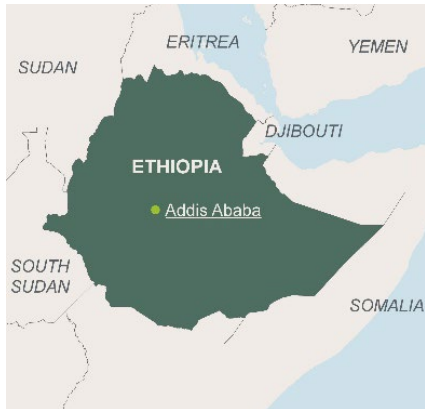


Ex-post-Evaluation

Vaccination program funding in cooperation with Gavi, Ethiopia



Title	Vaccination program funding in Ethiopia in cooperation with Global Vaccine Alliance (Gavi), Phase 1		
Sector and CRS code	Health, family planning, HIV/AIDS (12550)		
Project number	2016 67 146		
Commissioned by	German Ministry for Economic Cooperation and Development (BMZ)		
Recipient/Project-executing agency	Global Vaccine Alliance, Gavi		
Project volume/Financing instrument	EUR 10 million, FC grant		
Project duration	2016-2017		
Year of report	2022	Year of random sample	2022

Objectives and project outline

The revised outcome objective was the reduction of vaccine preventable diseases through contributing to nationwide vaccination coverage of all newborns according to the vaccination calendar with pentavalent, pneumococcal and rotavirus vaccines and children under 5 not vaccinated accordingly. At the impact level, the objective was the improvement of the health of the population in Ethiopia, considering children under 5 in particular. The project provided funds to Gavi for the procurement of pneumococcal, pentavalent and rotavirus vaccines in 2016. These vaccines were administered through established Gavi/UNICEF support to the Ethiopian Expanded Program on Immunization.

Key findings

The project was highly relevant and effectively supported the Ethiopian childhood immunization program. It is plausible that it contributed to reductions in child mortality. The project is rated as "moderately successful":

Coherence (moderately successful): The project arose from a global initiative and synergies with the German development cooperation portfolio were limited, synergies with Ethiopian government priorities were strong.

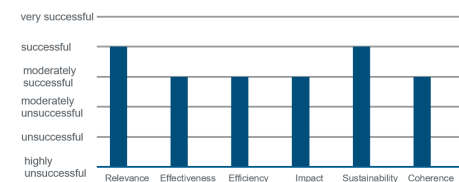
Effectiveness (moderately successful): Two of the three outcome indicators were met, however, vaccination coverage rates improved for all three supported vaccines. Equity in vaccination coverage remains a challenge.

Efficiency (moderately successful): Immunization of children is a highly cost-effective health intervention. Even though procurement was highly efficient, efficiency at the operational level can still be enhanced. However, annual tranches of bilateral, earmarked funding raise Gavi transaction costs.

Impact (moderately successful): It is too soon to say whether the objective of a reduced child mortality rate will be reached, but at current rates of reduction Ethiopia will come close. It is plausible that the project contributed to this impact.

Sustainability (successful): Vaccinations are for life and are inherently sustainable. One threat to the sustainability of the immunization program is an escalation of conflict, but in the past, it has managed to maintain vaccination campaigns in all parts of Ethiopia in spite of episodes of conflict.

Overall rating:
moderately successful



Conclusions

- Equity in coverage is crucial for immunization programmes; therefore monitoring (and management) should be based on indicators disaggregated by gender and other relevant criteria (e.g. urban/rural, regional, poverty).
- The efficiency of implementation could be enhanced through the provision of multilateral, unearmarked funding to Gavi, minimising transaction costs.

Ex post evaluation – Rating according to DAC criteria

Framework conditions and classification of the project

The Financial Cooperation (FC) project under review here was undertaken in Ethiopia in 2016, although funding was disbursed retrospectively in 2017. It was the first phase of a three-phase immunization project, financed with parts of the bilateral funding from Germany's pledge of EUR 600 million for Gavi, the Global Vaccine Alliance, made by Chancellor Angela Merkel in January 2015 to cover the period 2016-2020.

The FC project was executed through Gavi, a globally active public-private partnership with its headquarters in Geneva. Its 2021–2025 mission (similar to the time of project appraisal) is to save lives and protect people's health by increasing equitable and sustainable use of vaccines¹.

Gavi's partners include governments in industrialised and developing countries, the World Health Organisation (WHO), the United Nations Children's Fund (UNICEF), the World Bank, the Bill & Melinda Gates Foundation, non-governmental organisations, vaccine manufacturers from industrialised and developing countries, health care and research institutions, and other private donors. Germany's Federal Ministry for Economic Cooperation and Development (BMZ) is represented on Gavi's Board and in various working groups. Gavi is seen as an operationally and fiscally sound partner. In the 2022 Aid Transparency Index, Gavi was listed in eighth place among 50 development organisations.

Gavi is a vertical program that focuses on fighting specific diseases. It is not integrated into the health care system but provides support for national vaccination programs through a parallel system of financing and procurement. Gavi bundles donor and counterpart contributions and ensures the availability of sufficient funding while UNICEF procures the vaccines.

Responsibility for the actual implementation of the national immunization program in Ethiopia lies with the Ethiopian Ministry of Health (MoH), specifically the Directorate of Mother and Child Health (MCHD), which manages the Expanded Program on Immunization (EPI). The vaccinations are given by MCHD personnel and administered through the Directorate's network of regional offices. This division of labour ensures that vaccines are available in a timely manner and in sufficient quantities and at the same time maximises the use of national systems. The Gavi support to the vaccination program provides vaccines and consumables, training measures, and maintenance of the cold chain as well as transport.

Brief description of the project

The objective of the FC project was to reduce child mortality in Ethiopia by contributing to nationwide vaccination campaigns of pentavalent², pneumococcal and rotavirus vaccines. The contribution was through a bilateral commitment of EUR 10 million for the Ethiopian EPI to Gavi. This was to finance routine vaccinations for children up to 12 months, and children up to the age of 5 who did not have sufficient vaccination protection. The FC funds were earmarked exclusively for vaccine procurement.

¹ Gavi is guided by four strategic goals: The vaccine goal to introduce and scale up vaccines. The equity goal to strengthen health systems to increase equity in immunization. The sustainability goal to improve sustainability of immunization programs. The healthy markets goal to ensure healthy markets for vaccines and related products.

² Pentavalent is a 5 in 1 vaccine including: diphtheria, tetanus, whooping cough, hepatitis B and Haemophilus influenzae type B (Hib)

Breakdown of total costs

The total costs of the project were based on the available financing volume. Therefore, there are no deviations between planned and actual figures.

