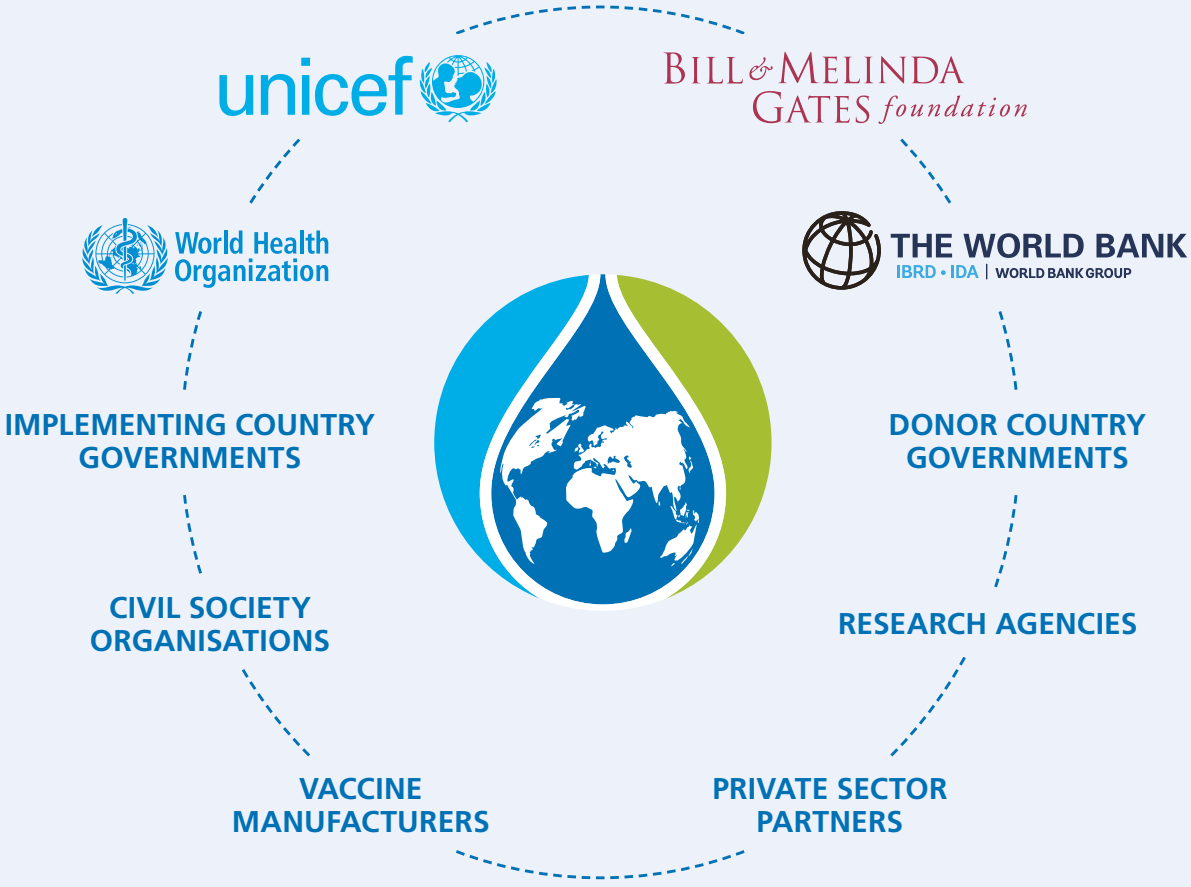
Gavi
The Vaccine Alliance

Annual Progress Report

Year 1
of our five-year strategy

2020
2019
2018
2017
2016



The Vaccine Alliance

Our 2016–2020 mission: saving children's lives and protecting people's health by increasing equitable use of vaccines in lower-income countries.

Our partners

Our partnership combines the technical expertise of the development community with the business know-how of the private sector.

- **WHO** regulates vaccines and supports country introductions, strengthening immunisation coverage and data quality.
- **UNICEF** procures vaccines and supports countries in maintaining their cold chain, improving access and collecting data.
- **The World Bank** helps pioneer innovative finance mechanisms like the International Finance Facility for Immunisation (IFFIm) and the Advance Market Commitment (AMC).
- **Bill & Melinda Gates Foundation**, one of our founding partners, provides funding and expertise and pioneers innovative approaches.
- **Implementing country governments** identify their immunisation needs, co-finance and implement vaccine programmes.
- **Civil society organisations** help ensure that vaccines reach every child.
- **Vaccine and cold chain equipment manufacturers** guarantee vaccine quality, supply and affordability for developing countries.
- **Donor country governments** make long-term funding commitments.
- **Private sector partners** contribute resources, expertise and innovation to help achieve our mission.
- **Research agencies** help generate the evidence base and communicate the value of vaccines.

