

Ex-post Evaluation

Vaccination program funding in cooperation with Gavi, East African Community

Title	Vaccination Program of the East African Community of States (EAC) in cooperation with Global Vaccine Alliance (Gavi), Phases I-III.		
Sector and CRS code	Health, family planning, HIV/AIDS (12550)		
Project numbers	2013 66 699, 2014 68 271, 2015 68 245		
Commissioned by	German Federal Ministry for Economic Cooperation and Development (BMZ)		
Recipient/Project-executing agency	Global Vaccine Alliance, Gavi		
Project volume/ Financing instrument	EUR 60 million, FC grant (EUR 20 million in each phase)		
Project duration	2013-2015		
Year of report	2023	Year of random sample	2022

Objectives and project outline

The revised outcome objective was 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 of children under 5 not vaccinated accordingly.

At the impact level, the objective was the improvement of the health of the populations - considering children under 5 in particular - of 5 partner countries of the East African Community (EAC) (Burundi, Kenya, Rwanda, Tanzania, Uganda).

The project provided funds to Gavi for the procurement of pneumococcal, pentavalent and rotavirus vaccines from 2013 to 2015. These vaccines were administered through established Gavi/UNICEF support to the national Expanded Programs on Immunization (EPIs).

Key findings

The project was highly relevant in supporting national childhood immunization programs of EAC partner countries. Even though outcome targets were not met, it is plausible that it contributed to reductions in child mortality. The project is rated as "moderately successful" as follows:

Relevance (moderately successful): The project design responded directly to core problems in EAC countries: high levels of child mortality and low levels of vaccine coverage. It was aligned with EAC and global policy in immunization and child health. However, project management through the EAC was not realized since all activities were at national level. **Coherence (successful):** The project arose from a global initiative. Synergies with national priorities of EAC partner countries were strong and external coherence was good.

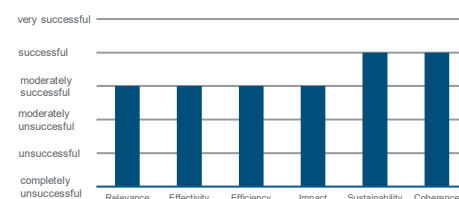
Effectiveness (moderately successful): Vaccine coverage improved in some countries but in general -the ambitious- targets were not met. There were no significant gender disparities, but disparities in other dimensions exist in some countries. Equity therefore remains a challenge.

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. Little is known about the granular efficiency of the EPI systems on the ground or wastage, which is not reported.

Impact (moderately successful): It is too soon to say whether the SDG objective of a child mortality rate of 25 per 1,000 live births will be reached. Rates are falling quickly but at current annual rates of reduction only Rwanda will achieve it. Uganda will come very close.

Sustainability (successful): Vaccinations are for life and are inherently sustainable. EPI sustainability depends upon the national and global levels of commitment. National levels of commitment vary by country, but global levels of commitment are positive.

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, minimizing 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 five partner countries of the East African Community (EAC) namely Burundi, Kenya, Rwanda, Tanzania and Uganda¹ from 2013-2015. Funding was disbursed retrospectively on an annual basis during those years. It was the first phase of a five-phase immunization project, financed with German bilateral resources administered by KfW.

The FC project was executed by Gavi, a globally active public-private partnership with its headquarters in Geneva. Its 2021–25 mission (similar to the time of project appraisal) is to save lives and protect people's health by increasing equitable and sustainable use of vaccines².

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) works closely with Gavi and is represented on Gavi's Board and in various Gavi Committees. 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 manages a vertical program that focuses on fighting specific vaccine-preventable diseases. It is not integrated into national health care systems 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 implementation of the national immunization programs of the EAC lies with various national ministries of health which manage the Expanded Program on Immunization (EPI) in each country. Although each EAC country has its own immunization arrangements, the typical process is that vaccinations are given by ministry of health personnel and administered through a provincial or district network. In some countries of the region, such as Kenya, the provincial ministries of health have greater autonomy. 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 programs of the region provides vaccines and consumables as well as in some of the counties, training measures, maintenance of the cold chain, and transport.

Brief description of the project

The objective of the FC project was to reduce child mortality in the EAC countries of Burundi, Kenya, Rwanda, Tanzania and Uganda by contributing to nationwide vaccination campaigns of Pentavalent³, Pneumococcal and Rotavirus vaccines. The contribution was through a bilateral commitment of EUR 20 million per annum to the East African Community for national EPIs based on the respective needs per country. 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 South Sudan only joined the EAC in 2016

² 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.

³ Pentavalent is a 5 in 1 vaccine including: diphtheria, tetanus, whooping cough, hepatitis B and Haemophilus influenza type B

Breakdown of total costs 2013-2015

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 project⁴ three years 2013-2015

	Projects (planned) EUR million	Projects (actual) EUR million
Total Investment costs (vaccine procurement)	352.9	352.9
Governments of EAC contribution	36.5	36.5
Other Gavi contribution	256.4	256.4
FC funding	60.0	60.0

Source: KfW Project documentation and Gavi Co-financing Factsheets for EAC countries

Rating according to DAC criteria

Relevance

Alignment with policies and priorities

The FC project objectives are aligned with global policies and priorities. At the time of project design in 2012 the primary global priorities were the Millennium Development Goals (MDGs). Of these, MDG 4 is most relevant to this project - to reduce by two thirds, between 1990 and 2015, the under-five (U-5) child mortality rate (CMR). During the course of the project the MDGs were replaced by the **Sustainable Development Goals (SDGs)**. Foremost among them is SDG 3 of 2015, which is to ensure healthy lives and promote well-being for all. SDG 3 sub-goals are also relevant to this evaluation including, by 2030, ending preventable deaths of newborns and children under 5, with all countries aiming to reduce 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*.

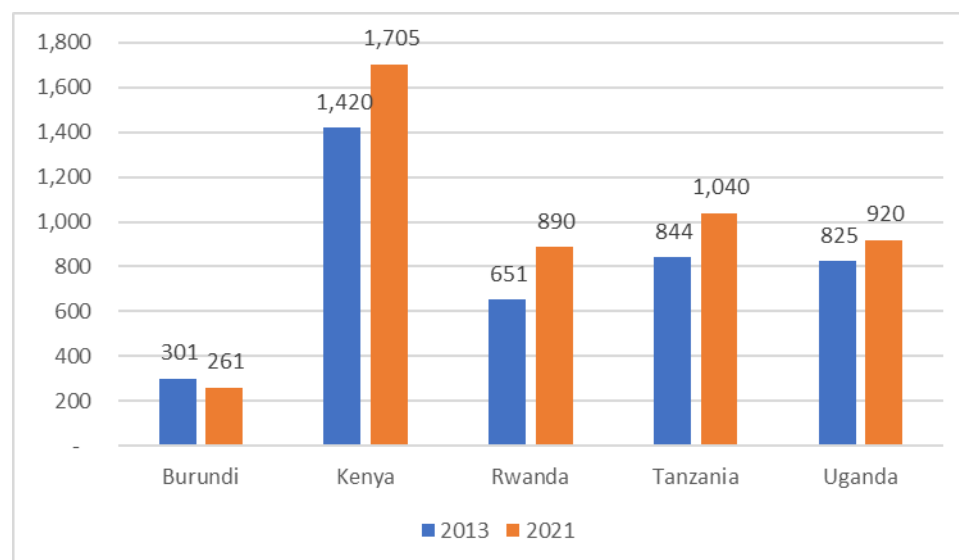
According to the WHO, immunization currently prevents 3.5-5 million deaths every year⁵ from diseases like diphtheria, tetanus, pertussis, influenza and measles. It is a key component of primary health care. The Gavi mission is also consistent with global goals in immunization. At the time of project design in 2012 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 five targeted EAC partner countries present some similarities of context, but many differences. For instance, in 2013 and in 2021 the GDP per capita (in constant US\$) of the five countries varied significantly.