Figure 1: Planned and actual costs of the project³

	Projects (planned) EUR million	Projects (actual) EUR million
Total Investment costs (vaccine procurement)	76.1	76.1
Government of Ethiopia (GOE) contribution	11.2	11.2
Other Gavi contribution	54.9	54.9
FC funding	10.0	10.0

Source: KfW Project documentation and Gavi Ethiopia Co-financing Factsheet 2021

Rating according to DAC criteria

Relevance

Alignment with policies and priorities

The FC project objectives are aligned with global policies and priorities. Foremost among them is Sustainable Development Goal (SDG) 3 of 2015, which is to ensure healthy lives and promote well-being for all. SDG 3 sub-goals are relevant to this evaluation including, by 2030, ending preventable deaths of newborns and children under 5, with all countries aiming to reduce under-5 (U-5) mortality to at least 25 per 1,000 live births; and providing access to safe, effective and affordable essential medicines and vaccines. The project is equally supportive of the international immunization program as captured in *Immunization Agenda 2030: A Global Strategy to Leave No One Behind*.

According to the WHO, immunization currently prevents 3.5-5 million deaths every year⁴ from diseases like diphtheria, tetanus, pertussis, influenza and measles. It is a key component of primary health care. The Gavi mission is also consistent with global goals in immunization. At the time of the Project Appraisal in 2016 the Gavi mission was to save children's lives and protect people's health by increasing equitable use of vaccines in Low Income Countries (LICs).

The FC project addressed a clear need. In 2016 Ethiopia suffered high rates of under 5 (U-5) child mortality at 59 per 1,000 live births. The EPI covered only 39 % of children in 2016 – and only 22 % before their 1st birthday (Ethiopia Demographic and Health Survey, 2017). A target of 90 % is recommended⁵ by the Global Vaccination Action Plan 2011-2020. Respiratory and diarrheal diseases were, and continue to be, a major cause of child mortality.

³ These figures are for all routine immunization, but for vaccine costs only. Importantly the proportion contributed by the government of Ethiopia is significantly higher when non-vaccine cost of immunization (e.g. transport, cold chains and consumables but also training) are included (see Effectiveness for more details).

⁴ WHO https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1 accessed September 13, 2022

⁵ Global Vaccine Action Plan 2011-2020 has the following target: By 2020, coverage of target populations should reach at least 90 % national vaccination coverage and at least 80 % vaccination coverage in every district or equivalent administrative unit for all vaccines in national immunization programs.

There was a high need for additional financing. The Government of Ethiopia (GOE) provided only 41 % of the 2016 routine immunization budget and only 11 % of the vaccine cost⁶.

The FC project was aligned with the national development objectives of Ethiopia. Analysts reported at the time that government promoted health services as part of its national development agenda, especially in rural and peripheral areas, as part of its political and strategic goals⁷. Ethiopia had a national five-year Health Sector Transformation Plan (HSTP II) which included the objective of reaching 95 % full vaccination coverage by 2020 [Dheresa et al, 2021].

Alignment with needs and capacities of stakeholders and affected persons

The primary target group was newborns in their first year of life and unvaccinated children up to the age of 5 which is wholly consistent with target groups identified by the EPI⁸.

FC project objectives were focused on the developmental needs and capacities of the target group. Vaccination deficiencies were correctly identified as one of the primary challenges facing U-5s and the approximately 3 million babies born annually in Ethiopia. The program was explicitly appraised with equity in mind since both gender equity and regional equity are built into the Gavi model (see Gavi Annual Report 2021) and were foreseen to be monitored through the EPI program. While the FC financing was focused on the procurement of vaccines, the broader Gavi support included measures to strengthen national implementation capacities of the EPI in areas with identified need of support (also see below).

Suitability of project concept

The theory of change (TOC) (even though not explicitly articulated in the project appraisal) was plausible at appraisal stage. Through contributing to the availability of more quality vaccines (inputs) for an increase in vaccination rates (outcome) the project intended to contribute to a reduction of vaccine preventable diseases and through this the reduction of the U-5 child mortality rate (CMR) (impact).

The underlying assumptions were as follows: the provision of vaccines would be arranged through a trusted, efficient and highly economic procurement agency (UNICEF); the oversight of the project would be carried out by Gavi with a sterling international reputation for performance, commitment to equity, and fiduciary care; that the immunization program on the ground would be carried out by the Ethiopian EPI which had many years of experience and a deep subnational reach, albeit facing some important and known challenges; that the use of well-established systems would provide the greatest possibility of success; and that the challenges in human resource quality, transport and cold chain could be rectified, overcome or circumvented. By pooling funds, the financing and implementation systems of Gavi were expected to lead to high efficiencies in the procurement of vaccines.

The concept of the FC project considered sustainability from the outset. It recognized that vaccinations of children are inherently sustainable since they provide lifelong protection from disease. The project appraisal document also recognized the economic sustainability issues of the EPI program. It reported that the MoH financed 33 % of the EPI program and this was expected to increase over time in line with Gavi's graduation policy (see sustainability for more details). However, it was acknowledged from the outset that immunization would continue to require significant financial support from external donors.

Within the scope of the ex post evaluation (EPE), the outcome and impact objectives were revised to clearly reflect the different levels in the results framework and be more specific concerning actual targeted beneficiaries. The indicators were adapted respectively and a further disaggregation proposed to enhance their informative value in view of equity monitoring and management (for details see Effectiveness and Impact below).

The concept did not explore the political dimension, which determines the wider environment in which the activities took place; nor the causes of the challenges that emerge in data collection, for instance. It assumed that 'well established' reporting structures and existing delivery mechanisms were sufficient and envisioned that the

⁶ WHO-UNICEF Joint Reporting Form 2017

⁷ Shumey B. Teshome & Paul Hoebink, 2018; Lavers, ESID 2016

⁸ The FC Project also had an aspiration to support HPV vaccination for 9 to 14 year old girls in later years, but not in the year under review. The EPI introduced HPV vaccinations for 14-year-old girls in 2018. <https://www.afro.who.int/news/ethiopia-launches-human-papillomavirus-vaccine-14-year-old-girls>.

violence that existed when the proposal was written would not significantly interfere with delivery of vaccines nor was it to worsen.

About the time the proposal was written, protests broke out in Ethiopia, which lasted for two years, causing some concerns in the donor community including Germany. However, the appraisal does not address these events, which continued through the project period. That said, the project appraisal identified other risks and challenges facing the project including cold chain management; education and training; chronically understaffed health centers and frequent staff turnover; accessibility to remote regions, and data collection and analysis. There are no environmental issues associated with the project, and thus no environmental risks.

Reaction to changes/adaptability

There has not been any revision or supplement to the initial concept. However, informants reported that the implementation of the Gavi supported EPI program was adaptable in the face of sporadic conflict. If conflict hindered the implementation in one area, it was put on hold in that area until the conflict abated.

Rating summary:

The FC project responds directly to the core problems: high levels of child mortality in Ethiopia, and low levels of vaccine coverage. The project is wholly aligned with the policies and priorities of the global and national communities, as well as with the needs and capacities of beneficiaries. While the FC funding is focused on the procurement of vaccines, existing challenges in national implementation capacities were to be addressed by the broader Gavi support. The project concept is well designed and takes advantage of proven and well-established systems. The Relevance therefore is rated as successful.

Relevance: 2

Coherence

Internal coherence

Originating from a pledge by Chancellor Merkel in 2015, the FC project had authorization from the highest level of German Government, but as it came from a central initiative, synergies with the existing German Development Cooperation (DC) portfolio in Ethiopia were not provided for. In fact, health was not one of the three focal sectors selected for the German DC in Ethiopia, but there was minor synergy as FC was supporting the training of biomedical engineers through the FC TVET program and had regular contact with the MoH.