Contents

2016 Annual Progress Report

> "The 2016 Annual Progress Report is a new way of reporting for Gavi and the first of five reports covering our new strategic period."
>
> **Dr Seth Berkley**
> Chief Executive Officer

Immunisation: a global context

2016 Annual Progress Report

Dr Seth Berkley, Chief Executive Officer

> "...global forces, such as climate change, human migration, conflict and urbanisation, continue to impact and challenge our mission and threaten global health security in the process."

Welcome to Gavi's 2016 Annual Progress Report, a new kind of report and the first of five covering our new strategic period. This report differs from previous versions in its approach, not only reporting back on our key performance indicators (KPIs) but also providing a global context for the important work we are doing here at Gavi. This "bigger picture" will become increasingly important in the rapidly changing world, as global forces, such as climate change, human migration, conflict and urbanisation, continue to impact and challenge our mission and threaten global health security in the process.

As you will see, in this first year of our new 2016–2020 strategy such challenges are already making themselves apparent. It will be critical for us to adapt accordingly. Based on lessons learned from monitoring and reporting on our performance in 2016, we have adjusted several indicators to ensure they provide more meaningful information. For example, with household survey data only available every three to five years, we cannot reliably update our indicators for poverty and gender equity each year. Instead these indicators will be updated at the mid-term (May 2018) and end of our strategy (2020). We will adopt a similar approach to monitoring hepatitis B prevalence through our disease dashboard, where identifying trends over time is more useful than recording annual variations.

Gavi is also rethinking its institutional capacity indicator to better assess whether countries are improving management of their immunisation systems. Of course, to build as comprehensive picture as possible of the impact of our investments in immunisation, we cannot just rely on our formal indicators. Gavi will continue to draw on a wide range of intermediate indicators and other sources, such as country performance data and evaluations.

All this emphasises the need for our new initiatives to strengthen health systems.

Until we do this and start to see stronger data, and more of it, we should not take the apparent stagnation of global immunisation coverage, and countries that appear to be performing very well, at face value. If we want to raise coverage we'll need to continually expand the net to include those children that are currently not being counted.

Another initial set-back is that we have not met our targets on vaccine introductions and have experienced serious supply issues for both yellow fever and inactivated poliovirus vaccines (IPV), partly because demand was so high.

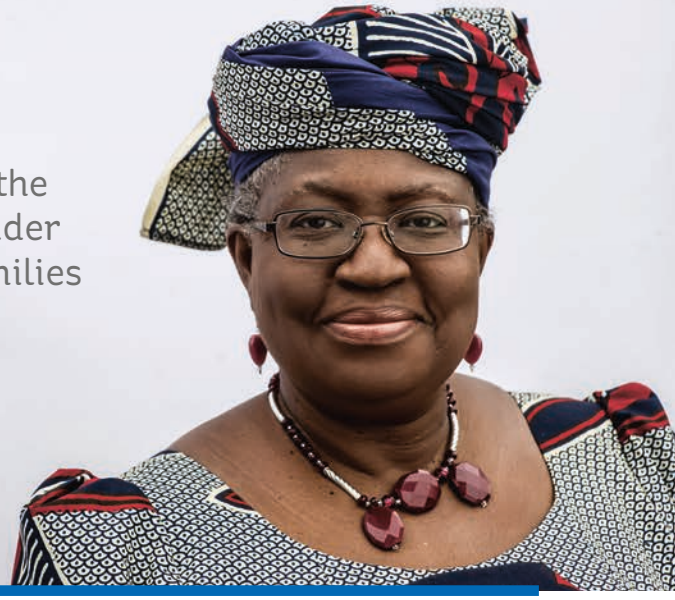
However, none of this should detract from the great progress we have made in 2016. Last year saw the introduction of new initiatives to help with the global strategies to reduce the risk of outbreaks of both measles and yellow fever. In the case of the latter, this was despite vaccine supply issues and in the face of the largest yellow fever outbreak in decades, ultimately helping to bring an end to that outbreak in Angola and the Democratic Republic of the Congo.

Last year I also met with Prime Minister Narenda Modi and was given personal reassurances of the Government of India's commitment towards immunisation and the introduction of pneumococcal, rotavirus and measles-rubella vaccines, commitments which have since been acted upon. With Gavi's help, in 2016 for the first time ever, the average price of pneumococcal, rotavirus and pentavalent vaccines fell below US$ 20, an extremely positive milestone.

The other good news is that 2016 was very much a year for innovation and technology, with the launch of three new private sector initiatives: Innovation for Uptake, Scale and Equity in Immunisation (INFUSE), our cold chain equipment optimisation platform (CCEOP) and the launch of the world's first nationwide autonomous drone-based medical delivery system in Rwanda. These kinds of developments are precisely what we need to address issues around immunisation delivery and to improve data, both of which will help us achieve our coverage and equity objectives.