⁴ These figures are for all routine immunization, but for vaccine costs only. Importantly the proportion contributed by the government of the East African Community is significantly higher when non-vaccine cost of immunization (e.g., Salaries, transport, cold chains and consumables but also training) are included (see Effectiveness for more details).

⁵ WHO https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1 accessed September 13, 2022

Figure 1: EAC countries GDP per capita in 2013 and 2021 (constant 2015 US\$)



Source: World Bank

The health status of East Africans has improved over the last decade, but maternal mortality and child mortality remained major challenges at the time of project appraisal. The 2014-15 Annual Report of the EAC reported that:

Life expectancy at birth on average stands at 59.2 years (vs. 58.1 for all Africa). The under-five mortality rate per 1000 live births was on average at 70.4 in 2012, while average maternal mortality (per 100,000 births) standing at 446, which is slightly below the Africa average of 460 (UNSD, 2015). The state of health systems in the region is a contributing factor to the current life expectancy and mortality rates. (...) In 2014 the average population living below US\$1.25 a day was 48.0 %.

By 2013, child mortality (U-5) had fallen to an average across the region of 60.97 per 1,000 live births, but this was still more than twice the SDG goal of 25 per 1,000 live births (agreed shortly after the project was designed) (see Impact chapter for more information on the development of child mortality rates (CMR)).

After malaria, the main causes of child mortality in the region were diarrhea and pneumonia, which continued to account for the majority of childhood illnesses and deaths, despite being preventable diseases. In 2013 vaccination coverage rates (VCRs) varied across the five countries, with most having room for improvement. In some countries such as Tanzania, VCRs had stagnated at relatively low levels for five years or more (Tanzania DHS 2016-17) The following were the reported coverage rates for Pentavalent and Pneumococcal and Rotavirus in 2013:

Table 2: Vaccine Coverage Rates for Pentavalent, Pneumococcal and Rotavirus in EAC in 2013

Vaccine	Burundi	Kenya	Rwanda	Tanzania	Uganda
	%	%	%	%	%
Pentavalent	96	87	98	91	84
Pneumococcal	96	75	98	80	0
Rotavirus	0	0	98	85	0

Source: WUENIC data

In 2013 neither Kenya nor Uganda had reached the 90 % VCR level recommended for Pentavalent, and none of Kenya, Tanzania and Uganda had reached 90 % for the Pneumococcal. Uganda had not even introduced it. Rotavirus vaccine had only been introduced in Rwanda and Tanzania. Even at the outset of the project, Rwanda performed highly for all three of the vaccines above with a VCR of 98 % in 2013.

One measure of vaccine effectiveness is numbers of fully vaccinated children according to the basic vaccination program. However, there is no systematic monitoring of numbers of fully vaccinated children in the EAC as a whole, nor of the total number of children with no vaccinations at all. However, some country information is

available, especially from surveys. Kenya reported that 79 % of children were fully vaccinated in 2014 (DHS, 2014) and Uganda reported that in 2015, 55 % of children aged 12-23 months received all basic vaccinations, and 37 % received all age-appropriate vaccinations (DHS, 2016). A target of 90 % is recommended by the Global Vaccination Action Plan 2011-2020⁶.

There was a high need for financial support. At the time, the governments of East Africa only provided from 10.1 % (2013) to 12.6 % (2016) of the total cost of vaccines in the region⁷ so without the Gavi program coverage would likely be significantly lower [further data on funding is presented in sections on Efficiency and Sustainability below].

From the above it is clear that the FC project addressed a pressing need. The project objectives are therefore appropriate.

Alignment with needs and capacities of stakeholders and affected persons

The primary target group of the FC project was children in their first year of life and others up to the age of 5 without sufficient vaccine protection. This is consistent with target groups identified by the national ministries of health and EPIs. The FC project is fully aligned with national policies. One example is Tanzania whose health strategy at the time states that: *“goals include polio eradication, elimination of neonatal tetanus, measles, rubella and congenital Rubella syndrome, and introducing new vaccines (...). Strategies will be instituted to ensure accessibility and utilization of the immunization services using the Reach Every Child approach by provision of daily immunization services at health facilities and strengthened outreach services in hard to reach areas.”*

The FC project was aligned with the development objectives of the EAC. Section 118(a) of the EAC Treaty notes that the Partner States undertake to: *“take joint action towards the prevention and control of communicable and non-communicable diseases and to control pandemics and epidemics of communicable and vector-borne diseases such as HIV-AIDS, cholera, malaria, hepatitis and yellow fever that might endanger the health and welfare of the residents of the Partner States, and to co-operate in facilitating mass immunization and other public health community campaigns.”* Subsequently the 4th EAC Development Strategy (2011/12 to 2015/16) identified health as a key sector, and health financing as a key challenge.

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 children under five. The program was 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 well-established national EPI programs⁸, by Gavi partners WHO and UNICEF, and also by Gavi’s own country-facing staff. While the FC financing was focused on the procurement of vaccines, it was complemented by broader Gavi support which included measures to strengthen the national implementation capacities of the EPIs including dedicated Health Systems Strengthening programs in Uganda, Rwanda and Burundi during the period under review.

Suitability of project concept

The theory of change (TOC) (even though not explicitly articulated in the concept) was plausible at appraisal stage and from today’s perspective. 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 EPI divisions of the national ministries of health, 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

⁶ The 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.

⁷ Authors calculations developed for this evaluation based upon Gavi data

⁸ The EPIs in East Africa were established from 1975 to 1983: Tanzania 1975; Rwanda 1978; Burundi 1980; Kenya 1980; Uganda 1983

circumvented⁹. By pooling funds, the financing and implementation systems of Gavi were expected to lead to high efficiencies in the procurement of vaccines.

There was a further assumption that the EAC structures would play a part in this regional program, and that a regional immunization platform would be established to enhance coordination and mutual learning. Regional immunization meetings were held in 2013, but there is no evidence that they continued after that, or that EAC structures played any significant role in the FC project.

The concept postulated some degree of Monitoring and Evaluation from the EAC structures themselves, over and above the national monitoring and evaluation processes. The structure of the EAC health sector comprises a Health Secretariat, reporting to the EAC Sectoral Council on Regional Cooperation on Health. Within the Health Secretariat are several Technical Working Groups (TWGs) including one on Reproductive, Child, Adolescent Health and Nutrition and one on Communicable and Non-communicable Diseases, both of which are relevant to the FC project. However, informants report that lack of resources meant that the TWGs were often unable to meet. Moreover, the first Regional Health Sector Strategic Plan which established the monitoring framework was for the period 2015 to 2020 (EAC, 2015) and thus was not in place for the first two years under review here. In practice it is likely that any effective monitoring was carried out at the national rather than regional levels. This is for two reasons: first, informants were of the view that vaccination data were submitted to regional bodies, who lacked the resources to collate and analyse them; and secondly, because the regional monitoring framework was only elaborated in 2015.

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 concept also recognized the economic sustainability issues of the EPI program. It reported that most of the countries were low-income countries contributing only 20 USD cents per dose (the minimum payable under Gavi's financing requirements). 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 adapted to clearly reflect the different levels in the results framework (i.e., impact vs. outcome) and be more specific concerning actual targeted beneficiaries. The indicators were ultimately not adapted for want of data, although additional disaggregation was proposed for future projects of a similar nature, 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 in data collection. That said, the project appraisal identified risks and challenges facing the project including cold chain management; staff shortages and transport deficits; accessibility of 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.

