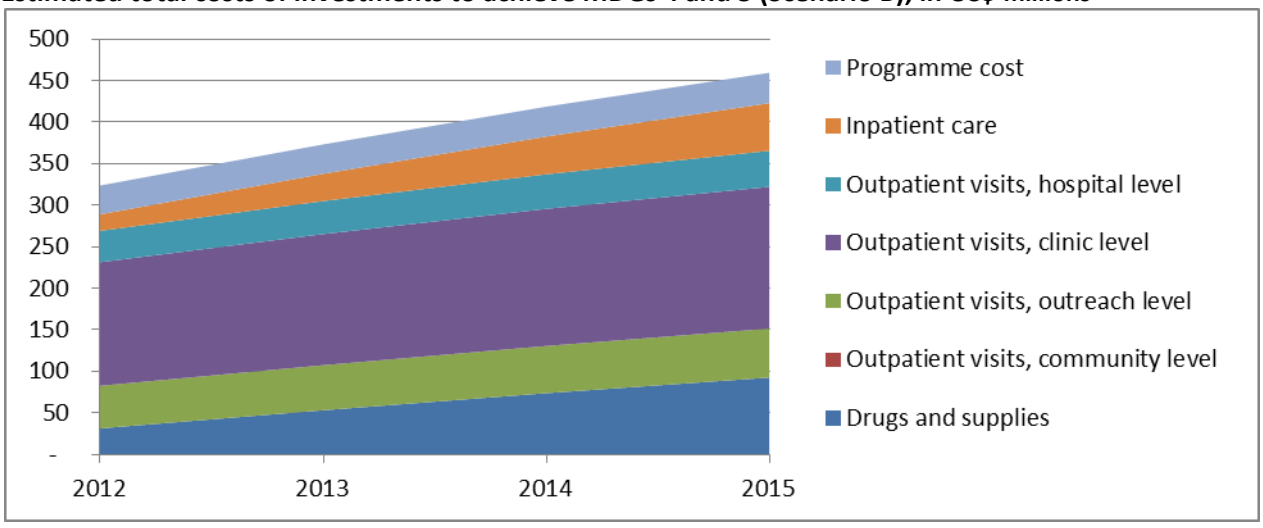
- Family planning was scaled up from 58% to 63% (A and B).
- Skilled birth attendance including antenatal care was increased from 79% to 90% (A) and up to 94% (B).
- Child vaccines coverage was kept high at around 97%, but rotavirus and pneumococcal vaccines were introduced and scaled up to 20% (A and B).
- Interventions included in the integrated management of childhood illnesses (IMCI) were scaled up, including the treatment of diarrhoea with oral hydration salts (increased from 28 to 50%) and zinc (increased from current low level to 20%) and the treatment of pneumonia (increased from 58% to 70% (A and B).
- Essential child health nutrition interventions such as counselling for breastfeeding and complementary feeding were scaled up from 29% to 40% and from 42% to 60% respectively (A and B)and management of malnutrition scaled up to 10% (A and B) from current low levels.
- The use of improved water source within 30 minutes was sustained at the current high level (about 99%) and other water and sanitation (WASH) interventions were scaled up including hand washing with soap (from 17% to30%) and hygienic disposal of children's stools (from 85% to 99%) in A and B.

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	373	418	459	**1250**
Total cost per capita	4.21	4.65	5.03	
Incremental cost (millions)	84	111	152	**347**
Incremental cost per capita	0.95	1.24	1.66	
Incremental child lives saved	1760	3223	4618	9601
Incremental maternal lives saved	34	61	94	189
U5MR (2015 target = 31)	20	19	18	
MMR (2015 target = 58)	63	61	59	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	373	419	459	1251
Total cost per capita	4.22	4.65	5.03	
Incremental cost (millions)	84	112	152	348
Incremental cost per capita	0.95	1.24	1.67	
Incremental child lives saved	1900	3558	5021	10 479
Incremental maternal lives saved	46	87	134	267
U5MR (2015 target = 31)	20	19	18	
MMR (2015 target = 58)	63	61	58	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



Iraq

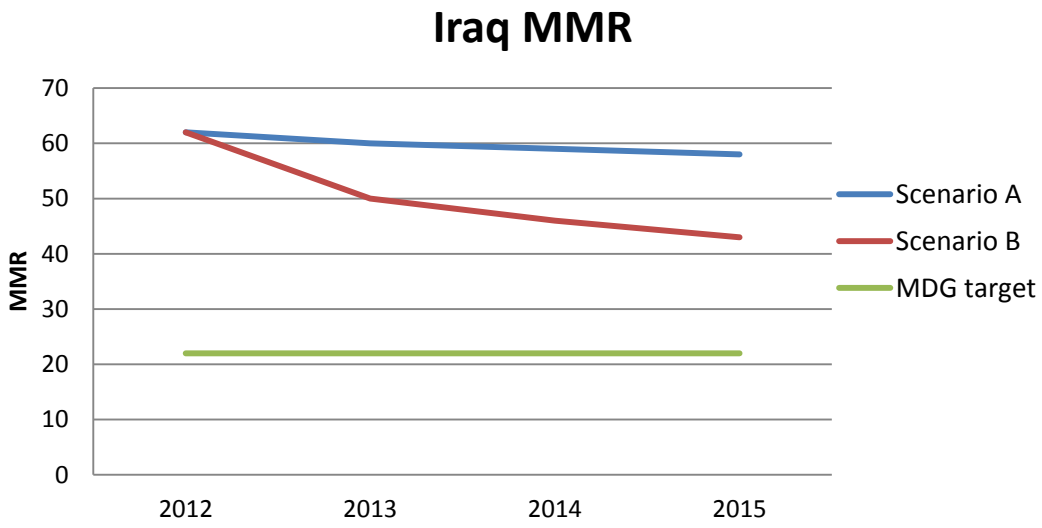
Scaling up interventions

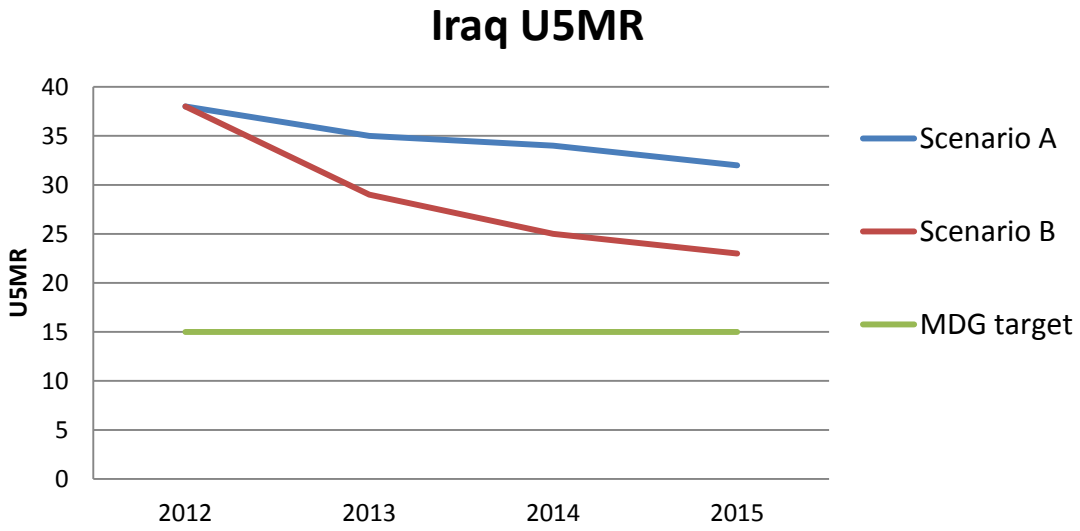
An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.

A: Accelerating implementation
This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

B: Reaching the MDGs
In the case of Iraq, the model predicts that scenario "A" would not be sufficient to reach MDGs 4 and 5. A second scenario was developed with more ambitious targets set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.

Scenario B was modelled with MNCH interventions reaching 95% coverage. The model indicates that it is unlikely that MDGs 4 or 5 targets can be reached but an accelerated increase in coverage can save a large number of lives of mothers and children.





The key intervention packages were scaled up as follows.