We still have a considerable way to go, and it is important to understand the enormity of the task before us; those children we are not reaching are not just the last to be reached, they are by far the most difficult to reach. However, we are only at the beginning of this strategic period and I am confident that we can meet that challenge and achieve our extremely ambitious targets. Doing so will not only save the lives of individuals, but will help create a better future for many millions more by building the foundations for universal health coverage. And from a global health security perspective, this will only serve to make the world a safer place.

Dr Ngozi Okonjo-Iweala, Board Chair



> …the value of vaccines stretches beyond the prevention of illness and death, bringing wider economic gain to countless individuals, families and communities.

For years to come, 2016 will be remembered by many as a turbulent year, and one posing many challenges for our Alliance.

It was characterised by global emergencies and huge demographic shifts, with conflicts such as Syria triggering the largest number of displaced people since the Second World War. Fears about global health security once again made the headlines following new outbreaks of infectious diseases, such as the Zika virus. It was also a year when we saw an increased focus on domestic agendas following a sudden geopolitical shift away from globalism towards a more unilateral landscape.

It was against this backdrop that Gavi embarked upon the most challenging phase of its history to date. Not just in terms of beginning an ambitious new strategy, but also because the entire Gavi model is under the microscope like never before, following the transition of four countries out of Gavi support. Given such trying circumstances, this would not normally be the best time to join an organisation! Yet, during my first year as Board Chair I have been repeatedly impressed by Gavi's resilience and its ability to adapt and innovate when necessary.

For example, the first four transitioning countries – Bhutan, Honduras, Mongolia and Sri Lanka – faced a long and complex journey to cross the finish line. It was only because of Gavi support that they got there. Now, some other countries that are due to follow the same path face challenges and risk sliding backwards. During this time, Gavi's technical support as well as our assistance with vaccine supply and health system strengthening is even more vital.

This emphasises the importance of Gavi's shift towards a more country-centric approach, which will play a major role in this current strategic period.

The focus of our new integrated set of tools and frameworks is to listen to the needs of countries so we can best support their immunisation programmes, while simultaneously tracking progress and minimising any risk. It is an approach which has proved very popular, as I discovered first-hand in Ethiopia during the Ministerial Conference on Immunization in Africa, last year.

At Addis Ababa, ministers talked about their commitment to transitioning out of Gavi support, and spoke of the importance of building political will to get there. Their enthusiasm and support ultimately led to the Addis Declaration on Immunization, an historic agreement, since endorsed by African leaders, which prioritises immunisation at the continental level.

To see this commitment backed by sustainable financing, it will be critical to emphasise how the value of vaccines stretches beyond the prevention of illness and death, bringing wider economic gain to countless individuals, families and communities. We have long known that immunisation is one of the most cost-effective ways of improving living standards, health and economies, but last year a research study published in the journal *Health Affairs* provided a number that quantifies the actual return on investment: US$ 16 return for every dollar invested in immunisation.

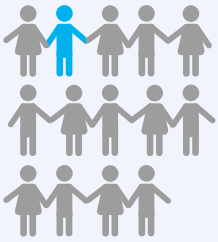
Findings such as this will not only help secure political commitment, they also help us to build support from the private sector, and not just in terms of funding. Last year, the way businesses support Gavi experienced a sea change, placing greater emphasis on operational partnerships aimed at leveraging business and industry expertise. The kind of technical knowledge and experience that this approach brings will play an ever more important role during this strategic period in closing those equity gaps.

Finally, I'd like to cite one last example of Gavi's ability to adapt and innovate. It is highlighted in this report and regards an issue that I care very deeply about: gender and equality. Historically, women and girls often face additional barriers to accessing basic health services; this means they can suffer infectious diseases in very different ways compared to men and boys. Zika is just one example of this. My heart goes out to the hundreds of thousands of pregnant women in Zika-infested countries, who have had to face the agonising experience of not knowing the fate of their unborn child.

So, last year when it became clear that we would face new challenges in reaching our targets to protect girls against cervical cancer with the human papillomavirus (HPV) vaccine, it was great to see Gavi change from a demonstration project-based approach towards encouraging national introductions of this important vaccine. This is just one of the many reasons why I am so very proud to be a part of the Gavi family and am excited about the positive work we are doing.

The Gavi model at work

Gavi, the Vaccine Alliance is a global partnership bringing together public and private sectors around the shared goal of creating equal access to vaccines for all children.



Inequity

19.5 million children worldwide miss out on a full course of basic vaccines.

Just 7% of children in Gavi-supported countries receive all 11 vaccines recommended by WHO for infants everywhere.