Rating summary:

The FC project responds directly to the core problems of EAC countries: high levels of child mortality, and low levels of vaccine coverage. The project is wholly aligned with global and national policies and priorities, with EAC regional policy, as well as with the needs and capacities of beneficiaries. While the FC funding is focused on the procurement of vaccines, challenges in national implementation capacities were to be addressed by the broader Gavi support. The project implementation was well designed and takes advantage of proven and well-established systems. The regional approach with the intention to strengthen EAC as a whole is less relevant, in particular from today's perspective. Relevance is therefore rated as **moderately successful**.

Relevance: 3

⁹ a.o. supported through parallel Gavi's health system and immunization strengthening program (not financed through the FC project).

Coherence

Internal coherence

Informants advised that the EAC FC project was authorized by BMZ in 2012 in an effort to provide additional bilateral funds to Gavi. As it came from a central initiative, synergies with the existing German Development Cooperation (DC) portfolios in East Africa were not a factor in the decision-making process. Synergies did however exist, since ministries of health in four of the five beneficiary EAC countries were also beneficiaries of German health sector support¹⁰ and other health projects with synergies were initiated during the course of the project¹¹. There was a further level of synergy because Germany was already supporting regional integration in East Africa.

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, although Germany's multilateral support for Gavi had continued throughout. With that said, the project was fully harmonized with the MDGs (and later SDGs) and international norms to which Germany subscribes, as indicated in the section on Relevance above.

External coherence

The FC project contributed to on-going and well-established immunization programs in partnership with EAC partner countries' national ministries of health, Gavi, and UNICEF. These national EPIs have been in place since the 1970s and the current Gavi/MoH systems were developed closely with national EPIs under a series of country based Gavi grant proposals. The FC funds went through Gavi to UNICEF for the procurement of vaccines, earmarked only for East Africa. The EPI programs throughout East Africa are implemented through national systems with levels of decentralization and district responsibility that vary by country. National multi-year plans (the comprehensive Multi Year Programs or cMYP) provide a framework within which Gavi receives and allocates financial support for the procurement of vaccines.

The EAC, including its Health Secretariat, had prior strong links with Gavi. At the time of project design the General Secretary of the EAC was also on the Gavi Board and had extensive knowledge of Gavi mechanisms. Within the EAC Secretariat, the health sub-division was already familiar with FC procedures as a result of an earlier German health project with the EAC and Aga Khan University. In addition, the national ministries of health of the EAC countries had long standing relationships with Gavi through their EPI programs.

Gavi received funds for its East Africa programs 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 at country level 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 and through Gavi had deep connections with stakeholders within the national ministries of health, within the donor community, and within the EAC. However, the project design anticipated an EAC-wide immunization oversight and monitoring structure which did not materialize. As a result, EAC-wide data was not prepared, and monitoring has continued to be exclusively at national level.

Rating summary:

The project arose from a central initiative of the German Government but nonetheless there were synergies with the existing FC portfolio in four of the five beneficiary countries. Alignment with government priorities and operational methods were strong as was the FC project's external coherence. It benefited from its support of an existing, well-established and well-coordinated national immunization program. Coherence is rated as **successful**.

¹⁰ Tanzania, Kenya, Rwanda and Burundi, although Rwanda was being phased out.

¹¹ For instance, FC support to the Kigali-based Regional Centre of Excellence for Vaccines, Immunization and Health Supply Chain Management.

Coherence: 2

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 of U-5s not vaccinated accordingly** (also see Annex 2).

Vaccine coverage rates (VCRs) are appropriate outcome indicators. However, as equity in coverage is crucial (a.o. to achieve herd immunity), the VCRs should, wherever possible, be disaggregated by gender, region, poverty, ethnicity etc. to constitute an adequate basis for equity monitoring and management. Simultaneously recipient countries should be supported to ensure the availability of disaggregated data. Unfortunately, no national level equity data¹² have been made available during the evaluation and it is unclear whether sufficient data exist. Available equity information from national and regional surveys has been referenced below. Some targets were revised, and these are also indicated below. Achievement against targets and revised targets is summarized in the following table:

Table 3: Achievement of intended objectives at outcome level¹³

Indicators – vaccine coverage rates	Country	Status at project appraisal (2012)	Revised target value 2014 ¹⁴	Revised status at final inspection (2017, from WUENIC 2021 revision)	Status at EPE (estimates from WUENIC 2021)
1 Pentavalent aggregate	Burundi	100 % ¹⁵	96 %	91 %	94 % Target not reached
	Kenya	83 %	95 %	82 %	91 % Target not reached
	Rwanda	100 %	98 %	98 %	88 % Target not reached
	Tanzania	92 %	95 %	90 %	80 % Target not reached
	Uganda	78 %	93 %	94 %	91 % Target not reached
	All EAC	91 %		89.2 % EPE calculation of population-weighted average	87.7 % EPE calculation of population-weighted average Target not specified

¹² And regional data on equity are not compiled

¹³ All vaccination coverage rates refer children up to the age of 2 years who are “fully vaccinated” for the vaccine referred to. For instance, the Pneumococcal VCR % is for children who have received three doses according to WHO guidelines.

¹⁴ The data for vaccine coverage rates (VCRs) in the Project Appraisal were drawn from 2014 WUENIC data which is an appropriate source. However, many were revised significantly in the 2021 WUENIC revision. The EPE has therefore adopted the revised target vaccine coverage rates (VCRs) and base rates for 2017 as indicated in columns 4 and 5 of table 3 (also see Annex 2 for more details).

¹⁵ In cases where status at project appraisal was >100% these were revised to 100% for the EPE. (Typically, this arises where population data are not up-to-date, and you have a million vaccinations of U5s, but only 980,000 in the demographic census data.)

Indicators – vaccine coverage rates	Country	Status at project appraisal (2012)	Revised target value 2014 ¹⁴	Revised status at final inspection (2017, from WUENIC 2021 revision)	Status at EPE (estimates from WUENIC 2021)
2 Pneumococcal aggregate	Burundi	100 %	96 %	91 %	94 % Target not reached
	Kenya	82 %	95 %	82 %	92 % Target not reached
	Rwanda	100 %	98 %	98 %	88 % Target not reached
	Tanzania	NYI	95 %	86 %	80 % Target not reached
	Uganda	NYI	88 %	90 %	91 % Target reached
	All EAC	57 %		86.9 % EPE calculation of population-weighted average	87.7 % EPE calculation of population-weighted average Target not specified
3 Rotavirus aggregate	Burundi	NYI	100 %	93 %	94 % Target not reached
	Kenya	NYI	Not reported	67 %	91 % Target not specified
	Rwanda	50 %	100 %	98 %	89 % Target not reached
	Tanzania	NYI	94 %	87 %	77 % Target not reached
	Uganda	NYI	Not reported	Not reported	87 % Target not specified
	All EAC			72 % Raw average from Final Inspection Report	85.5 % EPE calculation of population-weighted average Target not specified

Source: WUENIC data; internal KfW reports

NYI = Not yet introduced

Notes:

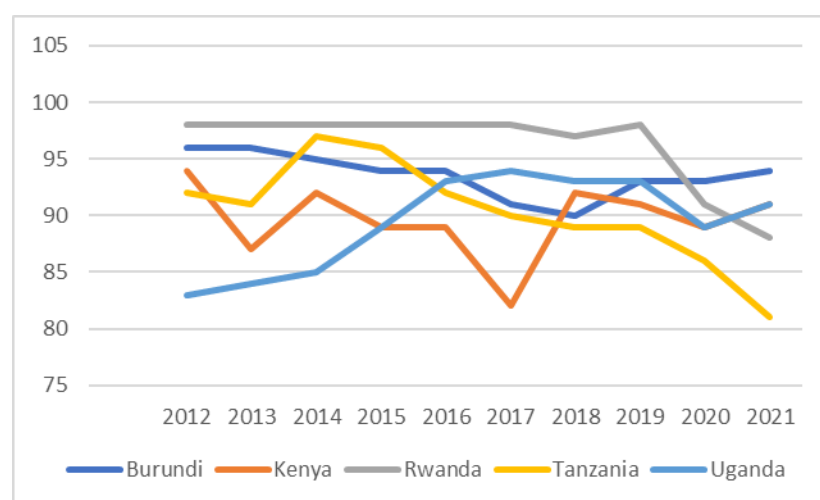
1. Target reached or not reached is based on WUENIC 2021 revision vs revised target.
2. A number of targets were revised by the EPE. Specifically:
 - 2014 Burundi targets for both Pentavalent and Pneumococcal were revised down to 96 % from 100 % (maintaining the 2012 VCR as reported in the 2021 WUENIC revision),
 - the 2014 Rwanda targets for both Pentavalent and Pneumococcal were revised down to 98 % from 101 % (maintaining the 2012 VCR as reported in the 2021 WUENIC revision),