BMZ is responsible for developing the guidelines and strategies for German development cooperation. However, during this evaluation no information was made available on German country or sector strategies for the relevant period. However, the project was fully harmonized with SDGs and international norms to which Germany subscribes, as indicated in the section on Relevance above.

External coherence

The FC project contributed to an on-going and well-established immunization program in partnership with the GOE, Gavi, and UNICEF. Ethiopian government immunization programs have been in place since the 1980s and the current Gavi/MoH system was developed closely with EPI and MoH under a Gavi grant proposal. The FC funds went through Gavi to UNICEF for the procurement of vaccines. The EPI program itself is implemented through local (Woreda) government structures at clinic level. GOE multi-year plans provide a framework within which Gavi can receive financial support for the procurement of vaccines.

Gavi received funds for its Ethiopia program from many sources. It coordinated the use of these funds through its own agency, and with UNICEF, which procured the vaccines. The coordination of the national vaccination programs with the sector program and other activities in the health sector is carried out by the Inter-Agency Coordination Committee (ICC), in which all relevant actors from the government, donors and civil society are represented. Gavi works closely with partners WHO and UNICEF to monitor immunization outcomes, and WHO/UNICEF publish regular summaries of data by vaccination type. The appraisal of the FC project was well aware of the Gavi/ICC coordination process and relied upon it.

As can be seen from the above, the project was designed to make use of existing partner systems.

Rating summary:

The project arose from a globally active initiative of the German Government and synergies with the existing FC portfolio in the country were very limited, but synergies with government priorities were strong. The FC project's external coherence was strong, and benefited from its support of an existing, well-established and well-coordinated national immunization program. Coherence is rated as moderately successful.

Coherence: 3

Effectiveness

Achievement of (intended) goals

The revised outcome objective is **the reduction of vaccine preventable diseases through contributing to the nationwide vaccination coverage of all newborns according to the vaccination calendar with pentavalent, pneumococcal and rotavirus vaccines, and U-5s not vaccinated accordingly** (also see Annex 2).

The EPE considers vaccine coverage rates appropriate as outcome indicators. However, as equity in coverage is crucial (a.o. to achieve herd immunity), they should incorporate data disaggregation by gender, region, poverty, ethnicity etc. to constitute an adequate basis for equity monitoring and management. Outcome indicators therefore should be expanded under the EPE to include gender disaggregation; unfortunately, no data has been made available during the evaluation. In addition, both baseline and target values were revised⁹. The achievement against the revised targets is summarized in the following table:

Figure 1: Achievement of intended objectives at outcome level¹⁰

Indicator – vaccine coverage rate	Status at project appraisal (2016)	Target value at project appraisal	Status at final report (2020)	Status at EPE (2022)
1 DTP-HepB-Hib (pentavalent) aggregate	EPE revision: 63 %	EPE revision: 68 %	--	71 % (2020) estimate from WUENIC 2021 revision. Target reached
2 Pneumococcal aggregate	EPE revision: 55 %	EPE revision: 60 %	--	67 % (2020) estimate from WUENIC 2021 revision. Target reached
3 Rotavirus aggregate	EPE revision: 56 %	EPE revision: 77 %	--	70 % (2020) estimate from WUENIC 2021 revision. Target not reached

⁹ The data for vaccine coverage rates (VCRs) in the Project Appraisal were drawn from 2014 WUENIC data which is an appropriate source. However, all were revised downward significantly in the 2017 WUENIC revision. The EPE has therefore adopted the new base rates and revised target vaccine coverage rates (VCRs) pro rata as indicated in column 2 of the table (Figure 1) (also see Annex 2 for more details).

¹⁰ All vaccination coverage rates refer to „fully vaccinated“.

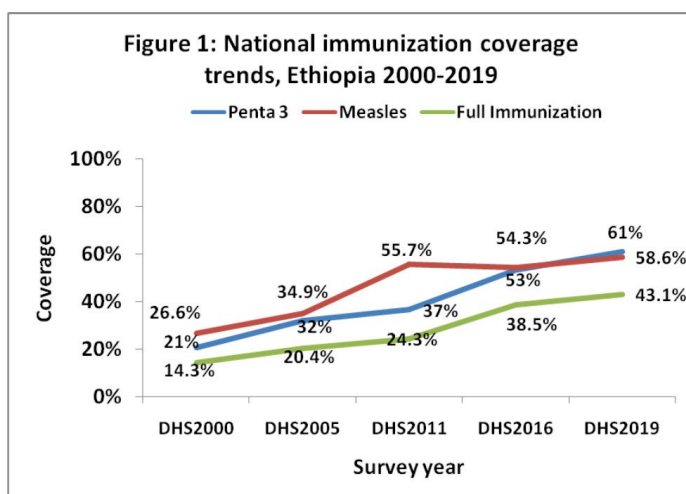
Figure 1 demonstrates that outcome indicator targets were achieved for both pentavalent and pneumococcal (PCV1), but not in respect of rotavirus.

- For the pentavalent a coverage rate of 71 % was reached in 2020, and the revised target of 68 % was met.
- For the pneumococcal a coverage rate of 67 % was reached in 2020, and the revised target of 60 % was met, even significantly overachieved.
- For the rotavirus a coverage rate of only 70 % was achieved in 2020, and the revised target of 77 % was not met. However, the coverage rate rose significantly from 2016-2020, climbing from 56 % to 70 %.

As further evidence of positive results from Ethiopia’s immunization activity, the regular Demographic and Health Surveys (DHS) confirm a positive trend as indicated at Figure 2 below:

Figure 2. Trends in national immunization coverage, Ethiopia, 2000-2019.

Selected indicators: measles vaccine (MCV), 3rd dose of DPT-hepB-Hib vaccine (Penta 3), and coverage of fully immunized children from 12-23 months old.

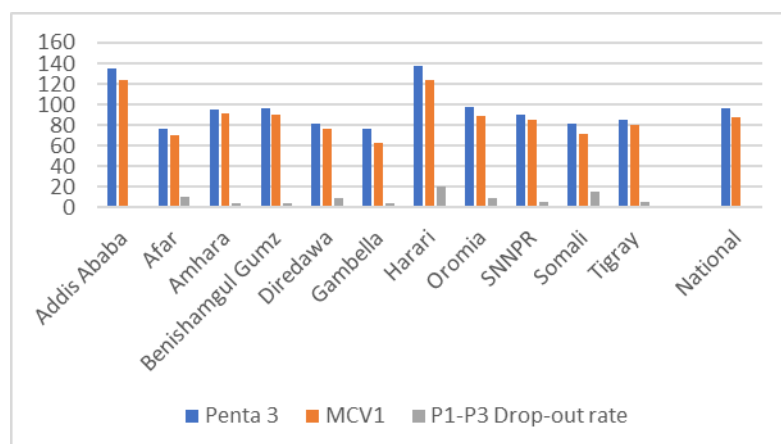


Source: Ethiopia Demographic and Health Surveys

However, UNICEF reported a global trend of the “largest decline in childhood vaccination in 30 years” due to the COVID-19 pandemic (UNICEF, July 2022). Globally 25 million children missed out one or more doses of Penavalent in 2021 (a key marker for immunization coverage). According to UNICEF, Ethiopia was among those countries with the highest numbers of unvaccinated children due to COVID-19. Coverage rates in 2021 for pentavalent dropped about 6 percentage points to 65 % and 61 % for pneumococcal and 5 percentage points to 65 % for rotavirus (WUENIC, 2022). Catch-up immunization activities will be required to allow Ethiopia to return to pre-pandemic levels of coverage.