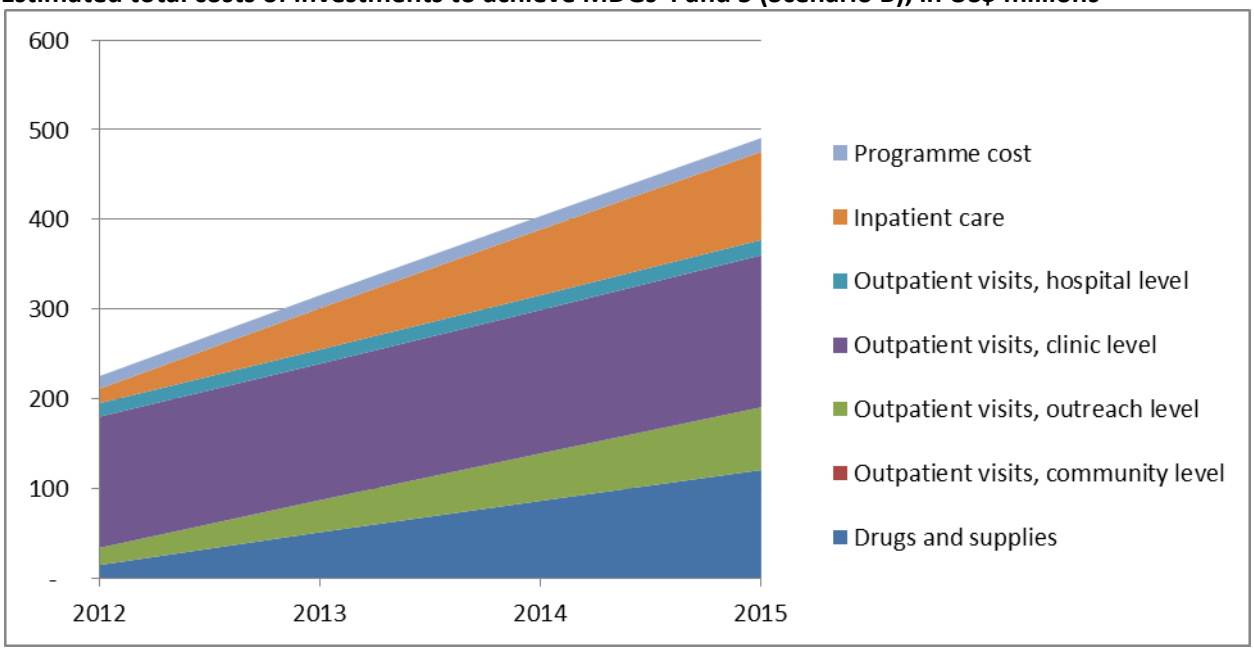
- Family planning is scaled up from 33% to 39%% (A and B).
- Skilled birth attendance including antenatal care increase from 84 to 100% by 2015 (A) and 100% by 2013 (B), antenatal care from 51% to 80% (A) and 95% (B), post abortion case management from 8 to 15% (A) and 95 % (B), and management of pre-eclampsia from 3% to 95 % (B).
- Child vaccines are kept at coverage ranging 65%–80% and rotavirus vaccine introduced up to a coverage of 20% in scenario A and all vaccines scaled up to 95% (B) including pneumococcal vaccine.
- The interventions included in the integrated management of childhood illnesses (IMCI) were scaled up, including the treatment of diarrhoea with oral hydration salts (kept at its current universal coverage level) and zinc scaled up from 0 to 10% (A) and 95% (B) and the treatment of pneumonia sustained at its current universal coverage level and the scaling up of the treatment of severe pneumonia to 10% (A) and 95% (B).
- Essential child health nutrition interventions such as counselling for breastfeeding and complementary feeding were scaled up to 15% and 50% in scenario A and to 95% in scenario B respectively, and the management of malnutrition was scaled to 10% (A and B) from current low levels.
- Water and sanitation (WASH) were scaled up including the use of improved water source within 30 minutes from current high level sustained in scenario A and increased to 95% in scenario B, hand washing with soap scaled up from 17% to 30% in scenario A and 95% in scenario B, and hygienic disposal of children's stools from 52% to 65% (A) and to 95% (B).

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	**256**	**285**	**314**	**854**
Total cost per capita	7.08	7.66	8.18	
Incremental cost (millions)	**37**	**66**	**94**	**197**
Incremental cost per capita	1.02	1.77	2.46	
Incremental child lives saved	2732	4979	7169	14 880
Incremental maternal lives saved	**30**	**40**	**53**	123
U5MR (2015 target =15)	35	34	32	
MMR (2015 target = 22)	59	58	57	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	**316**	**404**	**491**	**1211**
Total cost per capita	8.74	10.84	12.79	
Incremental cost (millions)	**97**	**185**	**272**	**553**
Incremental cost per capita	2.68	4.96	7.08	
Incremental child lives saved	10 895	15 388	18 636	44 919
Incremental maternal lives saved	165	210	247	622
U5MR (2015 target = 15)	29	25	22	
MMR (2015 target = 22)	48	44	41	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



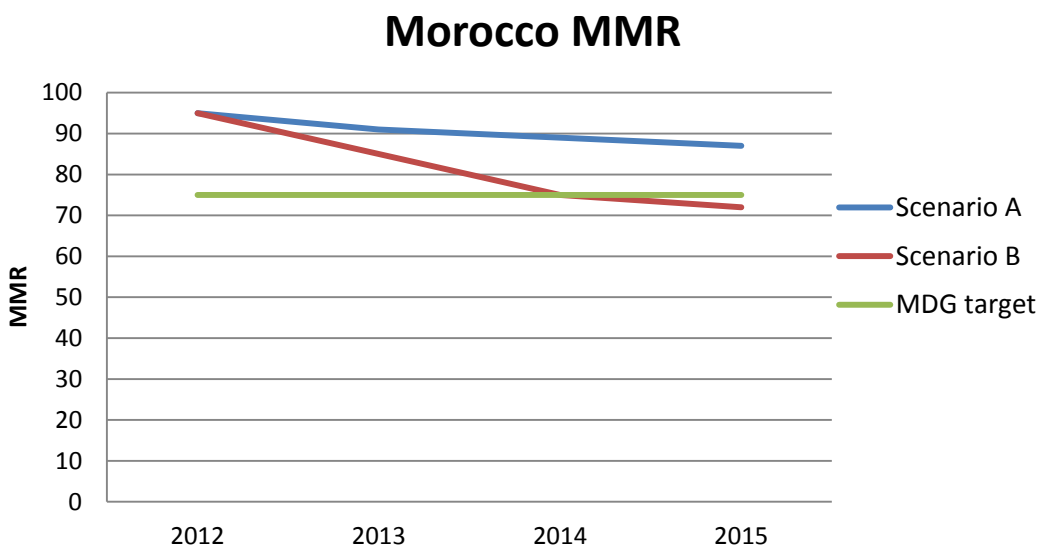
Morocco

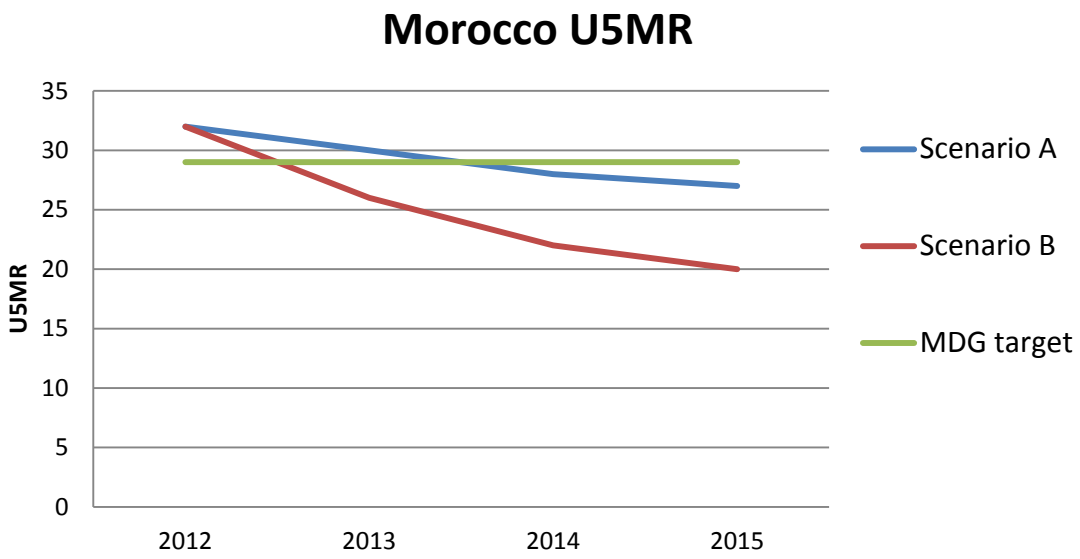
Scaling up interventions

An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.