- the Kenya 2014 target for Pentavalent was revised upward from 90 % to 95 %, because the 2021 WUENIC revision reported that the 2012 VCR was 94 %, so that the 90 % target represented a deterioration, and
- the Uganda 2014 target for Pentavalent was revised upward from 88 % to 93 %, because the 2021 WUENIC revision reported the 2012 VCR at 83 % (not 78 %) and the target was increased proportionately.

The latest data from WUENIC have been used to assess outcomes against targets (including revised targets) which at project design were only set for 2014. The figure above demonstrates that the 2014 outcome indicator targets were largely not achieved by 2017. The only exceptions to this were for Pentavalent and Pneumococcal vaccines in the cases of Uganda and Rwanda. For Pentavalent and Pneumococcal most national 2017 VCRs were below the 2012 baseline. None of the 2014 targets were met by 2017.

This is in part because the targets themselves were problematic, having been set at 100 % for all vaccines in Burundi and 100 % in the case of Rwanda. Additionally, in 2012 (the baseline year) Pneumococcal vaccine had not been introduced in two of the countries, and Rotavirus vaccine was not introduced in four countries. These vaccines were introduced during the project period. There was no pre-existing data to guide target setting, but the targets of 100 % after two years from introduction seem unrealistic. Programs in Kenya were adversely affected by the transfer of responsibility for immunization to newly established counties in 2013. WUENIC Pentavalent data for the period under review and forward to 2021 give the following picture and show that for Pentavalent, VCRs in Kenya were volatile through the period under review, and both Tanzania and Burundi recorded declines:

Figure 3: WUENIC Pentavalent coverage for EAC countries excluding South Sudan from 2012 to 2021



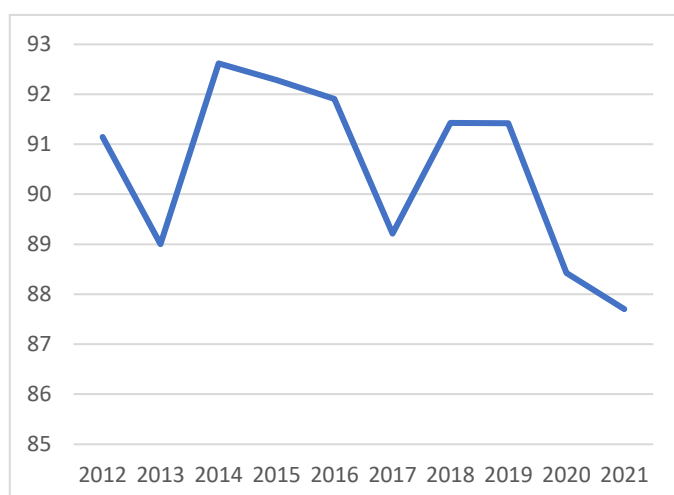
WUENIC data 2021 Revision

In spite of the failure to meet outcome targets, there was progress in the introduction and establishment of new vaccines supported by the FC project. Pneumococcal was not available in Tanzania or Uganda in 2012, but by 2017 Pneumococcal coverage rates were 86 % and 90 % respectively. Similarly, in 2012 Rotavirus vaccine was only available in Rwanda, but by 2017 VCRs were Burundi 93 %; Kenya 67 %, Rwanda 98 %; and Tanzania 87 %. The 2017 Uganda Rotavirus VCR was not reported.

For the purposes of the EPE a regional trendline for Pentavalent was derived by weighting each of the countries according to 2016 population ratios to account for the greater significance of Kenya, Tanzania, and Uganda which together made up 86 % of the region’s population in that year. That trendline is volatile but declines from 2012 to 2017 before recovering in 2018 and falling again during the COVID-19-driven downturn from 2020¹⁶. It is shown at Figure 4 below:

¹⁶ 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 Pentavalent in 2021 (a key marker for immunization coverage).

Figure 4: WUENIC Pentavalent coverage in the EAC – population-weighted average



WUENIC data 2021 Revision, EPE analysis

The VCRs depicted in the diagrams above are aggregates. They say nothing about how immunization programs have benefited specific demographics; and nothing about equity, whether gender equity, geographical equity, or equity between income groups. Comprehensive data on equity, whether national or regional, was not made available for the purposes of this evaluation and EAC regional data on vaccine equity is not available online in any form. Some equity data is available from diagnostic reports, DHS reports, WHO and Gavi Joint Appraisal documents. Table 4 below has been compiled from DHS survey data and reflects the disparities in several equity measures, but for Pentavalent vaccinations only. A number of points arise:

- EAC wide data for these disparities is not publicly available, and possibly has not been collated. As a result, Table 3 shows national data only.
- In Table 4 all disparities greater than 10 % are highlighted in red. They mostly occur in Kenya and Tanzania. The only disparity greater than 10 % outside these two countries is a geographical disparity in Uganda. No disparities greater than 10 % under any dimension are reported in Rwanda or Burundi.
- Across all five countries there is little difference between rates of vaccination for boys and girls. This is a major Gavi goal¹⁷. Gender parity in the EAC was reported at project design stage and has continued.
- Disparities between urban and rural VCRs for Pentavalent are limited and in the case of Kenya have mostly disappeared by 2022. There is no recent DHS data for Tanzania, but the latest Multi-stakeholder Dialogue (2020) reported that the number of districts with Pentavalent coverage rates less than 80 % is steadily decreasing and in 2020 was less than 5 %.
- The data at Table 4 suggest that the poorest people and people in the most remote areas, along with children of mothers who are the least educated, are the least likely to be vaccinated.

It is not possible to say which access barriers drive the disparities that remain, and it is likely that different barriers predominate in different countries and districts. The vaccination itself is free of charge in all EAC countries, but transport costs or mothers' need to take time off work to bring children to the clinic create opportunity costs. Dropouts prior to full vaccination are reported to result from limited awareness. In Tanzania an assessment revealed that barriers which prevent women from taking their children for vaccination include their engagement in petty trade, or work in the paddy fields and mines (Tanzania Joint Appraisal, 2019). On the other hand, a district study in Uganda reported that access to immunization centres is difficult due to poor roads undermining the effectiveness of outreach programs; there is a lack of supportive supervision and mentorship; and immunization programs are hampered by untimely delivery of supplies especially refrigerator gas and vaccines (Malande et al, 2019).

A final point on immunization equity is that improvements (or indeed deteriorations) cannot easily be attributed to this FC project or to Gavi more generally. However, Table 4 suggests that equitable outcomes are being achieved in several areas.

¹⁷ Equal access is a plank of Gavi policy. However, a 2019 (Itad, 2019) Evaluation of Gavi's Gender Policy pointed out that gender policy was not always having the desired impact at country level.