Detailed data on gender and spatial distribution of vaccines has not been made available. However, some pre-pandemic equity data is available from diagnostic reports, DHS reports, WHO and the 2019 Gavi Joint Appraisal. In 2018 WHO reported on routine immunization coverage by region showing Addis Ababa and the very small region of Harari with significantly higher coverage than Afar and Gambella, which achieved 77 % coverage according to official data:

Figure 3: Routine immunization coverage (Penta 3 and MCV1 (measles)) by regions in 2018, in percent)



Source: WHO 2018 EPI Report for Ethiopia

However, there is some evidence that disparities decreased during the period of the project. The Gavi Joint Appraisal reported that the difference between high performing (Addis Ababa) and the lowest performing region (Afar) for DPT-Hib (Haemophilus influenza B), Hep-B 3 (Hepatitis B) reduced from a ratio of 4.7 in 2016 to 3.7 at the time of the 2019 Mini DHS (Gavi, 2019).

A 2020 report reviewed several studies and concluded that child gender preferences do not seem to play an important role for immunization inequalities in Ethiopia (Tilahun et al, 2020). The Joint Appraisal of 2019 confirmed this (Gavi, 2019). However, the Mini DHS of 2019 reported significant rural/urban disparities and by wealth quintile (reproduced in the Gavi Joint Appraisal). In respect of the latter, the Gavi Joint Appraisal reported:

“The gap between lowest and highest quintile remains between 35 to 40 % higher for the richest wealth quintile households than [for] children in the poorest households both in EDHS 2016 and Mini DHS 2019 for Penta3 and fully vaccinated children. The proportion of unvaccinated children among the lowest wealth quintile households increased from 24.4 % in 2016 to 33.6 % in the 2019 Mini DHS. Conversely, it reduced from 6.3 to 3.8 % for children from highest quintile during the same period. Thus, households’ economic status is strongest determinant of child’s vaccination status, and the gap is increasing over time [rather] than narrowing.”

These are hints that equity of vaccination campaigns in Ethiopia remains challenging in particular concerning reaching rural areas and population with low income.

It is not possible to say which access barriers predominate these disparities. The vaccination itself is free of charge; however, transportation costs or taking time of work to be able to bring children to the vaccination might be relevant opportunity costs. Dropouts prior to full vaccination also are reported to be related to limited awareness.

Contribution to goal achievement

At the time of the appraisal, one-third of the immunization budget was reported to be provided by the GOE¹¹ and Gavi funded about 62 %. The current EPI 2016 - 2020 has a financing requirement of approx. EUR 1 billion (USD 1.137 billion). With around 33 % of the total vaccination budget, the Ethiopian government made considerable contributions to this. The percentage had risen to 41 % by 2016.

In order to quantify the contribution made by the FC project to the outcome objectives some plausible assumptions must be introduced. It is reasonable to suppose that the project contribution to the increased vaccination coverage rates in entavalent, pneumococcal and rotavirus was in proportion to the funds provided. The 2016 contribution of EUR 10 million was approximately USD 10.54 million¹². The total amount spent on

¹¹ According to Gavi co-financing data the GoE covered 33.25 % of routine immunization costs in 2014.

¹² According to an exchange rate at 1 EUR = 1.054 USD on date of payment December 9, 2016.

vaccines under the EPI in 2016 was USD 80.2 million (Gavi, Co-financing report, 2019) so that we can see the FC contribution to EPI vaccines was 13.1 %¹³.

The FC funds were spread over all three vaccines as indicated at Figure 4 below, providing financing for 4,9 million doses:

Figure 4: spending on vaccines

	No. of vaccines	Costs in EUR
Pneumococcal	1,534,484	4,460,390
Pentavalent	1,939,800	2,669,960
Rotavirus	1,434,000	2,869,650
Total	4,908,284	10,000,000

Source: KfW Final Report

What might have happened in the absence of the German grant? There are two possibilities: either a large number of children would have gone unvaccinated, and a significant number would have died; or one of Gavi and the GOE would have found the funds to fill the gap. In either case, the true consequence would result from the absence of expenditure in another area, or for another purpose. This cannot easily be known, and the evidence is therefore inconclusive.

Quality of implementation

The effective implementation was ensured through the financing mechanism used by Gavi with built in oversight mechanisms. The FC funds were transferred directly to an account used solely for procuring vaccines by UNICEF.

A further strength of the FC project is that it used existing EPI systems. After vaccines were procured, they were supplied to established MoH immunization programs in EPI (for details see under Coherence). Gavi reports, that coordination of immunization program implementation spearheaded by GOE improved in the project period (Gavi, 2018). The EPI network was continuously being strengthened with external sources of finance including Gavi's own Health Systems Strengthening (HSS) program. Informants advised that commitment of government was "impressive" and was a critically important factor in the success of the EPI. Informants also reported that the key factor hindering progress was the continuing levels of conflict, which interrupted immunization service delivery.

The fact that limited data concerning equity nor information on wastage etc. could be provided (also see Efficiency below) are indications of a lack of monitoring and management of the actual implementation of the EPI in Ethiopia.

Unintended effects (positive or negative)

The EPE is not aware of any unintended effects.

Rating summary:

Two of the three outcome indicators were met (pentavalent and pneumococcal) while one (rotavirus) was not. However, prior to the COVID-19 pandemic, vaccine coverage rates improved for all three vaccines. The contribution of the FC project met expectations. The quality of implementation in terms of procurement and distribution to EPI was sound, but little is known about the implementation within the Ethiopian EPI, except that Gavi considered it to have improved in the project period. Even though regional disparities in coverage were slightly reduced, an increase in the percentage of unvaccinated children in poor households is alarming and an equitable access to immunization remains a challenge. The Effectiveness in summary is rated as moderately successful.

Effectiveness: 3

¹³ There is a discrepancy between Gavi and FC internal reporting. In its final report, the latter reports the 2016 total costs of vaccines for pentavalent, pneumococcal and rotavirus at USD 65.5 million and the project's contribution at 16.1 % (10.54/65.5). For the EPE we will rely on the data reported by Gavi.