A: Accelerating implementation
This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

B: Reaching the MDGs
In the case of Morocco, the model predicts that scenario "A" would be sufficient to reach MDG 4. A second scenario was developed with more ambitious targets set towards universal coverage (95%) in which MDG 5 would be reached and under-five mortality would be well below the MDG target. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.





The key intervention packages were scaled up as follows.

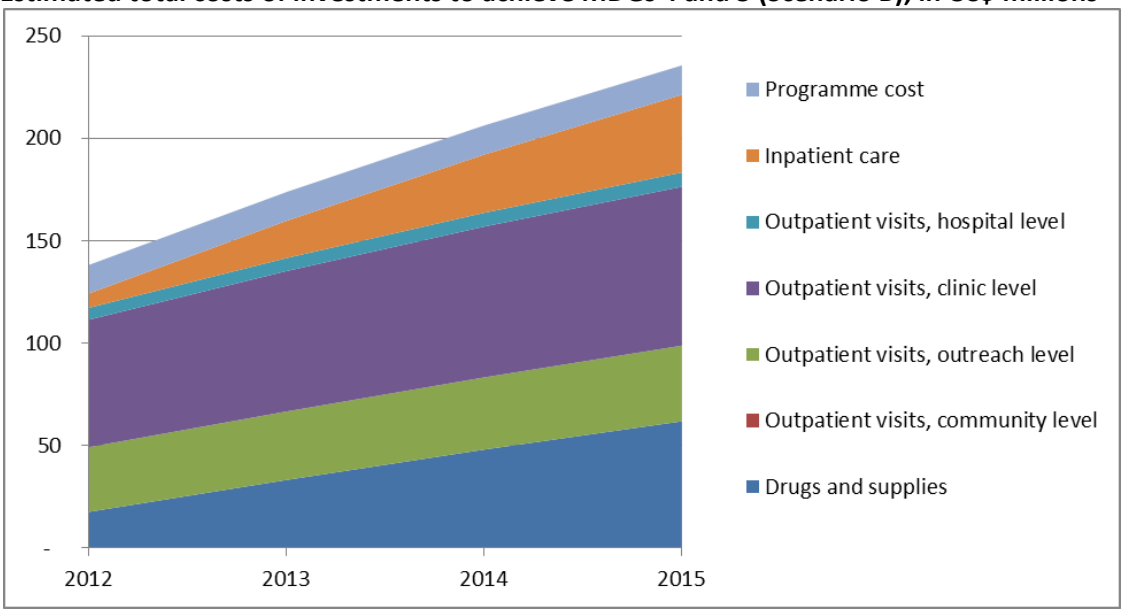
- Family planning is scaled up from 57% to 60% (A and B).
- Skilled birth attendance including antenatal care increase from 64% to 90% (A) and to 99% (B).
- Child vaccines were kept high at around 98%, and rotavirus and pneumococcal vaccines were scaled up from their very low level to 15% (A) and 75% (B).
- Interventions included in the integrated management of childhood illnesses (IMCI) were scaled up, including the treatment of diarrhoea with oral hydration salts (from 23 % to 50% in scenario A and 75% in scenario B) and zinc (from 0 to 20% in scenario A and 75% in scenario B) and the treatment of pneumonia kept at 49% in scenario A and scaled up to 75 % in scenario B.
- Essential child health nutrition interventions such as counselling for breastfeeding and complementary feeding were scaled up from 10% to 15% (A) and 75% (B) and from 22% to 35% (A) and 75% (B) respectively. Management of malnutrition was scaled up to 10% (A and B) from current low levels.
- Water and sanitation (WASH) interventions were scaled up including the use of improved water source within 30 minutes from 83% to 96% (A and B), hand washing with soap from 17% to 30% (A) and 75% (B), and hygienic disposal of children's stools from 42% to 50% (A) and 75% (B).

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	**155**	**171**	**186**	**512**
Total cost per capita	4.41	4.81	5.19	
Incremental cost (millions)	24	40	55	119
Incremental cost per capita	0.68	1.12	1.53	
Incremental child lives saved	1306	2244	3137	6687
Incremental maternal lives saved	26	37	46	109
U5MR (2015 target = 28)	30	28	27	
MMR (2015 target = 75)	91	89	87	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	174	206	236	616
Total cost per capita	4.95	5.81	6.58	
Incremental cost (millions)	42	75	104	221
Incremental cost per capita	1.21	2.11	2.90	
Incremental child lives saved	3578	6227	7307	17 112
Incremental maternal lives saved	67	128	143	338
U5MR (2015 target = 28)	26	22	20	
MMR (2015 target = 75)	85	75	72	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



Pakistan

Scaling up interventions

An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.

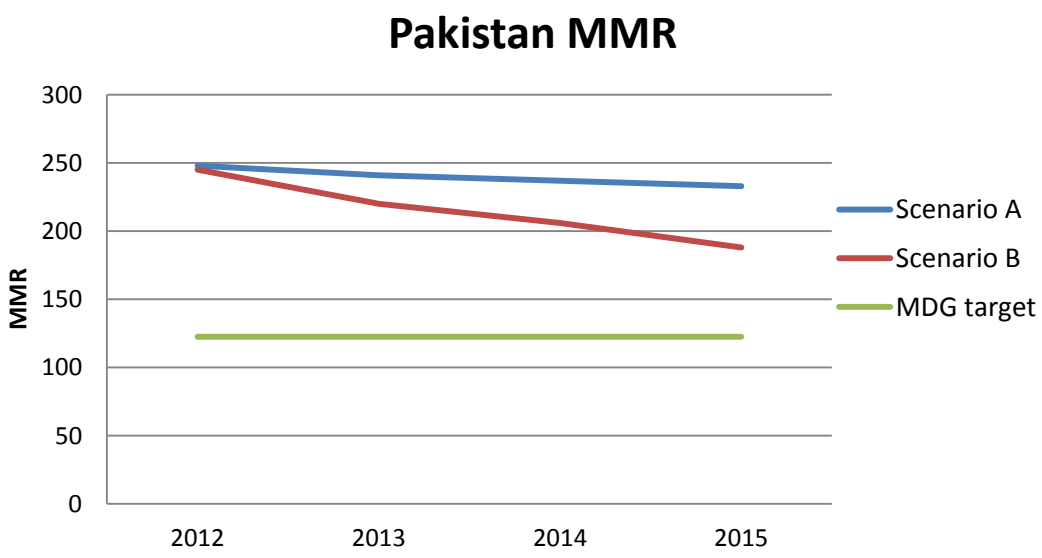
A: Accelerating implementation

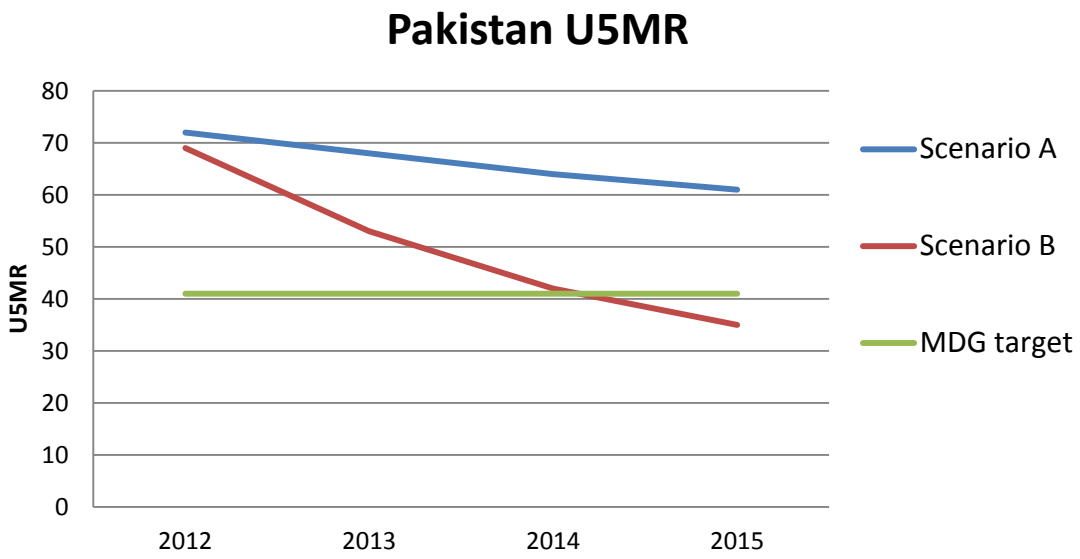
This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

B: Reaching the MDGs

In the case of Pakistan, the model predicts that scenario "A" would not be sufficient to reach MDGs 4 and 5. A second scenario was developed with more ambitious targets set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.