Table 4: Pentavalent equity measures at the times indicated for the five countries¹⁸¹⁹

Equity measure: (all are for Pentavalent only)	Kenya		Uganda	Tanzania	Rwanda	Burundi
	DHS 2014	DHS 2022	DHS 2016	DHS 2015-16	DHS 2014-15	DHS 2016-17
Urban	96.2 %	87.9 %	77.2 %	95.0 %	98.7 %	93.2 %
Rural	89.2 %	89.9 %	79.0 %	86.6 %	98.0 %	96.8 %
Boys	89.6 %	88.8 %	78.7 %	90.1 %	98.5 %	96.3 %
Girls	90.2 %	89.5 %	78.4 %	87.8 %	97.8 %	96.7 %
Best region	95.5 %	99.1 %	90.0 %	97.0 %	100.00 %	99.3 %
Worst Region	77.4 %	36.4 %	72.5 %	77.5 %	96.3 %	91.5 %
Mother has secondary education	93.3 %	96.4 %	79.2 %	94.1 %	99.1 %	96.1 %
Mother has no education	77.3 %	87.4 %	76.1 %	79.2 %	95.4 %	96.4 %
Highest income percentile	92.7 %	90.4 %	78.0 %	95.4 %	98.9 %	99.3 %
Lowest income percentile	83.3 %	85.1 %	78.0 %	80.3 %	95.7 %	95.1 %

Source: Demographic and Health Surveys as indicated.

¹⁸ All equity measures which differ by more than ten percentage points are highlighted in red.

¹⁹ The disparity between best and worst region is mostly calculated based upon district comparisons. The table does not show disparities within districts which might be significant.

During the project period there was unrest in parts of Burundi and Kenya, including a coup d'état in Burundi, which is understood to have at least temporarily affected the immunization program in those regions, although the extent is not quantified.

Contribution to goal achievement

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 Pentavalent, Pneumococcal and Rotavirus was in proportion to the funds provided.

GAVI reports that the EAC countries had a total budget for vaccines in 2013 of USD 138.9 million²⁰. The FC project was a EUR 20 million project, which at an average 2013 conversion rate of 1 EUR = 1.33 USD contributed USD 26.6 million thus contributing 19.15 % of the effort. Similar calculations can be carried out for 2014 and 2015 where the percentages are expected to be slightly lower because the total spending rose, but the contribution remained at EUR 20 million, and in 2015 the exchange rate fell²¹.

The way in which the FC support was provided renders it untraceable. It was contributed to general Gavi country resources, and there were no identifiable "FC financed" vaccines. As a result, the FC project support to vulnerable groups and beneficiaries mirrored the support provided by the national Gavi programs.

Quality of implementation

Effective financing and procurement were 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 in all countries. After vaccines were procured by UNICEF, they were supplied to established MoH immunization programs in EPI (for details see under Coherence). The national EPI networks were strengthened with external sources of finance including Gavi's own Health Systems Strengthening (HSS) program.

The national systems faced a variety of challenges which were known at appraisal stage. Some difficulties noted in contemporary reports include supply chain weaknesses highlighted by a program audit in Kenya (Gavi 2016); challenges in Kenya resulting from the rapid decentralization; conflict in Burundi and in parts of Kenya; refugee flows into and within the region; and vaccine availability which was a challenge in Uganda²² (Gavi, 2015) and perhaps more widely.

The fact that limited data concerning equity, 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 the beneficiary countries.

Unintended effects (positive or negative)

The EPE is not aware of any unintended effects.

Rating summary:

There was improvement in vaccine coverage in some countries and in others earlier improvements were maintained. Targets were not met in most cases, but in mitigation, some were ambitious and although targets were not met, progress was made and VCRs improved mainly until today. There was good progress with the newly introduced vaccines of Rotavirus and Pneumococcal, and although targets for Rotavirus were not met, the EPE considers them to have been overly ambitious. The contribution made by the project was nonetheless significant. The quality of implementation in terms of procurement and distribution to the EPIs was sound, but little is known about the implementation within the national EPIs. There are no significant gender disparities, but

²⁰ This figure and others that follow in this section were derived by the authors from data on Gavi Co-financing sheets which are available on the various country websites.

²¹ Average exchange rates for the years under review were: 2013 1 EUR = 1.33 USD; 2014 1 EUR = 1.33 USD; 2015 1 EUR = 1.11 USD.

²² Gavi, 2015. Summary of Findings: „By the end of 2014, PCV was not fully routinized, in part due to stock-outs at multiple levels of the health system. While there have been improvements since 2014, by the third quarter of 2015, PCV was still not yet fully routinized; furthermore, geographic inequalities in PCV coverage remain, reflecting existing bottlenecks in the immunization systems. Elsewhere in the report it is indicated that insufficient numbers of PCV vaccines were shipped to Uganda in 2013-14, but the reasons were not clearly established. One possibility is that it was a failure of co-financing.

disparities in coverage in other dimensions exist in some countries. Effectiveness in summary is rated as **moderately successful** as positive results dominate although results fall short of expectations.

Effectiveness: 3

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, 2017).

The mechanism chosen for the project (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 2022 was 7.4 % (Gavi Annual Financial Report, 2022). In the project under review, in-country overheads were absorbed by the Gavi program and/or MoH/EPI. Gavi is supported by several donors and through pooling and bundling the Gavi approach can lead to high efficiencies.

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 %²³. No information was made available on whether FC funds were used to cover the handling fees. All procurement is on a competitive basis and the low prices are understood to be achieved because of the very large volumes procured.

The bilaterally provided annual tranche of FC funds earmarked for procurements of vaccines go along with higher set-up transaction costs for Gavi since each tranche had to be separately contracted. However, the bilateral arrangement was necessary for Germany, and did not adversely affect the recipient countries. However, it created additional project management transaction costs for both Gavi and KfW in negotiating, establishing, monitoring and evaluating a series of FC projects.

Use of existing national systems is an undoubted strength of the project. However, by using the national systems of EAC countries, the project took on board the challenges that those systems face. Those challenges were recognized in the appraisal document and vary in intensity and significance between and within countries. They included cold chain management; staff shortages and transport deficits; accessibility to remote regions; and challenges in 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 and no data to assess the overall efficiency of national systems. 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 or GPF (Gavi, 2019b). Still, no specific information on the efficiency of the in-country implementation was made available by Gavi during this evaluation.

²³ <https://www.unicef.org/supply/handling-fees>

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 %²⁴. No information was made available on whether FC funds were used to cover the handling fees. All procurement is on a competitive basis and the low prices are understood to be achieved because of the very large volumes procured.

An internal evaluation confirms that “FC financed” vaccines were indeed purchased in a timely manner on a reimbursement basis, that is, the vaccines had already been procured at the time of payment²⁵. However, reference is made to delivery delays in Uganda (Gavi, 2015).

A second question is whether the vaccines were used in immunization programs in a timely manner, but no information has been made available to verify this.

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 and varies with the size of vials used.

Although there are several references to wastage in Joint Appraisals and other mostly Gavi-initiated documents, those mostly include ex-ante proposed wastage rates. There is no information on actual wastage rates. This is probably because they are not routinely collected. Gavi Joint Appraisals for Kenya in 2014, 2015 and 2016 and cMYP 2015-19 for example all note the inability of the MoH to monitor wastage rates, and the need for an enhanced data-management and evaluation capacity by the EPI program. The project design included wastage indicators, but they proved ineffective as a result of the lack of data.

Allocation efficiency

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 all EAC countries is through an EPI supported by Gavi, UNICEF and the World Health Organization (WHO), any parallel approach would lose the efficiencies and controls of this established system.

Allocation by gender was satisfactory. However, as noted above there were allocative disparities by region and by income group in both Kenya and Tanzania.

Funds were allocated amongst the 5 EAC partner countries by Gavi in response to demand, and not according to any pre-agreed plan.

Observers and stakeholders cited areas for improved efficiency. The opportunities for improvement vary between countries and regions and have been listed above under operational efficiency and noted elsewhere in the report. These concerns raise questions concerning the appropriateness of earmarking FC funds for the procurement of vaccines only.