Efficiency

Production efficiency

Immunization of children under 5 is regularly identified as a highly cost-effective intervention. A comparison across countries reveals that child health and immunization produce the most favorable average cross-effectiveness ratios (ACERs). Across the life course, interventions targeting the newborn have the lowest ACERs, closely followed by interventions targeting U-5s (Sternberg et al, 2021). Another study assessed the return on investment for vaccinations to prevent diseases related to ten antigens in 94 low- and middle-income countries during 2011-2020 (Sachiko Ozawa/WHO, 2016):

“We derived these estimates by using costs of vaccines, supply chains, and service delivery and their associated economic benefits. Based on the costs of illnesses averted, we estimated that projected immunizations will yield a net return about 16 times greater than costs over the decade (uncertainty range: 10-25). Using a full-income approach, which quantifies the value that people place on living longer and healthier lives, we found that net returns amounted to 44 times the costs (uncertainty range: 27-67). Across all antigens, net returns were greater than costs.”

A 2017 study also reported that reduced prices of pneumococcal and rotavirus vaccines had further dramatically improved the cost-effectiveness of these interventions (Horton et al).

The mechanism chosen (Gavi/UNICEF/EPI) is known to be efficient. Gavi itself is an efficient organization with minimal in-country presence. Each year it publishes its operating expenses ratio, which for 2021 was 6.35 % (Gavi Annual Financial Report, 2021). In the project under review, in-country overheads were absorbed by the Gavi program and/or MoH/EPI. Gavi is supported by a number of donors and through pooling and bundling the Gavi approach can lead to high efficiencies in the procurement of vaccines. However, the bilaterally provided annual tranche of FC funds earmarked for procurements of vaccines go along with comparatively high transaction costs for Gavi.

Use of existing systems is an undoubted strength of the project. However, by using GOE systems, the project took on board the challenges that those systems face. Those challenges were recognized in the appraisal document. They included cold chain management; education and training; chronically understaffed health centers and frequent staff turnover; accessibility to remote regions; data collection and analysis. Where they are known to have affected the program directly, they are referred to in this evaluation, but there is no easy way to assess the overall impact. Gavi pays close attention to in-country results through organization of regular Joint Appraisals in all program countries, financial audits, and through its Grant Performance Framework (GPF) (Gavi, 2019 (b)). Still, no specific data and information on the efficiency of the in-country implementation was made available by Gavi during this evaluation.

UNICEF procures vaccines at highly competitive prices and operates its procurement service for Gavi on a not-for-profit basis. UNICEF does charge handling fees. They are variable and for vaccines, they currently stand at 4 %¹⁴. No information was made available of whether FC funds were used to cover the handling fees or not. All procurement is on a competitive basis and the low prices are understood to be achieved because of the very large volumes procured.

The evaluation considered whether alternative approaches are feasible, but it would be difficult and probably unwise to adopt an alternative approach. Since the overwhelmingly dominant vaccination program in Ethiopia is through EPI supported by Gavi and UNICEF, any parallel approach would lose the efficiencies and controls of this established system. The question is also moot because MoH would be unlikely to authorize any alternative or parallel approach.

The vaccines were necessarily obtained in a timely manner since the payments of the first two phases (this project is the first of three phases) were made retrospectively by reimbursement. The vaccines had therefore already been procured at the time of payment. A secondary question is whether the vaccines were used in immunization programs in a timely manner, but no information has been made available to verify this.

14 <https://www.unicef.org/supply/handling-fees>

Wastage is a routine hazard of immunization programs and can occur from unopened vials or from open vials. Wastage from unopened vials can arise through inefficiencies in the supply chain, including temperature control, temperature monitoring, and stock management during storage and transportation. It may result from vaccine expiry, excess heat exposure, freezing, breakage and missing inventory or discard following outreach sessions etc. Wastage from open vials is often inevitable through discarded doses from vials of unused doses of multidose vials. However, no observations can be made here on wastage levels since they were not being properly recorded through the District Health Information System (Gavi, 2019).

Allocation efficiency

Observers and stakeholders cited possibilities for improved efficiency. The opportunities for improvement vary between regions and localities but include improved cold chain including the availability and maintenance of refrigerators; availability of vaccination cards; and inadequate community engagement (Tilahun et al, 2020). The 2019 Joint Appraisal repeats some of these observations and highlights high turnover of staff at all levels, and unreliable data particularly at woreda and health facility level (Gavi, 2019). These concerns raise questions concerning the adequacy of the FC earmarking for the procurement of vaccines only.

Indications of deficits concerning equity in coverage rates further challenge whether a good allocation efficiency has been adopted in the implementation of the Ethiopian EPI (also see under Effectiveness). **Rating summary:**

Even though the FC project supported a functioning well-established system, which reached high efficiency in vaccine procurement, little is known about the efficiency and wastage within the EPI program. Studies report that the project outcome was affected by challenges faced e.g. in human resources and the cold chain affecting production efficiency but also allocative efficiency. Equity in allocation could be enhanced. Overall, the Efficiency is rated as moderately successful.

Efficiency: 3

Impact

Overarching (intended) developmental changes

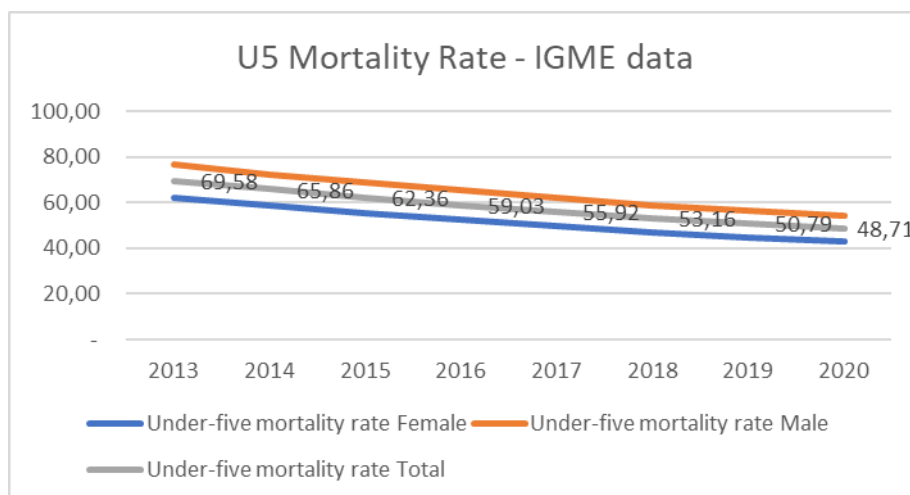
The revised **impact objective of the FC project was the improvement of the health of the population in Ethiopia, considering children under the age of 5** (also see Annex 2). The achievement of this objective is measured by a reduction of the U-5 child mortality rate (CMR) as summarized at Figure 6 below:

Figure 6: Project results at the level of the impact objective

Indicator	Status at project appraisal (2016)	Target value at project appraisal	Status at final report (2020)	Status at EPE (2022)
Reduction of Mortality Rate of Under Five Year olds - deaths per 1,000 live births	62 deaths per 1,000 live births	Aligned with SDGs to reach 25 deaths per 1,000 live births by 2030	--	Cannot yet be assessed as target is for 2030. However, latest data suggest Ethiopia might reach 30 deaths per 1,000 live births by 2030.