Scenario B was modelled with MNCH interventions reaching 95% coverage. The model indicates that the MDG4 target could be reached but MDG 5 would still be a long way to go.





The key intervention packages were scaled up as follows.

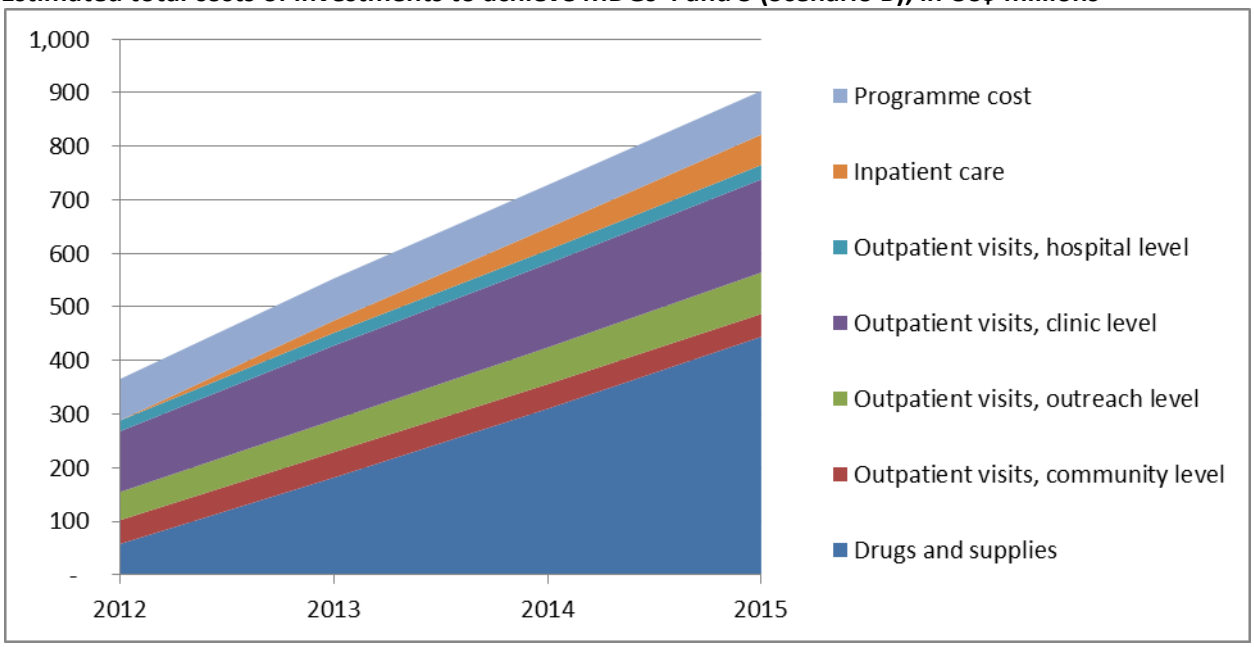
- Family planning was kept at 29% (A and B).
- Skilled birth attendance including antenatal care increase from 41% to 80% (A) and 95% (B).
- Child vaccines are scaled up to 95%–98% (A and B) and rotavirus and pneumococcal vaccines were introduced up to a coverage of 20% in scenario A and 95% in scenario B.
- Interventions included in the integrated management of childhood illnesses (IMCI) were scaled up, including the treatment of diarrhoea with oral hydration salts (scaled from 41% to 50% in scenario A and up to 95 % in scenario B) and zinc (increased from current low level to 20% in scenario A and up to 95% in scenario B) and the treatment of pneumonia was increased from 50% to 60% (A) and 95%(B).
- Essential child health nutrition interventions such as counseling for breastfeeding and complementary feeding were scaled up from 23% and 36% respectively up to 30% and 50% (A) and then to 95% (B), and the management of malnutrition was scaled up to 10% from current low levels (A and B).
- Water and sanitation (WASH) were scaled up including the use of improved water source within 30 minutes (from 92% to 95% in both scenario A and B), hand washing with soap (from 17% to 30% in scenario A and 95% in scenario B), and hygienic disposal of children's stools (from 6% to 50% in scenario A and to 95% in scenario B).

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2012	2013	2014	2015	Sum 2013–2015
Total cost (millions)	328	370	410	454	1233
Total cost per capita	3.35	3.70	4.02	4.37	
Incremental cost (millions)		61	100	144	306
Incremental cost per capita		0.61	0.99	1.39	0.00
Incremental child lives saved		20 922	41 743	57 395	120 060
Incremental maternal lives saved		446	796	1064	2306
U5MR (2015 target = 41)		65	61	58	
MMR (2015 target = 123)		232	226	222	
Scenario B (US$)	2012	2013	2014	2015	Sum 2013–2015
Total cost (millions)	366	553	728	903	2185
Total cost per capita	1.90	2.82	3.63	4.42	
Incremental cost (millions)		225	399	574	1198
Incremental cost per capita		1.15	1.99	2.81	
Incremental child lives saved		80 932	138 524	178 921	398 377
Incremental maternal lives saved		1078	1862	2908	5848
U5MR (2015 target = 41)		53	43	36	
MMR (2015 target = 123)		220	206	188	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



Somalia

Scaling up interventions

An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.