1

Leveraging economies of scale

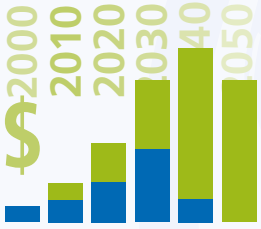
Pooling and responding to demand for vaccines and other immunisation products from the world's poorest countries.

2

Long-term funding

Working with donors and countries to secure long-term, predictable funding for programmes.

Contributions from public- and private-sector donors and country co-financing of vaccines.



3

Shaping markets

Creating healthy markets. Ensuring sufficient supply of appropriate and affordable vaccines and cold chain equipment.

continued support

How the Vaccine Alliance works

As a public-private partnership, our Alliance represents all the key stakeholders in global immunisation: implementing and donor governments, the World Health Organization, UNICEF, the World Bank, the Bill & Melinda Gates Foundation, civil society, the vaccine industry, research agencies and private companies.

Drawing on the individual strengths of its members, Gavi pools country demand, guarantees long-term, predictable funding and brings down prices, helping to ensure that generations of children in developing countries do not miss out on life-saving vaccines.

All partners invest in the Gavi business model, and all are accountable for its results.

Gavi aggregates demand from the world's poorest countries, creating a large and viable market for vaccines and other immunisation products. Gavi-supported countries represent more than half of the world's birth cohort.

All countries co-finance a share of the cost of their Gavi-supported vaccines. As a country's income grows, its contributions gradually increase to cover the full cost of its vaccine programmes.

Predictable, long-term donor support, both in cash and in kind, is another cornerstone of our model. It provides the security countries need to introduce new vaccine programmes, and makes it possible

4

Accelerating access to vaccines

Introducing life-saving vaccines through routine immunisation and campaigns:

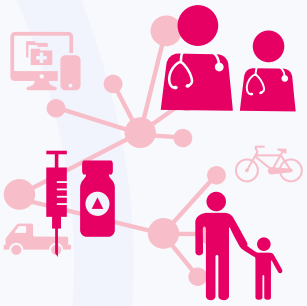
- Pentavalent
- Pneumococcal
- Rotavirus
- Measles
- Measles-rubella
- Meningitis A
- Multivalent meningitis (including A, C, W and Y)
- Yellow fever
- Human papillomavirus
- Inactivated polio
- Japanese encephalitis
- Oral cholera

5

Strengthening vaccine delivery platforms

Innovative solutions to strengthen health systems and ensure vaccines reach people everywhere:

- service delivery
- health worker training
- engaging communities and parents
- supply chain management
- health information systems



6

Sustaining immunisation

As countries become more prosperous, they invest more in their immunisation programmes – ensuring a healthier and more productive population.

Equity

Eventually, countries are able to fully finance their immunisation programmes without Gavi support.

More and more children have access to all 11 vaccines recommended by WHO for infants in all countries.

transition out of support

for manufacturers to make new investments in production capacity. Private-sector donors also contribute innovative solutions to help improve immunisation coverage and equity.

Through our market shaping efforts we influence markets for vaccines and other products, such as cold chain equipment. Manufacturers are better able to plan their production and supply the right quantities of vaccines and other immunisation products at more affordable prices.

With our support, countries introduce vaccines against a range of life-threatening diseases. We also support them in improving their health and immunisation systems to increase coverage and reach every child.

Greater immunisation coverage leads to healthier, more productive populations and greater prosperity. This, in turn, means countries are better able to pay for their vaccine programmes and eventually transition out of our support.

640m

children immunised, saving 9 million lives in the long term

Gavi
The Vaccine Alliance

The road to reaching every child: a more country-centric model

Coverage with a full course of basic vaccines in Gavi-supported countries has increased to 80%, but in recent years progress has stalled. To reach the "final fifth" with a basic package of vaccines – as well as with a range of new life-saving vaccines – we need to work more closely with each country to understand its specific challenges.

In the current strategy period, we are shifting towards a more country-centric model. At its heart is an integrated set of tools and frameworks which help us to better understand countries' needs, target our support to meet those needs and track progress towards immunisation goals.

An integrated approach

Understand

Country risk matrices identify, monitor and quantify key risks in each country and track mitigating actions.

Programme capacity assessments evaluate a country's capacity to implement and manage Gavi-supported programmes and recommend strengthening measures where needed.

Target

The partners' engagement framework (PEF) enables a wide range of Alliance partners to offer technical support targeting the needs each country has identified in its joint appraisal. Nearly 200 dedicated staff have been recruited by WHO and UNICEF at country level to boost national immunisation programmes.

The country engagement framework (CEF) was piloted in five countries in 2016. During this phase, CEF seeks to create a single, harmonised approach to planning, prioritising and approving all Gavi grants to a country.