The target is a CMR of 25 deaths per 1,000 live births by 2030 aligned with the SDGs. It is too early to determine whether Ethiopia will reach this target, but the latest CMR from the Inter-Agency Group on Mortality Estimates (IGME) is 48.7 deaths per 1,000 live births (2020) with an annual rate of reduction of 4.7 %. This is a significant reduction from the 2015 level of 62.36 deaths per 1,000 live births. If this rate were maintained to 2030 it would give a CMR of approximately 30 deaths per 1,000 live births in that year, and the SDG target would be missed. Nonetheless, the figure below shows a strong downward trend for total CMR as well as separately for boys and girls. As is usual in many countries, the CMR for girls is lower than that for boys.

Figure 7: Ethiopia under-5 mortality rates 2013 to 2020 with gender disaggregation



Source: Inter-Agency Group on Mortality Estimates (IGME)

There is more than one source of data for child mortality but the IGME data is a well-regarded standard which takes account of data from a variety of sources. Also, while child mortality data may sometimes rely on estimates or occasionally incomplete data, trends are considered reliable. This positive trend in a key indicator demonstrates clearly that the overarching developmental change of improved health is effective at the level of the beneficiaries.

However, as we do not know how the project impacted U-5s at regional level, or in different income groups, we cannot assess the specific effect on vulnerable groups.

Contribution to overarching (intended) developmental changes

The contribution of the FC project to improved child health as measured by the CMR is not possible to be accurately determined nor quantified in this EPE. Immunization is only one of several contributory causes of reduced U-5 mortality even though vaccinations for newborns are known to be essential. Further, the project only financed part of the vaccines administered under the EPI in 2016 (also see under Effectiveness). Thus, we can say that it is plausible that the project has had a positive impact on child health by providing nearly 5 million vaccinations over a year.

Gavi is reliant on donors like the German Government. The EUR 600 million grant committed for the period of 2016-2020, of which the FC project forms a part, was a significant contribution to its program.

Implicit in the FC project concept is an understanding of health being of benefit to development and thus to political stability. Any contribution in this area is an additional dividend since the project was not intended to address the national policy environment. There was no expectation that the FC project would contribute to structural or institutional changes or changes in organisations, systems or regulations and none have been observed.

Several factors both internal and external to the FC project were decisive in determining project results. A crucial one is that Gavi has several agreements with the Ethiopian MoH, has been working with Ethiopia since 2002 and is a trusted partner of government (also see Effectiveness and Efficiency above).

The project could be replicated, but a better option would be to fund Gavis wider operation, which BMZ already does with multilateral funding. This option has lower transaction costs and allows funds to be allocated along with contributions from other sources. Unfortunately, this was not an option for the project under review because of fixed budgetary allocations for the period in question to multilaterals including Gavi. This was the first phase of a 3-phase program, so it initiated further FC projects, which included different vaccines.

Contribution to overarching (unintended) developmental changes

No unintended overarching developmental changes are apparent. However, Ethiopia suffers from recurring ethnic and regional tensions, and development policies, including health initiatives, have been used by government to maintain support and to promote political stability (Lavers et al, Croke and Gebremariam). The project may therefore have contributed to political stability.

Rating summary:

It is too soon to say whether the 2030 CMR target will be reached, but at current rates of reduction Ethiopia will come close. From 2016 to 2018, the CMR fell from 59 % to 53 %. The contribution of the FC project is plausible but cannot be quantified. It was critically dependent on existing working arrangements between Gavi, UNICEF and the EPI program, and the commitment of the government. The evaluation did not find any unintended overarching developmental changes, whether positive or negative and is rating Impact as moderately successful.

Impact: 3

Sustainability

Capacities of persons concerned

There are two issues: the sustainability of the project outputs – vaccinations; and the sustainability of the immunization program. At an individual level, vaccines provide protection for life and are inherently sustainable. In addition, the project measure indirectly protects the entire population with a high vaccination coverage through a significantly reduced risk of infection (herd immunity).

Programmatically, we can expect the immunization interventions in Ethiopia to be sustainable for several reasons. Not least because health in general and immunization in particular, are priorities for the international community and for the Government of Ethiopia (see Relevance and Coherence above). Moreover, immunization is the sole mandate of Gavi and a major mandate of UNICEF. Both are well-established, well-funded and influential organizations with their own inherent sustainability. Further, informants remarked on the strong broad national commitment of both government and communities to the immunization program.

In addition to the above, Gavi promotes sustainability by placing all partner countries on graduation plans to ensure that their domestic contribution is steadily increased¹⁵. Figure 8 below shows that the proportion of routine immunization costs borne by the Government of Ethiopia has increased from 27 % in 2013 to 41 % in 2017. However, it is understood that COVID-19 and inflation have more recently undermined efforts to tip the balance in favour of domestic spending to cover health costs (UNICEF 2020/21).

Figure 8: total costs of routine immunization

	2013	2014	2015	2016	2017
Government expenditure	29,390,931	36,333,665	43,276,400	49,721,033	51,212,664
non-government expenditure	78,655,030	72,954,162	66,969,794	71,549,780	72,483,566
Total expenditure	108,045,961	109,287,827	110,246,194	121,270,813	123,696,230
Government as % of total	27.20	33.25	39.25	41.00	41.40

Source: Gavi Co-Financing Information Sheet 2022
 Note: co-financing data from 2018 forward was not available

The sustainability of vaccine financing is dependent on levels of spending in health. The nominal rate of increase was particularly high in 2020/2021 as more budget flowed into the sector as part of the COVID-19 response, but high rates of inflation meant that the real increase was much lower. The average per capita expenditure on health

¹⁵ The Gavi co-financing requirement for Low Income Countries (LICs) is USD 0.20 per dose without any annual increase. When a country graduates to become a Phase 1 country, the co-financing requirement remains the same for the first year, but thereafter each dose of each co-financed vaccine is at an agreed “price fraction” which increases by 15 % each year. When a country moves into Phase 2, the co-financing requirement increases at a rate appraised to reach 100 % over an agreed number of years (often five years). LICs, Phase 1 and Phase 2 countries are determined by income thresholds, which are updated regularly by Gavi (Gavi. Co-Financing Policy, 2015).

in Purchasing Power Parity (PPP) international dollars, stood at 15.6 USD in 2018, which is lower than that of neighbouring countries, and much lower than the sub-Saharan average of PPP international 69.1 USD. It is also far below the 86 USD per capita spending estimated by WHO for required essential health care services in low-income countries. Although the share of government budgetary allocation increased to reach 10 % in 2020, it is still below the 15 % spending target of the Abuja Declaration.

Risks to the continuing program include the GOE not being able to finance its share of the EPI as required by the graduation plan; and the on-going risks of human capacity, the transport system and the supply and cold chains described above.

Risks not sufficiently enumerated at the appraisal stage included conflict and unrest, epidemics such as COVID-19 that skew funding and operational priorities, and major crises such as droughts or other climate-related disasters (which are increasingly likely). Pandemics and other crises are costly and disruptive both institutionally and in terms of human resources. An additional risk is that changes in government priorities might adversely affect the political will to prioritize health and in particular immunization.