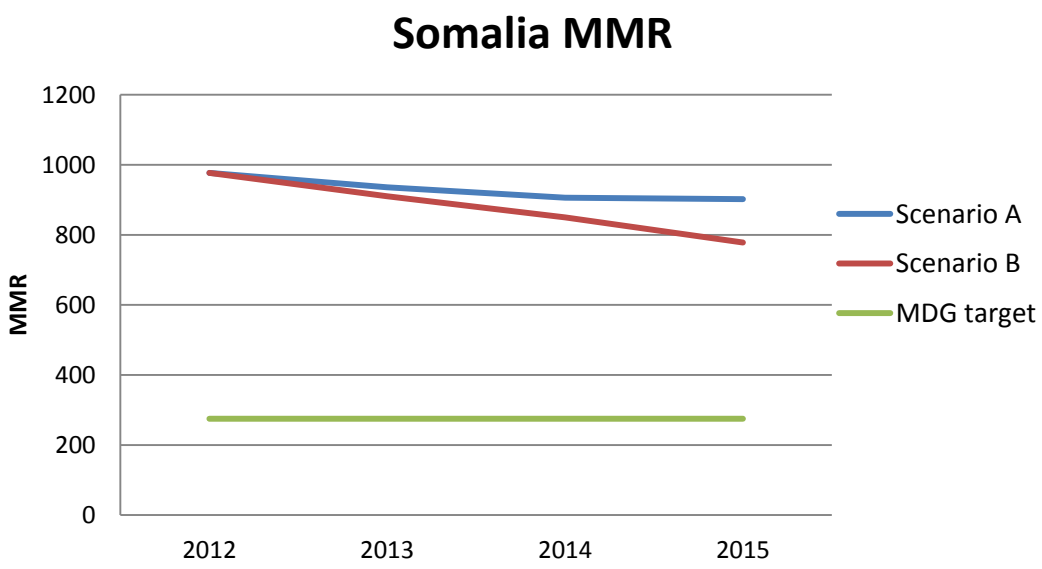
A: Accelerating implementation

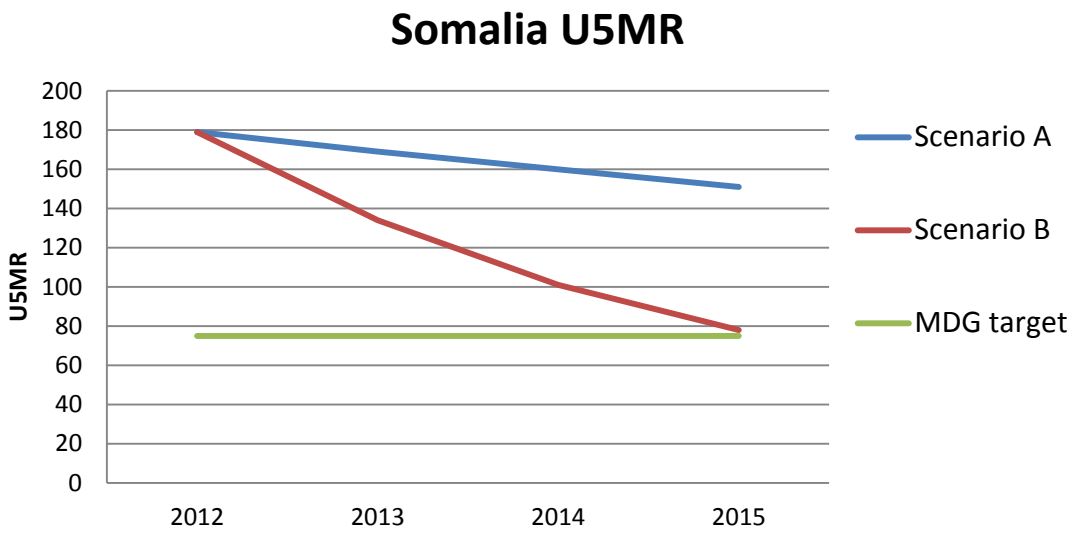
This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

B: Reaching the MDGs

In the case of Somalia, the model predicts that scenario "A" would not be sufficient to reach MDGs 4 and 5. A second scenario was developed with more ambitious targets set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.

Scenario B was modelled with MNCH interventions reaching 95% coverage. The model indicates that the MDG4 target would nearly be reached but MDG 5 would still be a long way to go.





The key intervention packages were scaled up as follows.

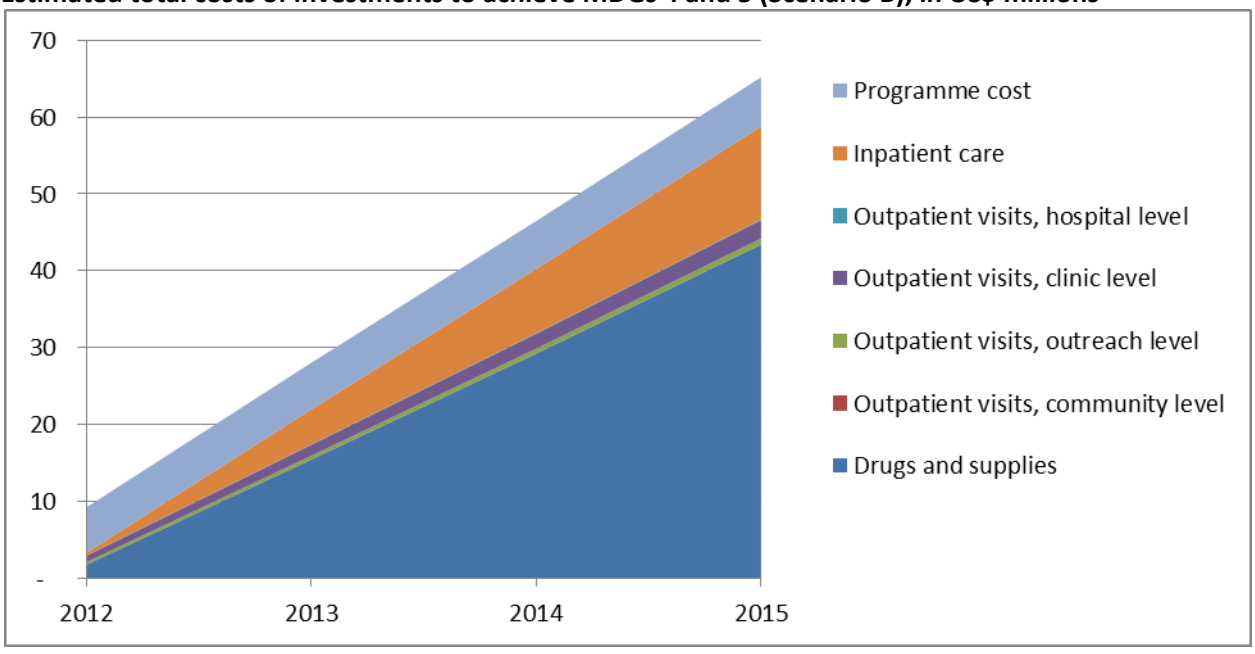
- Family planning is scaled up from 1 to 6 % (A and B).
- Skilled birth attendance including antenatal care increase from 33% to 60% (A) and 95% (B).
- Child vaccines are scaled up to an average 70% coverage and rotavirus and pneumococcal vaccines are introduced up to 20% coverage in scenario A and all vaccines are scaled up to 95% in scenario B.
- Interventions included in the integrated management of childhood illnesses (IMCI), including the treatment of diarrhoea with oral hydration salts (scaled from 30% to 50% in scenario A and 95 % in scenario B) and zinc (scaled from its current low level to 20% in scenario A and 95% in scenario B) and the treatment of pneumonia increased from 32% to 45% (A) and 95% (B).
- Essential child health nutrition interventions such as counseling for breastfeeding and complementary feeding were scaled up from 21% and 11% respectively up to 35% and 20% in scenario A and then to 95% in scenario B, and management of malnutrition was scaled up to 10 % from current low levels (A and B).
- Water and sanitation (WASH) scaled up including the use of improved water source within 30 minutes (increased to 50 in scenario A and 95% in scenario B), handwashing with soap (up to 30% in scenario A and 95% in scenario B) and hygienic disposal of children's stools (up to 45% in scenario A and 95% in scenario B).

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	13	18	23	54
Total cost per capita	1.24	1.74	2.21	
Incremental cost (millions)	7	13	18	38
Incremental cost per capita	0.72	1.22	1.70	
Incremental child lives saved	4387	8336	11 909	24 632
Incremental maternal lives saved	167	293	312	772
U5MR (2015 target = 60)	169	160	153	
MMR (2015 target = 223)	936	906	902	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	28	46	65	149
Total cost per capita	2.78	4.48	6.12	
Incremental cost (millions)	23	41	60	124
Incremental cost per capita	2.25	3.97	5.61	
Incremental child lives saved	18 846	33 053	43 727	95 626
Incremental maternal lives saved	316	680	1236	2 2321 965
U5MR (2015 target = 60)	136	103	80	
MMR (2015 target = 223)	903	815	681	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