Our new **health system and immunisation strengthening (HSIS) model** directs our health system strengthening support more directly towards improvements in coverage and equity on the ground.

Track

Joint appraisals, led by countries, monitor the progress of ongoing programmes in each country. They help all partners align around a common agenda and priorities.

Grant performance frameworks (GPFs) are used to track country performance against agreed targets and indicators.

Independent audits provide assurance of country controls and appropriate use of Gavi support.

Evaluations, such as full country evaluations, leverage learnings.

> "Many of the right pieces are now coming together at country level – PEF functions, technical assistance milestones and performance frameworks."
>
> **Full country evaluations report**, 2016

Grant performance frameworks: measuring progress

While we have always emphasised the importance of grant monitoring and evaluation, we recognised that further improvements were needed. This is why in 2016 we accelerated the use of grant performance frameworks (GPFs) across all Gavi-supported countries.

First introduced in 2015, a GPF is an upfront agreement between a country and Gavi on the key metrics that will be used to track the progress and results of a grant as it is implemented. By monitoring and analysing grant performance from activities through to outcomes, GPFs provide better information to support decision-making by all Alliance partners.

All active Gavi grants in a country – including both vaccines and financial support – are covered by one GPF. Each GPF contains 20 core indicators plus a number of country-specific, tailored indicators.

Together with the joint appraisals, GPFs allow countries to set their own goals and targets, and to monitor and assess their progress in a more transparent and consistent way.

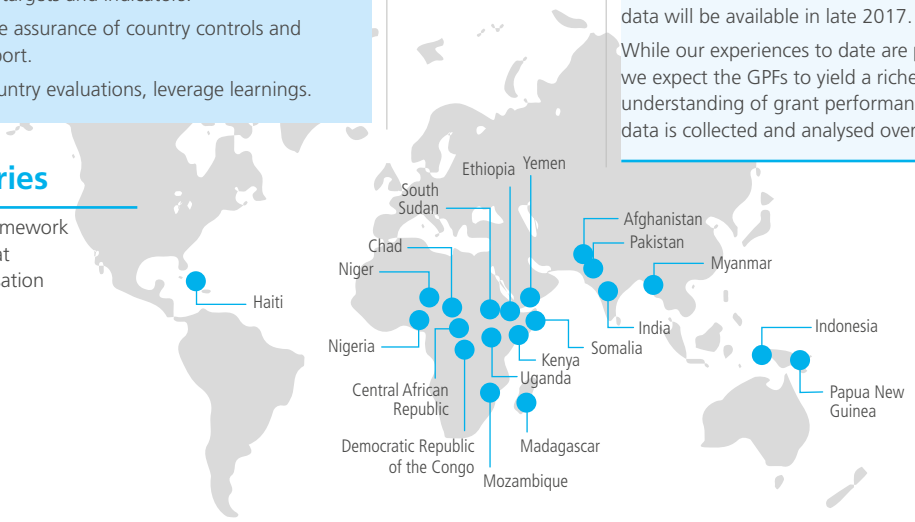
Early analysis shows good levels of compliance and reporting: 80% of countries reported on at least 80% of the agreed indicators in 2016, exceeding our target.

In 2015, 45% of countries achieved 80% of their intermediate result indicator targets. 2016 data will be available in late 2017.

While our experiences to date are promising, we expect the GPFs to yield a richer understanding of grant performance as more data is collected and analysed over time.

20 priority countries

The partners' engagement framework prioritises the 20 countries that face the most urgent immunisation challenges.



> Gavi is moving towards an upstream risk management model of earlier dialogue and engagement with countries... to explore what kind of support they need.

Multilateral Organisation Performance Assessment Network (MOPAN) review, 2016

Managing risks to achieve our mission

Throughout 2016, we also further enhanced our ability to monitor and manage risks. More complex programmes, a focus on strengthening weak country systems to improve equitable coverage and sustainability, and the rapidly changing world expose the Alliance to new uncertainties and risks. Throughout the year, we started to manage risks in our strategy, operations and grants in a more proactive way, thereby increasing the likelihood of achieving our overall mission.

Three lines of defence

We continued to strengthen our best practice three-way separation of responsibilities for risk management, independent monitoring and objective assurance.

1

Active management of day-to-day grant risks at Gavi headquarters, in collaboration with countries and partners on the ground

Active staff recruitment has reduced the average number of countries under a single country manager from approximately 14 in 2012 to just 3–4 in 2016. In addition, we stepped up the roll-out of country risk matrices, which help us to identify, monitor and manage risks at the country level. We have also established a programme finance team to assist countries in their budgeting and use of Gavi funds.

2

Specialist support and monitoring through regular financial and programmatic checks and balances at Gavi headquarters

2016 also saw the creation of a team focusing on programme capacity assessments, which are used to gauge a country's capacity to manage Gavi-supported programmes, and recommend ways to strengthen it where needed. Another new team tracks grant performance, based on metrics and targets agreed with each country. These complement our dedicated "risk function", which is responsible for coordinating risk management across the Alliance.