Rating summary:

The FC project chose an efficient and established method to support a health intervention (immunization) which is widely recognized as highly efficient and cost effective. There were no viable alternatives. Little is known about the granular efficiency of the EPI systems on the ground or wastage which is not reported. However, studies report that the project outcomes were affected by challenges faced including in human resource availability, data availability and a suboptimal cold chain, which would have affected both production efficiency and also allocative efficiency. Also, equity in allocation could be enhanced. Overall, Efficiency is rated as **moderately successful**.

Efficiency: 3

²⁴ Informants advised that in practice the allocation of FC funds to vaccines was an accounting exercise. When the FC funds arrived at Gavi they were earmarked for East Africa and allocated to beneficiary countries.

²⁵ Informants advised that in practice the allocation of FC funds to vaccines was an accounting exercise. When the FC funds arrived at Gavi they were earmarked for East Africa and allocated to beneficiary countries.

Impact

Overarching (intended) developmental changes

The revised **impact objective of the FC project was the improvement of the health of the populations of the East African Community, especially children under the age of 5** (also see Annex 2).

The only indicator at impact level from the project appraisal is improvement in U-5 mortality rates (or Child Mortality Ratio – CMR). For the first three years of the project (2013-2015) the target was aligned with the MDG CMR goal for each country. Table 6 shows how each country performed against the MDG goal:

Table 6: Project results at the level of the impact objective - reduction of CMR

Country	Status at project appraisal (2012)	Target at project Appraisal (aligned with 2015 MDG goal)	Status at		Status at EPE (2022)*
			2015* (MDG closure)	final inspection (2017)	
deaths per 1,000 live births					
Burundi	104	68	67.6	72	54.3
Kenya	73	33	48.9	49	41.9
Rwanda	55	50	47.7	39	40.5
Tanzania	54	54	58.1	57	48.9
Uganda	69	56	55.7	53	43.3

Source: various as indicated; * = Data from the Inter-Agency Group on Mortality Estimates (IGME)

Burundi, Rwanda and Uganda achieved the MDG goal. Tanzania missed it by a small margin (58.1/1,000 vs. a target of 54/1,000) while Kenya missed the MDG goal by a large margin (48.9/1,000 vs. 33/1,000). The table also includes the CMR status at 2022 showing that all countries except Burundi were below 50/1,000 by that time and three countries were below 45/1,000. Kenya in 2022 was the second-best performer at 41.9/1,000.

After 2015 the SDGs replaced the MDGs, and the CMR target became 25/1,000 for all countries by 2030. It is too early to say whether the 5 supported EAC partner countries will reach the SDG target in 2030, but the latest CMR data from the Inter-Agency Group on Mortality Estimates (IGME) suggest that at least three of them will fall short.

Table 7 below shows the 2020 U5 CMR for the five EAC countries being reviewed here. The raw EAC average in 2020 was 45.8/1,000. The authors' calculations indicate that at current national "Annual Rates of Reduction" (ARRs) only Rwanda will reach 25/1,000 by 2030 and thus achieve the SDG. At the current ARR, Uganda would come close with 26.5/1,000, but Kenya (31.2), Tanzania (32.2) and Burundi (36.5) would miss the target.

Table 7: Progress toward the SDG goal in the five countries

Country	2020 CMR per 1,000 live births	2020 IGME Annual Rates of Reduction	Expected 2030 CMR per 1,000 live births (based on current ARR)	SDG target
Burundi	54.3	3.9 %	36.5	25.0
Kenya:	41.9	2.9 %	31.2	
Rwanda	40.5	5.1 %	24.0	
Tanzania	48.9	4.1 %	32.2	
Uganda	43.3	4.8 %	26.5	

Source: IGME Report 2020

The data²⁶ show strong downward aggregate CMR trends in all countries²⁷. However, it is difficult to assess just how much vaccinations (and by extension the FC project) contribute to the decline in U-5 mortality. For instance, a recent study in Kenya has shown that contraceptive use and maternal education are also major factors (Keats Macharia et al, 2018).

However, we do not have granular data on how the project impacted U-5s at sub-national level, or in different income groups, so 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 cannot 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 in the EAC from 2013 to 2015 (also see under Effectiveness). Thus, we can say that it is plausible that the project has had a positive impact on child health.

Implicit in the FC project concept is an understanding of health as a 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. Other than the intention to initiate a regional immunization platform at the EAC level, 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. The regional immunization group appears to have met once in 2013, but there is no evidence of subsequent meetings or activities.

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 governments of East Africa²⁸. It has been working with them since its creation in 2000 and is a trusted partner of governments in the region (also see Effectiveness and Efficiency above). The same can be said for German FC which had pre-existing relationships with all EAC governments.

The project reviewed here comprises the first three phases of a 5-phase program, so it initiated further FC projects, which included different vaccines and other activities. Additionally, it complemented the multilateral funding for Gavi.

Contribution to overarching (unintended) developmental changes

No unintended overarching developmental changes are apparent.

Rating summary:

Three of the five countries achieved the 2015 MDG target for CMR (which was also the FC project target). Only Kenya fell short by a wide margin but has since made good progress. It is too soon to say whether the SDG 2030 targets for CMR will be reached, but at current rates of reduction Rwanda will achieve it and Uganda will come very close. The contribution of the FC project to these achievements is plausible but cannot be quantified. The evaluation did not find any unintended overarching developmental changes, whether positive or negative. Impact is rated as **moderately successful**.

Impact: 3

²⁶ IGME data is a well-regarded standard source of data for child mortality, 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.

²⁷ as well as separately for boys and girls, although details are not presented here. As is usual in many countries, the CMR for girls is lower than that for boys.

²⁸ For instance, during the period under review Rwanda had two approved proposals in 2013 for HPV and Measles Rubella; and for Health Systems Strengthening. In 2015 Rwanda had a further proposal approved for Measles – second dose <https://www.gavi.org/country-documents/rwanda>. All approved proposals result in agreements.

Sustainability

Capacities of persons concerned

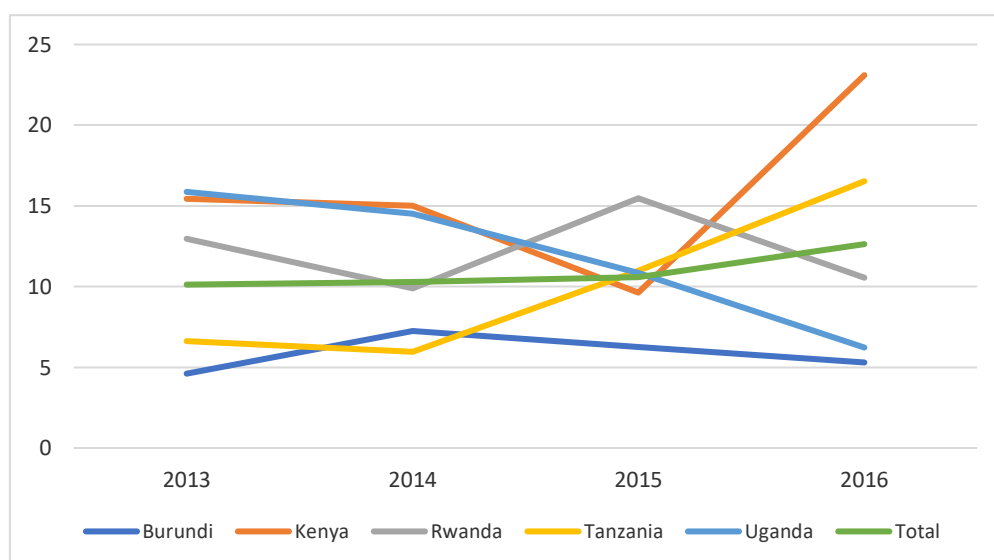
There are two issues: the sustainability of the project outputs – vaccinations; and the sustainability of the immunization program. At an individual level, vaccines provide protection for life and are inherently sustainable. In addition, the project measure indirectly protects the entire population with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

Programmatically, we can expect the immunization interventions in East Africa to be sustainable for several reasons. Not least because health in general and immunization in particular, are priorities for the international community, for the governments of the region (see Relevance and Coherence above) and indeed for the EAC. 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. Data presented under **Impact** above show that the CMR has continued to fall after the project period, and this trend is expected to continue.