South Sudan

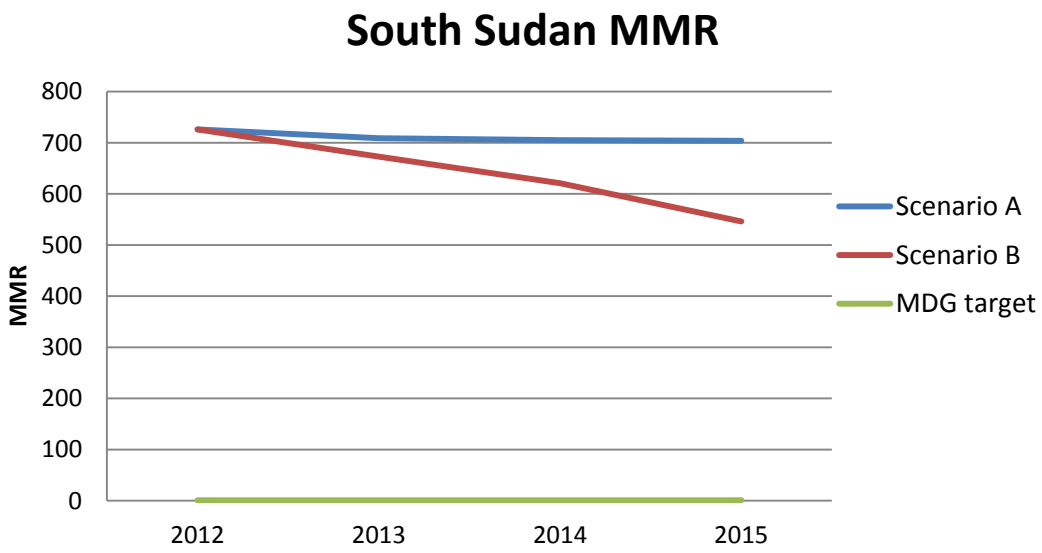
Scaling up interventions

An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.[6]

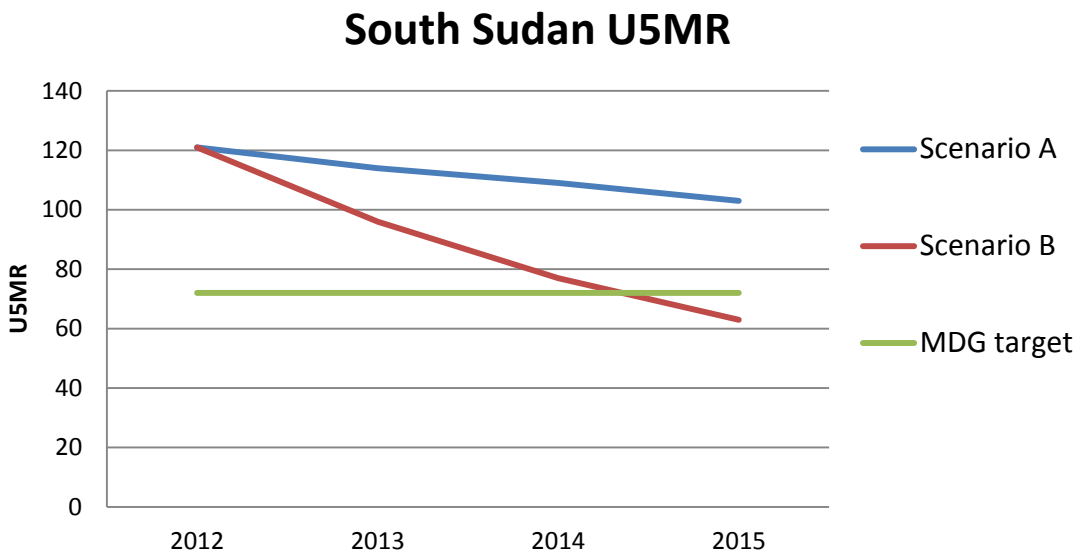
A: Accelerating implementation
This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

B: Reaching the MDGs
In the case of South Sudan, the model predicts that scenario "A" would not be sufficient to reach MDGs 4; MDG 5 target is not available. A second scenario was developed with more ambitious targets set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.

Scenario B was modelled with MNCH interventions reaching 95% coverage. The model indicates that the MDG4 target could be reached whereas the maternal mortality ratio decreases considerably but still remains high.



[6] Due to limited availability of data specific for South Sudan, the modelling has in instances where data were not available been based on best assumptions which should be taken into account when reviewing data.



The key intervention packages were scaled up as follows.

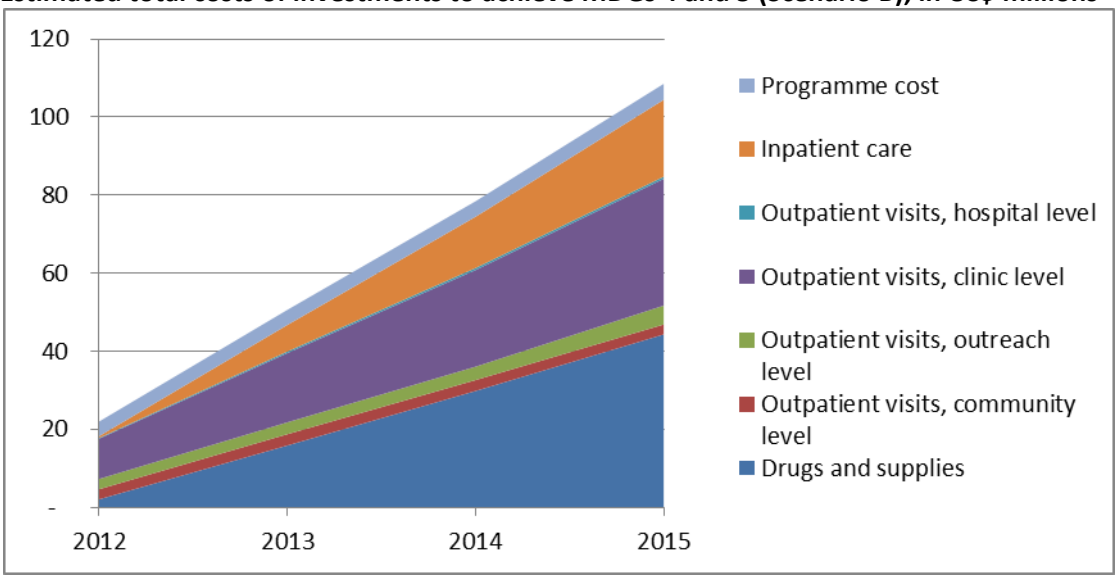
- Family planning is scaled up from 4% to 10% (A and B).
- Skilled birth attendance including antenatal care increase from 10% to 50% (A) and 90% (B).
- Child vaccines were scaled up from about 65% to 90% and pneumococcal vaccine introduced up to a coverage of 40% in scenario A. All vaccines were scaled up to 95% in scenario B and rotavirus vaccine was introduced in addition to pneumococcal vaccine and both were scaled up to 95%.
- Interventions included in the integrated management of childhood illnesses (IMCI) were scaled up, including the treatment of diarrhoea with oral hydration salts (scaled from 39% to 50% in scenario A and to 95 % in scenario B) and zinc (increased from current low level to 10% in scenario A and to 95% in scenario B) and the treatment of pneumonia increased from 33% to 50% (A) and 95% (B). Treatment of malaria increased from 11% to 25 % (A) and 95% (B).
- Essential child health nutrition interventions such as counseling for breastfeeding and complementary feeding were scaled up from 45% and 21% respectively up to 55% and 30% in scenario A and then to 95% in scenario B, and management of malnutrition was scaled up to 10 % from current low levels (A and B).
- Water and sanitation (WASH) were scaled up including the use of improved water source within 30 minutes (from 69% to 75% in scenario A and to 95% in B), hand washing with soap scaled up from current low level to 15% in scenario A and 95% in scenario B, and hygienic disposal of children's stools from current low level to 10% (A) and to 95% (B).