3

Independent auditing of Alliance processes and countries' programmes, as well as whistle-blower reporting and investigations

In 2016, we continued to develop our audit and investigations team to allow us to carry out audits more effectively. Investigations are conducted as considered appropriate if significant concern is identified over potential misuse of grants.

Risk & assurance report

Gavi's first risk & assurance report, approved by the Board in December 2016, identifies and prioritises the most critical risks the Alliance faces. The report's findings are being used to steer regular strategic discussions with the Board and Alliance partners on which risks need further mitigation, and which risks we are willing to accept in pursuing our mission.

Risk management case study: Kenya

With more than 160,000 children missing out on a full course of basic vaccines every year, Kenya faces some steep challenges. Immunisation coverage has declined in recent years, particularly in some counties, resulting in growing inequities. At the same time, the country is due to enter the "accelerated transition" phase in 2022, meaning that it is expected to become fully self-financing by 2027.

Our new set of tools and frameworks is helping us to manage risks and improve coverage, equity and sustainability in Kenya's immunisation programmes. This approach includes:

- **developing a country risk matrix,** which identifies major programmatic and financial risks and helps us to prioritise and structure our response.
- conducting a **programme capacity assessment** to review Kenya's capacity to implement Gavi-supported programmes and identify requirements for strengthening it. This has resulted in an increase in the number of staff at vaccine stores, the creation of a coordination unit within the Ministry of Health, and the hiring of a temporary independent agent to monitor funds.
- applying a coverage and equity lens to the country's **health system strengthening (HSS) support proposal**, focusing particularly on urban slums, and conducting a **bottleneck analysis** in conjunction with WHO and UNICEF.
- employing a **country manager** only overseeing Kenya (the previous configuration meant that the country manager was also overseeing nine other countries).
- performing a **programme audit** to assess financial management and appropriate use of Gavi funds, and to highlight areas that may need enhancement.
- conducting **joint appraisals**, which provide Kenya and its partners with a holistic view of all ongoing national immunisation programmes and identify needs for technical assistance.
- applying a **grant performance framework** to guide reporting of progress in both vaccine and HSS programmes using an agreed set of metrics and indicators.
- developing a **transition plan** with support from Alliance partners, notably the World Bank, to help Kenya lay the groundwork for its transition out of our support.

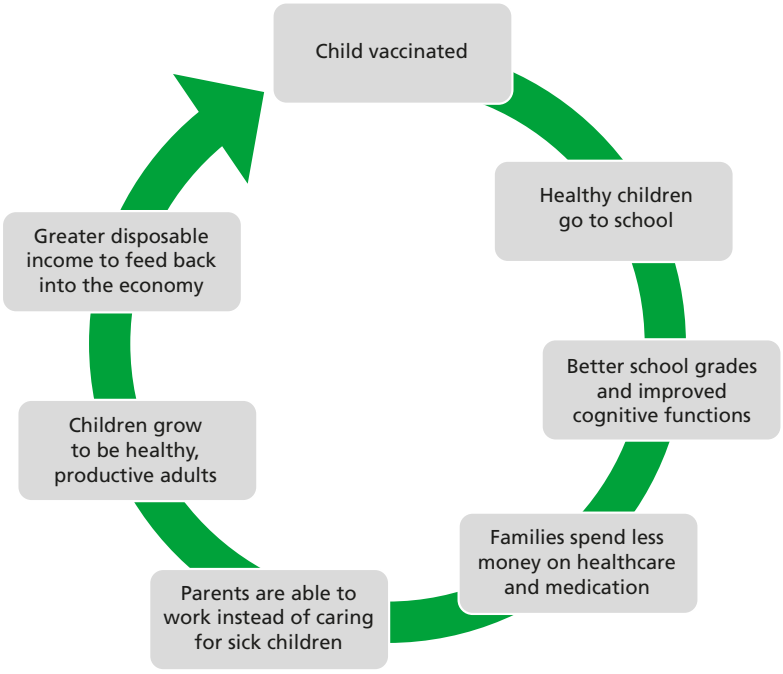
Families gather at the Mnarani Dispensary in Kilifi, Kenya, which is able to serve 500 people a day.

Gavi/2014/Duncan Graham-Rowe

Beyond saving lives: the value of vaccines

We do not usually think of vaccination as an investment, at least not beyond its role in protecting people against infectious disease. But a research paper published in 2016 suggests that vaccination is in every sense an investment, with wider economic benefits that accrue across a lifetime.