Contribution to support for sustainable capacities

The FC funds contributed to the Gavi/UNICEF and EPI program, which went on to strengthen and expand into further phases and to provide additional vaccines in 2017-19. However, the primary contribution of the FC project, as indicated above, was to the immediate vaccination need, rather than to the sustainability of the EPI program. This will come from sustainable financing and investments in human capacity and infrastructure, which the FC project was not designed to support.

Durability of effects over time

For the last decade, Ethiopia has demonstrated high levels of economic growth ranging from 6 % per annum to 11 %. However, this has now slowed and the IMF projects real growth to reach only 3.8 % in 2022¹⁶. Nonetheless, these levels of growth are sufficient to sustain and increase support for the health sector over time. However, threats to the sustainability of the vaccine effort remain. Since 2020, COVID-19 has undermined funding streams and put pressure on the organisations that deliver vaccines. Further, Ethiopia is subject to unrest and conflict due to regional and ethnic strains, rights abuses, and poverty exacerbated by climate change. However, Gavi/UNICEF is unlikely to have problems delivering support to EPI except in periods of extreme unrest.

The positive effects of the wider Gavi/UNICEF engagement, which this project partially enables, include health systems strengthening, long-term technical support and many components of capacity building which can be demonstrated by reference to their Ethiopia strategy documents.

Rating summary:

While the sustainability of the annual tranche of the FC funds exclusively earmarked for the procurement of vaccines is limited, the individual benefit from the so supported vaccinations is for life and is inherently sustainable. The sustainability of the immunization program depends upon the national and global levels of commitment, which are both considered positive. There is also good reason to be positive about the sustainability of financing since Ethiopia has steadily increased its financing of the EPI program. The most obvious threat to the sustainability of the immunization program is an escalation of conflict, but in the past, the EPI has managed to maintain its programs in all parts of Ethiopia. Sustainability is thus rated as successful.

Sustainability: 2

Overall rating: 3

Taking into account the significant success on the outcome level and positive developments on the impact level, which the project plausibly contributed to, its high relevance and good sustainability but also deficits in equity and efficiency as well as coherence the FC project is rated as moderately successful.

16 <https://www.imf.org/en/Countries/ETH>

Contributions to Agenda 2030

The primary contribution to the 2030 agenda has been to support the reduction of the Child Mortality Rate in Ethiopia. At current rates of reduction, this rate is estimated to fall to 30 deaths per 1,000 live births by 2030, marginally short of the SDG goal of 25 deaths per 1,000 live births and a dramatic improvement over the 62 deaths per 1,000 live births in 2015.

Project specific strengths/weaknesses and general conclusions/lessons learned

Strengths and weaknesses of the project included

Strengths:

- High levels of relevance to the needs in Ethiopia
- Immunization is a highly effective and efficient health measure
- Well established and trusted systems to deliver vaccines – Gavi/UNICEF/EPI
- Strong commitment of the Ethiopian government
- Maximized cost efficiency through use of UNICEF vaccine procurement

Weaknesses:

- The project appraisal did not include an explicit ex-ante theory of change, an ex-ante contribution analysis, and ex-ante political economy assessment, or an ex-ante assessment of value added
- Equity monitoring and management: project objectives and indicators did not include equity (regional, poverty, or gender disaggregation)
- Impact indicator only set for 2030 – interim targets would be helpful
- Globally pledged German DC funding had limited coherence with FC country portfolio
- Comparatively small-scale earmarked funding to Gavi reducing efficiency

Conclusions and lessons learnt

For outcomes and impacts of projects supporting immunization programs, equity concerning coverage is essential. Therefore, outcome and impact objectives as well as indicators to measure the respective results should disaggregate by gender and other relevant criteria in the respective context (e.g. region, poverty, ethnicity etc.) as a basis for enhanced equity monitoring and management.

Future finance is likely to be more efficient if provided to Gavi unearmarked and multilaterally rather than in separate, annual, bilateral projects.

Rating methodology

Projects are rated on a six-point scale for each of the OECD DAC criteria. The scale is as follows:

- Level 1** very successful: result is clearly above expectations
- Level 2** successful: result meets expectations fully, no significant shortcomings
- Level 3** moderately successful: result falls short of expectations, but the positive results dominate
- Level 4** moderately unsuccessful: significantly below expectations, with negative results dominating despite discernible positive results
- Level 5** unsuccessful: despite some positive partial results, the negative results clearly dominate
- Level 6** highly unsuccessful: situation has deteriorated

The overall rating on the six-point-scale is compiled by weighting all six individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("Effectiveness"), the impact on the overall objective ("overarching developmental Impact") and the Sustainability are rated at least "moderately successful" (level 3).

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Annexes

Annex 1 Abbreviations

Annex 2 Target System

Annex 3 Risk Analysis

Annex 4 Rating of the OECD DAC criteria and sub-dimensions

Annex 5 Bibliography

Annex 1 - Abbreviations

ACER	Average cross-effectiveness ratio
ARR	Annual Rate of Reduction
CMR	Child Mortality Rate
cMYP	Comprehensive Multi-Year Plan
DC	German Development Cooperation
DHS	Demographic and Health Survey
EPE	Ex Post Evaluation
FC	German Financial Cooperation
EPI	Expanded Programme on Immunisation
FR	KfW final report
Gavi	Global Vaccine Alliance
GOE	Government of Ethiopia
GPF	Grant Performance Framework
Hib	Haemophilus influenza type b
HSS	Health System Strengthening
HSTP 2	Ethiopian Health Sector Transformation Plan
ICC	Interagency coordination committee
IGME	Inter-Agency Group on Mortality Estimates
JAR	Joint Annual Review
LIC	Low Income Country
MCHD	Directorate of Mother and Child Health, MoH Ethiopia
MCV	Measles vaccine
MoH	Ministry of Health, Ethiopia
PA	KfW project appraisal
Pentavalent	5 in 1 vaccination including diptheria, tetanus, whooping cough, hepatitis B, haemophilus influenza type b (Hib)
PPP	Purchasing power parity
PCV1	Pneumococcal vaccine
SDG	Sustainable Development Goal
TOC	Theory of Change
U-5	Under 5 year old children
UNICEF	United Nations Children Fund
VCR	Vaccine coverage rate
WHO	World Health Organization
WUENIC	WHO/UNICEF Estimates of National Immunization Coverage