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	28	34	40	102
Total cost per capita	2.89	3.43	3.93	
Incremental cost (millions)	8	14	20	43
Incremental cost per capita	0.84	1.43	1.99	
Incremental child lives saved	2549	4878	6953	14 380
Incremental maternal lives saved	60	77	78	215
U5MR (2015 target = 72)	114	109	103	
MMR (2015 target = N/A)	709	705	704	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	51	78	109	238
Total cost per capita	5.24	7.88	10.59	
Incremental cost (millions)	30	58	88	177
Incremental cost per capita	3.15	5.85	8.61	
Incremental child lives saved	9466	16 669	22 180	48 315
Incremental maternal lives saved	190	380	652	1222
U5MR (2015 target = 72)	96	77	63	
MMR (2015 target = N/A)	673	621	546	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



Sudan

Scaling up interventions

An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.[7]

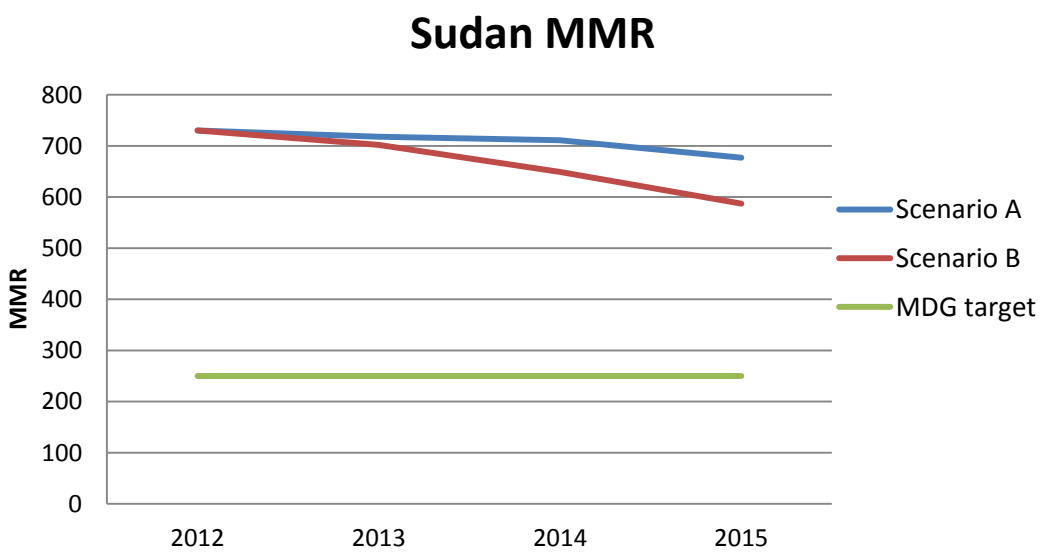
A: Accelerating implementation

This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

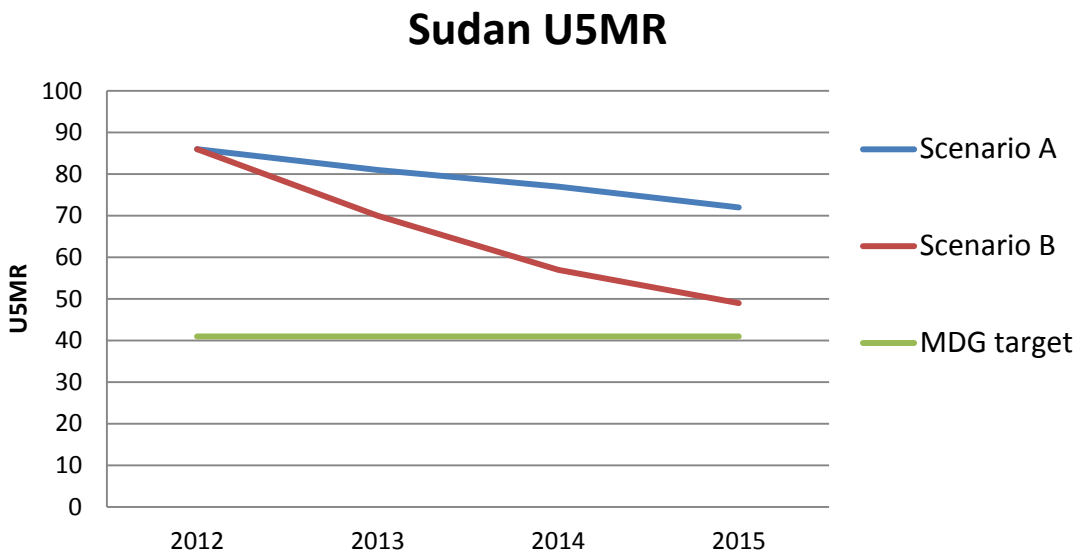
B: Reaching the MDGs

In the case of Sudan, the model predicts that scenario "A" would not be sufficient to reach MDGs 4 and 5 target. A second scenario was developed with more ambitious targets set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.

Scenario B was modelled with MNCH interventions reaching 95% coverage. The model indicates that the MDG4 target could be almost be reached whereas reaching the MDG5 target would be unlikely.



[7] Due to limited availability of data specific for Sudan, the modelling has in instances where data were not available been based on best assumptions which should be taken into account when reviewing data.



The key intervention packages were scaled up as follows.

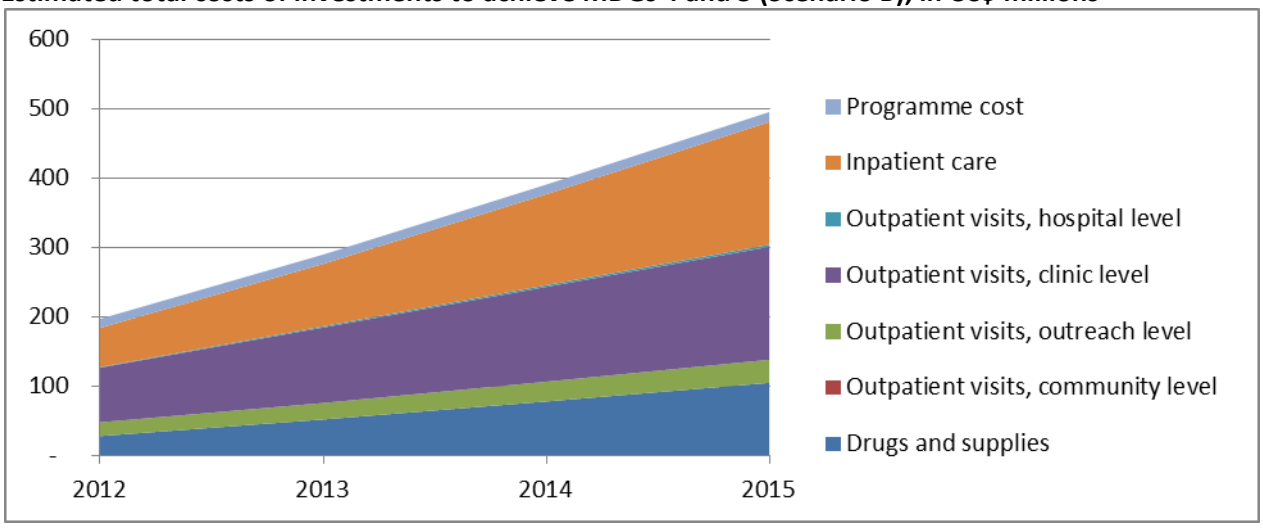
- Family planning is scaled up from 7% to 13% (A and B).
- Skilled birth attendance including antenatal care increase from 73% to 80% (A) and 95% (B).
- Child vaccines almost universal coverage (except for rotavirus) was sustained at 95% (A and B) and pneumococcal vaccine was introduced up to a coverage of 40% in scenario A. All vaccines were scaled up to 95% in scenario B including both pneumococcal and rotavirus vaccines
- Interventions included in the integrated management of childhood illnesses (IMCI), including the treatment of diarrhoea with oral hydration salts (scaled from 52% to 75% in scenario A and 95 % in scenario B) and zinc (increased from current low level to 20% in scenario A and 95% in scenario B) and the treatment of pneumonia was increased from 66% to 80% (A) and 95%(B).
- Essential child health nutrition interventions such as counselling for breastfeeding and complementary feeding scaled from baselines of 41% and 51% respectively up to 55% and 65% (A) and then to 95% (B), and the management of malnutrition was scaled up to 10 % from current low levels (A and B).
- Water and sanitation (WASH) were scaled up including the use of improved water source within 30 minutes from 61% to 80% in scenario A and to 95% in B, hand washing with soap scaled up from 17% to 20% in scenario A and 95% in scenario B, and hygienic disposal of children's stools from current low level to 20% (A) and to 95% (B).