Vaccination sets off a positive cycle in a child's life



Preventing disease through vaccination sets off a positive cycle almost immediately in a child's life. Immunised, healthy children are more likely to go to school, and they tend to perform better once they are there. Vaccination has been linked to better school grades and improved cognitive functions, including higher scores in intelligence tests.[a]

Families with vaccinated children spend less money on healthcare and medication, and parents are able to work instead of caring for sick children.[b] Most importantly, children can grow up to become healthy, productive adults. All of this means that families have a greater disposable income to feed back into the economy.

Health economists have long known that preventing illness through immunisation makes sound economic sense. A 2016 study published in *Health Affairs* puts an even more precise figure on this: for every US$ 1 invested in vaccination in the world's 94 lowest-income countries, more than US$ 16 are expected to be gained. If we focus on Gavi-supported countries only, this figure rises to US$ 18.[c]

While this makes vaccines a very wise investment – more so than almost any other health intervention – it is a moderate estimate, which only takes into account direct savings on medical treatment costs and lost productivity caused by illness or death. Even so, such savings are expected to amount to nearly US$ 600 billion in the 2011–2020 period.[d]

When we add the broader economic and social benefits of helping children stay healthy and grow up to become productive adults, immunisation yields an estimated return of US$ 44 for every US$ 1 spent. For Gavi-supported countries, this figure reaches US$ 48. This brings the overall economic benefits for the 10-year period to more than US$ 1.5 trillion.[e]

> "Healthy children are more likely to attend schools and become economically productive adults. Vaccinating a baby benefits everyone in the long run."
>
> **President Ibrahim Boubacar Keïta**
> Republic of Mali

The study shows that all of the vaccines that Gavi supports are cost-effective,[f] including human papillomavirus (HPV) vaccines, which prevent girls from getting cervical cancer later in life, and pneumococcal and rotavirus vaccines, which protect against two of the world's biggest child killer diseases.

Developing countries see the value of investing in immunisation, and they all contribute a share of their vaccine costs through Gavi's co-financing policy. As former Tanzanian President Jakaya Kikwete, a global ambassador for immunisation, puts it: "Universal vaccination plays a fundamental role in developing a healthy, resilient population and in ensuring that we develop the economies we need to face the challenges of the next century."

While reducing illness and mortality is already reason enough to want to have every child in the world vaccinated, we now have the added motivation of knowing that immunisation helps families, communities and countries to thrive and prosper. Immunisation is not just good value for money, it is a financial investment that will pay for itself many times over.

a – Bärnighausen, T. Accounting for the full benefits of childhood vaccination in South Africa. *South African Medical Journal*, 2008, Vol. 98(11). Canning D, Razzaque A, Driessen J et al. The effect of maternal tetanus immunization on children's schooling attainment in Matlab, Bangladesh: follow-up of a randomized trial. *Social Science & Medicine* 2011. Bloom D, Canning D, Seiguer E. The Effect of Vaccination on Children's Physical and Cognitive Development in the Philippines. Program on the Global Demography of Aging 2010.

b – Bloom D. The Value of Vaccination. *Advances in Experimental Medicine and Biology*, 2011.

c – Ozawa S, Clark S, Portnoy A et al. Return On Investment From Childhood Immunization In Low- And Middle-Income Countries, 2011–20. *Health Affairs* 35, NO. 2, 2016.

d – Ibid.

e – Ibid.

f – Ibid. Note that the study covers all Gavi-supported vaccines with the exception of oral cholera and inactivated polio vaccines.

Measuring our performance

mission and strategic goals

Gavi/2016/Randrianarivony Voara

Gavi's mission is to save children's lives and protect people's health by increasing equitable use of vaccines in lower-income countries.

Our work towards achieving this mission is guided by a five-year strategy, underpinned by four strategic goals and a set of key performance indicators. The current strategy, which came into force in January 2016, runs until the end of 2020.

The 2011–2015 strategic period provided a strong foundation for the future. We exceeded all our mission-level targets by immunising close to 280 million children, averting more than 4 million future deaths and contributing to a significant reduction in child mortality.

Mission indicators

Five mission indicators reflect our overall aspiration for the 2016–2020 period. They measure our impact on numbers of immunised children, future deaths prevented, under-five mortality rates and years lost due to disability or death in the countries we support. We also track whether vaccine programmes are successfully maintained in countries after our financial support stops – a reflection of our strategy's increasing emphasis on ensuring sustainability of immunisation.

Disease dashboard

Our goal is to reduce the overall disease burden in the countries we support. Therefore, we also monitor the proportion of Gavi-supported countries with low prevalence of three infectious diseases – hepatitis B, rotavirus diarrhoea and measles – as part of a "disease dashboard".