Annex 2 - Target system

Project objective at outcome level		Rating of appropriateness (former and current view)			
<p>At project appraisal: Decrease of child mortality and disease burden by reduction of vaccine preventable infections through nationwide vaccine coverage of all newborns with newly introduced vaccines (pentavalent vaccine, pneumococcal and rotavirus vaccine).</p>		<p>The outcome objective as defined in the project appraisal includes objectives relevant on the outcome as well as on the impact level. The outcome objective therefore is revised to clearly reflect the two different levels of project results as follows:</p>			
<p>During EPE (if target modified): Reduction of vaccine preventable infections through contributing to the nationwide vaccine coverage of all newborns according to the vaccination calendar with pentavalent, pneumococcal and rotavirus vaccines and under 5-year-old children not vaccinated accordingly.</p>					
Indicator	Rating of appropriateness (for example, regarding impact level, accuracy of fit, target level, smart criteria)	Target level at project appraisal	Status at project appraisal (2016)	Status at final inspection (2020)	Status at ex post evaluation (2022)
<p>1. Pentavalent vaccination coverage rate (VCR)</p>	<p>Vaccine coverage rates are a widely used and appropriate measure of effectiveness.</p> <p>However, as equity in vaccination coverage is crucial for resulting in reduced disease burden, the indicators should incorporate data disaggregation by gender, region, poverty etc. to constitute an adequate basis for equity monitoring and results-based management.</p>	<p>Target: 83 % (2020)</p>	<p>77 % (2014) WUENIC 63 % (2017) revised WUENIC</p> <p>Revised target for EPE: 68 %</p>	<p>95 % (3rd dose) 100 % (first dose)</p> <p>(data source unclear)</p>	<p>71 % (2020) WUENIC 2021 revision</p>
<p>2. Pneumococcal VCR</p>	<p>WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) is an appropriate data source. However, the project appraisal (and final report) used data from 2014 WUENIC, which were revised downward significantly in the 2017 WUENIC revision. The evaluation assesses trend based on these revised vaccine coverage rates.</p>	<p>Target: 83 % (2020)</p>	<p>76 % (2014) WUENIC 55 % (2017) revised WUENIC</p> <p>Revised target for EPE: 60 %</p>	<p>94 % (3rd dose) 100 % (first dose)</p>	<p>67 % (2020) WUENIC 2021 revision</p>
<p>3. Rotavirus VCR</p>	<p>Further, the final report compared Ethiopian data of unclear data source on vaccination rates with WUENIC data („apples and oranges“) showing large improvements since WUENIC is much more conservative.</p>	<p>Target: 87 % (2020)</p>	<p>63 % (2014) WUENIC 56 % (2017) revised WUENIC</p> <p>Revised target for EPE: 77 %</p>	<p>93 % (last dose) 100 % (first dose)</p>	<p>70 % (2020) WUENIC 2021 revision</p>
<p>4. No of beneficiaries vaccinated with:</p> <p>4.1 Pentavalent, 4.2 Pneumococcal 4.3 Rotavirus</p>	<p>Number of beneficiaries is an appropriate measure of outputs not outcomes.</p> <p>Therefore this indicator is not used for the evaluation.</p>	--	--	--	--

Project objective at impact level		Rating of appropriateness (former and current view)			
At project appraisal: Improvement of the health of the population in Ethiopia, considering populations at risk in particular		The impact objective as defined in the project appraisal does not further define “population at risk” and does not reflect the actual target group of the FC financed activities. The impact objective therefore is revised as follows:			
During EPE (if target modified): Improvement of the health of the population in Ethiopia considering children under the age of 5.					
Indicator	Rating of appropriateness (for example, regarding impact level, accuracy of fit, target level, smart criteria)	Target level at project appraisal	Status at project appraisal (2016)	Status at final inspection (2020)	Status at ex post evaluation (2022)
Reduction of mortality rate of under 5 year old children, deaths per 1,000 live births (CMR)	<p>The children's mortality rate is widely used and an appropriate indicator to measure impact on children's health.</p> <p>The target was aligned with SDGs to be achieved until 2030. Although 2030 is still 8 years away there is value to look at current trends in CMR and this is done in the evaluation.</p> <p>The IMGE is an appropriate data source, however the baseline value cited in the project appraisal is incorrect and therefore revised in the evaluation.</p>	Aligned with SDGs, target: 25 deaths per 1,000 live births by 2030	<p>U-5 mortality rate incorrectly reported as 44 deaths per 1,000 live births (2015) from 2015 IGME revision</p> <p>EPE revision: 62 deaths per 1,000 live births (IGME, 2015 revision)</p>	<i>The final report reports IGME latest available data for U-5 mortality at 63.46 deaths per 1,000 live births (2015).</i>	<p>Cannot yet be assessed as target is for 2030.</p> <p>However the latest data suggest that if the current rate of reduction continues, Ethiopia might reach 30 deaths per 1,000 live births by 2030.</p>

Annex 3 - Risk Analysis

Key Risks identified at appraisal	Relevant OECD-DAC criteria affected
Financial sustainability	<p>Sustainability</p> <p>The risk was always mitigated by two factors: the Gavi graduation program that requires countries to increase their contribution over time; and the intent of the donor community to maintain financing of immunization in low-income countries including Ethiopia. Data on co-financing by the government of Ethiopia has not been made available beyond 2017, but the contribution has been steadily increasing to that point, and there is reason to believe that the country's strong economic growth will enable it to continue. The risk has not yet materialized.</p>
Vaccine shortages	<p>Effectiveness, Efficiency and Impact</p> <p>General vaccine shortages would have affected the program adversely. None were reported. The planned vaccines were procured and it was reported that the vaccines had continued to be available on the world market.</p>
Staff capacity	<p>Effectiveness, Efficiency, Impact and Sustainability</p> <p>No detailed information was made available. It is reasonable to assume that staff capacity was challenging at some times and especially in remote locations, but this was not overwhelming since targets were reached in two of three outcome indicators, and good progress was made on the third.</p>
Delayed delivery of vaccines caused by inadequate transport	<p>Effectiveness, Efficiency, Impact</p> <p>No detailed information was made available, however, challenges in staff capacity at the MoH during the period of the FC project were reported. Project outcomes were satisfactory in spite of this.</p>
Inadequate cold chains	<p>Effectiveness, Efficiency, Impact</p> <p>No detailed information was made available, however incomplete supply and cold chains were reported. Similar observations were made by other development partners. Project outcomes were satisfactory in spite of this challenge.</p>
Regional conflict	<p>Effectiveness, Impact, Sustainability</p> <p>There is no detailed information on the impact of regional conflicts on the EPI. However, regional conflict continued throughout the period of the FC project and has continued sporadically since. Observers report that there is good community support for the EPI and the MoH has continued to be able to operate throughout the country.</p>
Outbreak of pandemics	<p>Sustainability</p> <p>There were no outbreaks of pandemics in the FC project period, but the COVID-19 pandemic that broke out in 2020 is understood to have adversely affected the sustainability of the EPI program.</p>

Annex 4 - Rating of the OECD/DAC criteria and sub-dimensions

Criteria and sub-dimensions		Rating
Relevance: Is the intervention doing the right things?		2
	Alignment with policies and priorities	2
	Alignment with needs and capacities of persons concerned	2
	Suitability of project concept	2
	Reaction to changes/adaptability	2
Coherence: How well does the intervention fit?		3
	Internal coherence	3
	External coherence	2
Effectiveness: Is the intervention achieving its objectives?		3
	Achievement of (intended) goals	3
	Contribution to goal achievement	2
	Quality of implementation	3
	Unintended effects (positive or negative)	2
Efficiency: How well are resources being used?		3
	Production efficiency	2
	Allocation efficiency	3
Impact: What difference does the intervention make?		3
	Overarching (intended) developmental changes	3
	Contribution to overarching (intended) developmental changes	2
	Contribution to overarching (unintended) developmental changes	2
Sustainability: Will the benefits last?		2
	Capacities of persons concerned	2
	Contribution to support for sustainable capacities	3
	Durability of effects over time	2

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