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	245	301	362	908
Total cost per capita	7.28	8.64	10.06	
Incremental cost (millions)	61	110	171	343
Incremental cost per capita	1.83	3.17	4.76	
Incremental child lives saved	6122	13 058	21 173	40 353
Incremental maternal lives saved	173	270	767	1210
U5MR (2015 target = 41)	81	77	72	
MMR (2015 target = 250)	718	711	677	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	289	390	495	1175
Total cost per capita	8.59	11.19	13.72	
Incremental cost (millions)	106	200	304	610
Incremental cost per capita	3.14	5.73	8.43	
Incremental child lives saved	21 207	40 946	54 755	116 908
Incremental maternal lives saved	407	1169	2082	3658
U5MR (2015 target = 41)	70	57	49	
MMR (2015 target = 250)	702	650	587	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions



Yemen

Scaling up interventions

An analysis is undertaken of the likely health impact and progress towards the MDG targets of scaling up the coverage of key interventions, as well as the financial resources required. Two scenarios (A and B) were developed.

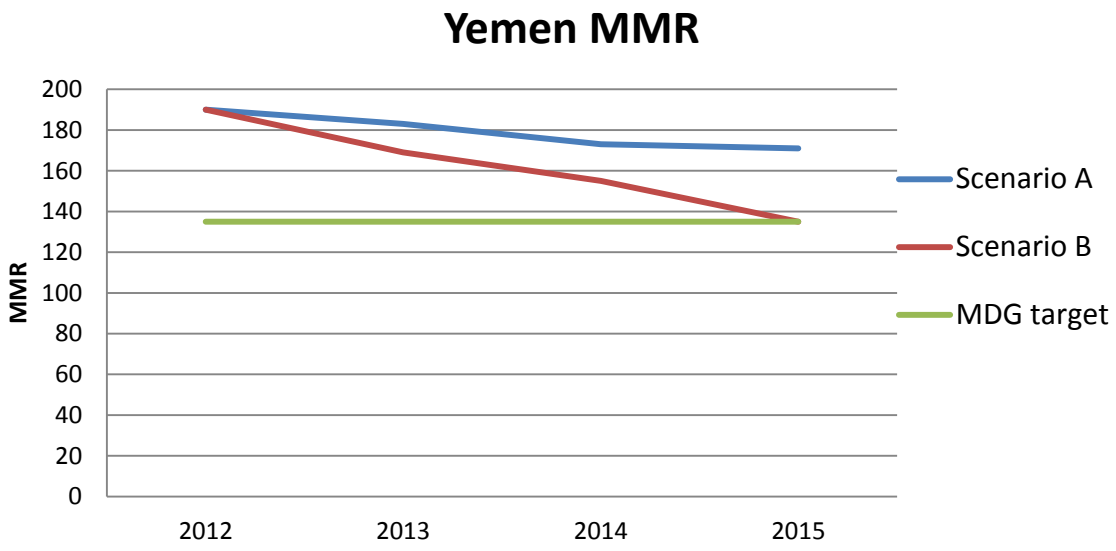
A: Accelerating implementation

This analysis was carried out to assess what impact would be achieved if efforts to increase coverage were substantially increased above current coverage rates. For many interventions this entailed doubling the coverage that would be achieved if current trends continue to 2015.

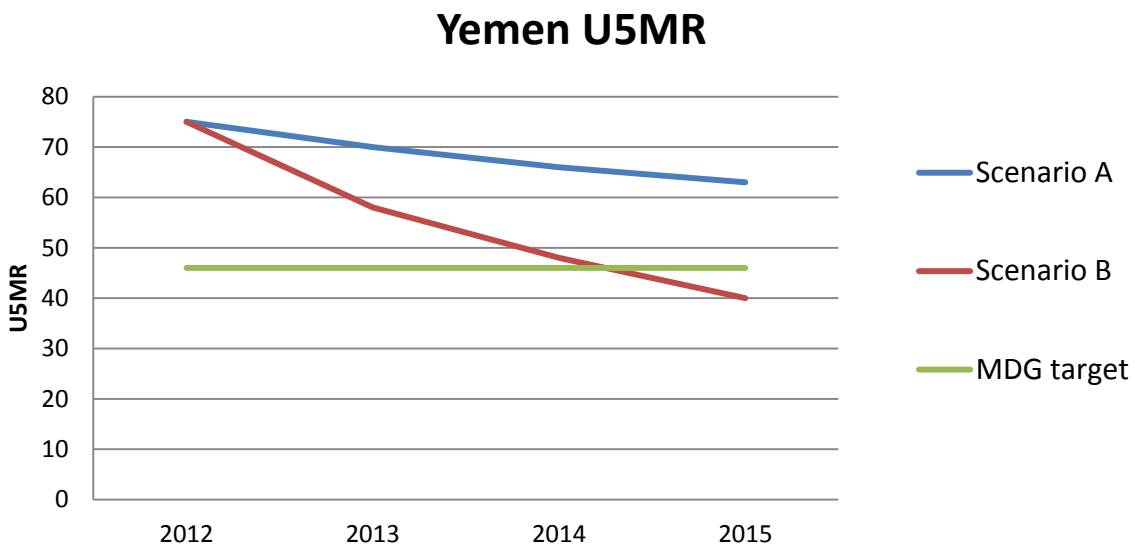
B: Reaching the MDGs

In the case of Yemen, the model predicts that scenario "A" would not be sufficient to reach MDGs 4 and 5. A second scenario was developed with more ambitious targets[8] set towards universal coverage (95%), in order to assess what the likely costs and impact would be. Coverage targets were modelled to maximize efforts required to reach MDGs 4 and 5 by 2015.

The model indicates that the MDG 4 and 5 targets would only be reached if most child health interventions are scaled up to cover 75% and extraordinary investments would be required for MNH interventions, reaching 95% coverage.



[8] Except for family planning where the original scenario A target was used, since there are limits as to how quickly the use of contraceptives can be scaled up.



The key intervention packages were scaled up as follows.

- Family planning is scaled up from 13 to 20% (A and B).
- Skilled birth attendance including antenatal care increase from 36 to 70% (A) and 95% (B).
- Child vaccines are were scaled up to 98% (80% for BCG) for scenarios A and B and rotavirus and pneumococcal vaccines were introduced up to a coverage of 20% in scenario A and to a coverage of 75% in scenario B
- Interventions included in the integrated management of childhood illnesses (IMCI), including the treatment of diarrhoea with oral hydration salts (scaled from 33% to 50% in scenario A and 75% in scenario B) and zinc (increased from current low level to 20% in scenario A and 75% in scenario B) and the treatment of pneumonia was increased from 38% to 50% (A) and 75% (B).
- Essential child health nutrition interventions such as counselling for breastfeeding was scaled up from 8% to 15% in scenario A and to 75% in scenario B. Complementary feeding counselling was maintained at 76% coverage (A and B) and the management of malnutrition scaled up to 10% from current low levels (A and B).
- Water and sanitation interventions (WASH) were scaled up including the use of improved water source within 30 minutes (up to 70% in scenario A and 75% in scenario B), hand washing with soap (up to 30% in scenario A and 75% in B), and hygienic disposal of children's stools (up to 50% in scenario A and 75% in scenario B).

What does it take?

Cost estimates presented here include MNCH-specific inputs such as commodity cost (drugs and supplies), outpatient visits and inpatient days for the relevant interventions, and costs for programme administration. The inputs are based on global defaults, using country-specific data when available. Estimates of health impact were derived by using the impact modules of the UN epidemiology reference groups, which are incorporated into the OneHealth tool. While the impact of WASH interventions is taken into account, the cost estimates do not include these interventions since they would be financed outside the health sector.

Scenario A (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	110	137	165	412
Total cost per capita	3.40	4.13	4.83	
Incremental cost (millions)	39	60	88	187
Incremental cost per capita	1.22	1.81	2.57	
Incremental child lives saved	5475	10 994	14 802	31 271
Incremental maternal lives saved	75	190	216	481
U5MR (2015 target = 46)	70	66	63	
MMR (2015 target = 135)	183	173	171	
Scenario B (US$)	2013	2014	2015	Sum 2013–2015
Total cost (millions)	**162**	**226**	**289**	678
Total cost per capita	5.03	6.81	8.44	
Incremental cost (millions)	79	136	198	413
Incremental cost per capita	2.44	4.09	5.79	
Incremental child lives saved	18 165	31 752	41 344	91 261
Incremental maternal lives saved	204	410	624	1,238
U5MR (2015 target = 46)	59	49	41	
MMR (2015 target = 135)	168	155	135	

Estimated total costs of investments to achieve MDGs 4 and 5 (Scenario B), in US$ millions