In addition to the above, Gavi promotes sustainability by placing all partner countries on graduation plans to ensure that their domestic contribution to immunization programs is steadily increased²⁹.

Figure 5 below shows that overall the regional contributions to vaccines are rising, although during the period under review contributions from Burundi and Uganda fell.

Figure 5: Percentage of vaccines paid for by national governments 2013-2016



Source: Gavi Co-Financing Information Sheets

Table 8 below shows that the proportion of vaccine costs borne by the five countries increased from 10.2 % in 2013 to 10.6 % in 2015³⁰. However, it is possible, even likely, that from 2020 COVID-19 and inflation have undermined efforts to tip the balance in favour of domestic spending to cover health costs.

²⁹ 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).

³⁰ Data from some countries is incomplete after 2015.

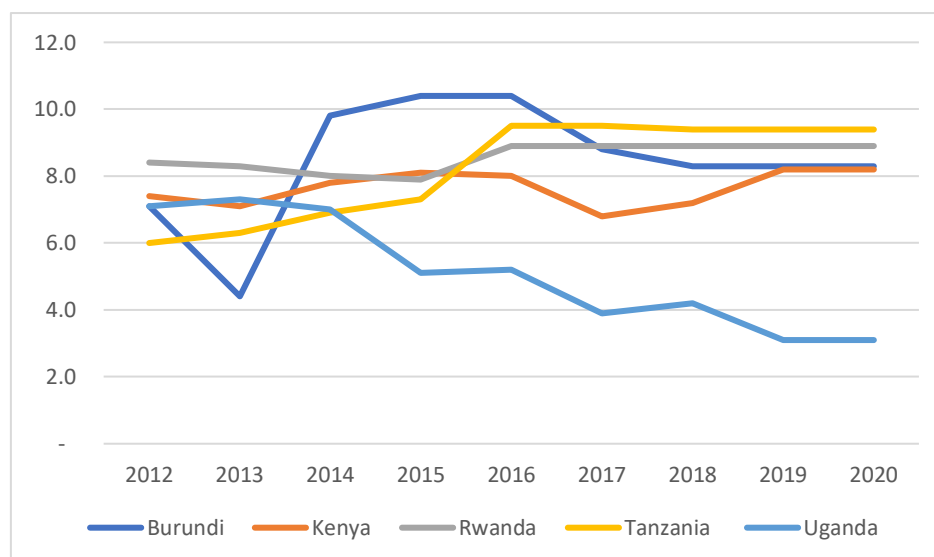
Table 8: total vaccine costs in East Africa USD during FC-project implementation

	2013		2014		2015	
	\$ million	%	\$ million	%	\$ million	%
Domestic contributions to vaccines	14.1	10.2	15.6	10.3	15.8	10.6
External contributions to vaccines	124.8	89.8	136.4	89.7	133.2	89.4
Total vaccine spending	138,9	100.0	152.0	100.0	149.0	100.0

Source: Gavi Co-Financing Information Sheet 2022

The sustainability of vaccine financing is dependent on levels of spending in health. Figure 6 below shows Domestic General Government Health Expenditure (GGHE-D) as a percentage of General Government Expenditure (GGE). Health spending in all countries with the exception of Uganda has stabilised at between 8 and 10 % of GGE. Overall, the EAC average has been approximately 8 % from 2017 to 2020, which is comparable with many sub-Saharan African countries but well below the 15 % spending target of the Abuja Declaration.

Figure 6: Domestic General Government Health Expenditure (GGHE-D) as a percentage of General Government Expenditure (GGE) – EAC countries 2012 to 2020



Source: World Health Organization General Health Expenditure database

Uganda Immunization Bill

A bill was passed by the Ugandan parliament in December 2015 and enacted into law in March 2016 to ensure sustainability of the Uganda National Expanded Program on Immunization after the country graduates from Gavi support. The law mandates compulsory immunization and establishes a new National Immunization Fund.

Risks to the continuing program include the countries not being able to finance their 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. The primary risk not sufficiently enumerated at the appraisal stage included, was that of 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 programs, which went on to strengthen and expand into further phases and to provide additional vaccines in subsequent years as well as other immunization-related interventions. 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. The positive effects of the wider Gavi/UNICEF engagement, which this project partially enables, include health systems strengthening, long-term technical support and components of capacity building.

Durability of effects over time

Over the last 6 years the countries of East Africa have demonstrated positive economic growth with some countries performing more consistently than others:

Table 9: Economic growth in East Africa (IMF data)

	2017	2018	2019	2020	2021	2022	6-year total	6-year average
Burundi	-0.6	1.6	1.8	0.3	3.1	3.3	9.5	1.6
Kenya	3.8	5.7	5.1	-0.3	3.1	3.3	20.7	3.5
Rwanda	4.0	8.6	9.5	-3.4	10.9	6.0	35.6	5.9
Tanzania	6.8	7.0	7.0	4.8	4.9	4.5	35.0	5.8
Uganda	6.8	5.5	7.8	-1.4	6.7	4.4	29.8	5.0

Table 9 shows that Rwanda, Tanzania and Uganda all achieved average real growth in excess of 5 % from 2017 to 2022. This augurs well for their ability to finance vaccines domestically in future years, but 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, the countries still have high levels of poverty exacerbated by climate change and steady growth in population. In spite of the above, Gavi/UNICEF is unlikely to have problems delivering support to EPI except in periods of extreme unrest.

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 supported vaccinations is for life and is inherently sustainable. The sustainability of the EPIs itself depend upon the national and global levels of commitment. National levels of commitment in East Africa vary by country but are broadly positive. Global levels of commitment are wholly positive. There is also reason to be optimistic about the sustainability of financing since economic growth over the last six years has averaged over 5 % in three of the five countries. The average is 3.6 % in a fourth (Kenya) but only 1.6 % in Burundi. Sustainability is thus rated as **successful**.

Sustainability: 2

Overall rating: 3

The project has had successes at the outcome level but also some disappointments resulting from contextual factors outside project control and also ambitious targets. There were positive developments on the impact level, to which the project plausibly contributed. The FC project exhibited high relevance, coherence and promises good sustainability. In the context of the broader Gavi support to national EPIs the funding of vaccines is rated as **moderately successful**.

Contributions to Agenda 2030

The primary contribution to the 2030 agenda has been to support the reduction of the CMR in 5 EAC partner countries: Burundi, Kenya, Rwanda, Tanzania and Uganda. At current rates of reduction, the CMR in four of the five countries reviewed here is expected to reach the SDG goal of 25 deaths per 1,000 live births, with Burundi

falling slightly short at 26/1,000. This would represent a dramatic improvement over the rates seen in the region in 2012 which ranged from 54/1,000 to 104/1,000.

Project specific strengths/weaknesses and general conclusions/lessons learned

Strengths and weaknesses of the project included

Strengths:

- High levels of relevance to the needs of the countries of the EAC;
- Immunization is a highly effective and efficient health measure;
- Use of a well-established and trusted system to deliver vaccines – Gavi/UNICEF/EPI;
- There was broad commitment from the East African governments;
- The project maximized cost efficiency through 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);
- After the MDGs expired in 2015, impact indicators were only set for 2030 in line with the SDG – interim targets would have been helpful;
- Comparatively small-scale earmarked funding to Gavi reducing efficiency;
- The project was established as an EAC-wide project, but the anticipated oversight structure within the EAC did not materialize.

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 be disaggregated 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).

About this publication

Responsible:

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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
DTP	Diphtheria-Tetanus-Pertussis vaccine
EAC	East African Community
EPE	Ex Post Evaluation
FC	German Financial Cooperation
EPI	Expanded Programme on Immunisation
FR	KfW final report
Gavi	Global Vaccine Alliance
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
MCV	Measles vaccine
MDG	Millenium Development Goals
PA	KfW project appraisal
Pentavalent	5 in 1 vaccination including diphtheria, tetanus, whooping cough, hepatitis B, Haemophilus influenza type B (Hib)
PPP	Purchasing power parity
PCV	Pneumococcal vaccine
SDG	Sustainable Development Goal
TOC	Theory of Change
U-5	Children under 5 years of age
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

<p>Project objective at outcome level</p> <p>at project appraisal:</p> <p>Decrease of child mortality and disease burden by reduction of vaccine preventable infections through nationwide EAC vaccine coverage of all newborns with newly introduced vaccines (pentavalent vaccine, pneumococcal and rotavirus vaccine).</p>	<p>Rating of appropriateness:</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>Modified EPE objective:</p> <p>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 of U-5s not vaccinated accordingly.</p>						
Indicator	Rating of appropriateness	Country	Revised target (2014)	Status at project appraisal (2012)	2017 Status from WUENIC 2021 revision	Status at EPE (estimates from WUENIC 2021)
<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>WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) is an</p>	Burundi	96 %	100 %	91 %	94 % (2021)
		Kenya	95 %	83 %	82 %	91 % (2021)
		Rwanda	98 %	100 %	98 %	88 % (2021)
		Tanzania	95 %	92 %	90 %	80 % (2021)
		Uganda	93 %	78 %	94 %	91% (2021)

	<p>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>In addition, minor adjustments have been made to some targets as a result of the 2017 WUENIC revision.</p>	All EAC		91 %	89.2 % EPE calculation of population-weighted average	87.7 % (2021) EPE calculation of population-weighted average
<p>2. Pneumococcal VCR</p>		<p>Country</p>	<p>Revised target (2014)</p>	<p>Status at project appraisal (2012)</p>	<p>2017 Status from WUENIC 2021 revision</p>	<p>Status at EPE (estimates from WUENIC 2021)</p>
<p>3. Rotavirus VCR</p>		Burundi	96 %	100 %	91 %	94 % (2021)
		Kenya	95 %	82 %	82 %	92 % (2021)
		Rwanda	98 %	100 %	98 %	88 % (2021)
		Tanzania	95 %	NYI	86 %	80 % (2021)
		Uganda	88 %	NYI	90 %	91 % (2021)
		All EAC		57 %	86.9 % EPE calculation of population-weighted average	87.7 % (2021) EPE calculation of population-weighted average
		Burundi	100 %	NYI	93 %	94 % (2021)
		Kenya	Not reported	NYI	67 %	91 % (2021)

		Rwanda	100 %	50 %	98 %	89 % (2021)
		Tanzania	94 %	NYI	87 %	77 % (2021)
		Uganda	Not reported	NYI	Not reported	87 % (2021)
		All EAC			72 % Raw average from Final Inspection Report	85.5 % (2021) EPE calculation of population-weighted average
4. No of vaccines procured 5. Vaccine wastage rate	Number of vaccines procured, and wastage rates are appropriate measures of outputs not outcomes. No data is available to measure whether these objectives were achieved. Therefore, these indicators are not used for the evaluation.			--		--

Source: WUENIC data; internal KfW reports

NYI = Not yet introduced

Project objective at impact level at project appraisal: Improvement of the health of the population of the East African Community, considering populations at risk in particular.		Rating of appropriateness The impact objective as set out in the project appraisal does not clarify “population at risk” and does not reflect the target group of the FC financed activities. The impact objective therefore is revised as follows:					
Modified EPE objective: Improvement of the health of the populations - considering children under 5 in particular - of 5 partner countries of the East African Community (EAC) (Burundi, Kenya, Rwanda, Tanzania, and Uganda).							
Indicator	Rating of appropriateness	Country	Target level at project appraisal (2014)	Status at project appraisal (2012)	Status at:		Status at ex post evaluation (2021 data)
					MDG closure 2015	final inspection (2017)	

<p>Reduction of mortality rate of under 5 year old children, deaths per 1,000 live births (CMR)</p>	<p>The Child Mortality Rate (CMR) is a widely used and appropriate indicator to measure impact on children's health.</p> <p>For this project, which was designed in 2012, the target was aligned with the MDGs which were finalized in 2015 and replaced with the SDGs.</p> <p>IGME is an appropriate data source, however the baseline value cited in the project appraisal is incorrect and therefore revised in the evaluation.</p>	Burundi	68	104	67.6	72	54.3
		Kenya	33	73	48.9	49	41.2
		Rwanda	50	55	47.7	39	40.5
		Tanzania	54	54	58.1	57	48.9
		Uganda	56	69	55.7	53	43.3
		All EAC					

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 the countries of East Africa. Kenya is the only lower middle income country in the region and is on track with its increased Gavi contributions. Data on co-financing by the countries of East Africa has not been made available beyond 2017, but the contribution has been steadily increasing to that point, and there is reason to believe that good economic growth in the region will enable it to continue. The risk has not yet materialized.</p>
Availability of vaccines on the world market	<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, but staff challenges are indicated in several reports. In Kenya the devolution to counties resulted in some staff going unpaid; in spite of its successful program, Rwanda reported “inadequacy of staff at grassroots level putting pressure on the few available staff coping with the high workload”. It is reasonable to assume that staff capacity was challenging at some times in all countries, and especially in remote locations, but it is not possible to quantify its impact.</p>
Delayed delivery of vaccines caused by inadequate transport in recipient countries	<p>Effectiveness, Efficiency, Impact</p> <p>No detailed information was made available, but reports mentioned transport challenges. For example, the 2015 Joint Appraisal for Tanzania reports “inadequate vehicles for distribution and supportive supervision at regional and council level especially the new ones...” Which “impacted on the vaccination coverage for some of the districts”. However, the impact across the five countries is not easy to quantify.</p>
Inadequate cold chains	<p>Effectiveness, Efficiency, Impact</p> <p>No detailed information was made available, but incomplete supply and cold chains continued to be reported. Gavi programs to support maintenance of cold chains were instituted in three of the countries (Burundi, Rwanda and Tanzania) .</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 in Burundi and in Kenya and has continued sporadically since. Observers report that there is good community support for the EPI and the MoHs have continued to be able to operate throughout the EAC partner countries.</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 programs and directly affected immunization rates in the respective years.</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?		3
	Alignment with policies and priorities	2
	Alignment with needs and capacities of persons concerned	2
	Suitability of project concept	3
	Reaction to changes/adaptability	2
Coherence: How well does the intervention fit?		2
	Internal coherence	2
	External coherence	2
Effectiveness: Is the intervention achieving its objectives?		3
	Achievement of (intended) goals	3
	Contribution to goal achievement	3
	Quality of implementation	2
	Unintended effects (positive or negative)	-
Efficiency: How well are resources being used?		3
	Production efficiency	3
	Allocation efficiency	3
Impact: What difference does the intervention make?		3
	Overarching (intended) developmental changes	3
	Contribution to overarching (intended) developmental changes	3
	Contribution to overarching (unintended) developmental changes	-
Sustainability: Will the benefits last?		2
	Capacities of persons concerned	2
	Contribution to support for sustainable capacities	-
	Durability of effects over time	3

Annex 5 - Bibliography

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