Strategic goals

We rely on four strategic goals to help us achieve our mission. These are:

- to accelerate equitable uptake and coverage of vaccines ("the vaccine goal");
- to increase the effectiveness and efficiency of immunisation delivery as an integrated part of strengthened health systems ("the health systems goal");
- to improve sustainability of national immunisation programmes ("the sustainability goal"); and
- to shape markets for vaccines and other immunisation products ("the market shaping goal").

Mission indicators

Vaccine Alliance partners and countries are making great strides towards the achievement of our five mission indicators. By the end of 2016, we were on track to reach virtually all our 2020 mission targets.

1 Children immunised

62m

2015: **63m** 2020 target: **300m**

Sources: WHO/UNICEF Estimates of National Immunization Coverage, 2017; United Nations Population Division; World Population Prospects

What we measure

The number of children immunised with the last recommended dose of a Gavi-supported vaccine delivered through routine systems[a]. People immunised through campaigns and supplementary immunisation activities are not included.

2016 performance

Countries immunised 62 million children – often with more than one Gavi-supported vaccine – in 2016. This brings the total number of children immunised with our support since we were founded to 640 million. We are on track to help countries immunise 300 million children in the 2016–2020 period.

2 Future deaths prevented

1.2m

2015: **n/a** 2020 target: **5–6m**

Sources: WHO/UNICEF Estimates of National Immunization Coverage, 2017; Gavi, the Vaccine Alliance Operational Demand Forecast; United Nations Population Division; World Population Prospects

What we measure

The number of future deaths prevented as a result of vaccination with Gavi-funded vaccines in the countries we support.

2016 performance

Developing countries prevented approximately 1.2 million future deaths in 2016 thanks to Gavi-supported vaccines. This puts us well on track to help countries to avert 5–6 million future deaths in the 2016–2020 period.

3 Under-five mortality rate

64[b] /1,000 live births

2015: **64/1,000** 2020 target: **58/1,000**

Sources: The United Nations Inter-agency Group for Child Mortality Estimation; United Nations Population Division; World Population Prospects

What we measure

The average probability of a child born in any of the Gavi-supported countries dying before they reach the age of five.

2016 performance

Under-five mortality was projected at 64 deaths per 1,000 live births in 2016, the same proportion as in 2015. Final 2016 estimates will be available in late 2017.

4 Future disability-adjusted life years averted

50m

2015: **n/a** 2020 target: **250m**

Sources: WHO/UNICEF Estimates of National Immunization Coverage, 2017; Gavi, the Vaccine Alliance Operational Demand Forecast; United Nations Population Division; World Population Prospects

What we measure

The number of future disability-adjusted life years (DALYs) averted as a result of vaccination with Gavi-supported vaccines. DALYs measure the number of healthy years lost due to disability or premature death.

2016 performance

Countries averted approximately 50 million DALYs in 2016 thanks to our support. We are on course to achieve our target of 250 million DALYs averted by 2020.

5 Vaccines sustained after Gavi support ends

100%

2015: **n/a** 2016–2020 target: **100%**

Source: WHO/UNICEF Estimates of National Immunization Coverage, 2017

What we measure

The percentage of countries that continue to deliver all recommended vaccines included in their routine programmes after they transition out of Gavi financing. This indicator covers all vaccines recommended by national authorities for routine immunisation, not only those supported by Gavi.

2016 performance

All transitioned countries continued to deliver each of their recommended routine vaccination programmes throughout 2016.

Disease dashboard

Our disease dashboard, introduced in 2016, is used to track trends in the disease burden of hepatitis B, measles and rotavirus diarrhoea, which can all be prevented by Gavi-supported vaccines.

In the absence of reliable data for a large number of Gavi-supported countries, we are currently only able to monitor disease trends for some countries. We remain committed to measuring our impact on countries' disease burden, and will continue to assess the availability and quality of this data.

The Alliance is discussing what, if any, additional contextual information could be used to supplement the dashboard indicators.

a – To ensure that we do not double-count children who receive more than one vaccine, we only take into account the Gavi-supported vaccine with the highest coverage level in each country.

b – Projection.

Key:

- On track
- Moderate delays/challenges
- Significant delays/challenges

Strategic goal indicators

We measure progress towards our four strategic goals for 2016–2020 through a set of objectives and indicators. This page gives a quick overview of our performance in the first year of our strategy.

More information about each indicator and Gavi's achievements in 2016 is available in the strategic goal chapters.

Accelerate vaccines

Routine immunisation coverage

Percentage of children in Gavi-supported countries that have received:

1st dose of measles-containing vaccine

78%

2015: **78%** 2020 target: **83%**

3rd dose of pentavalent vaccine

80%

2015: **80%** 2020 target: **85%**

Breadth of protection

Average coverage across all Gavi-supported vaccines

37%

2015: **30%** 2020 target: **63%**

Equity: geographic distribution

Percentage of Gavi-supported countries meeting the benchmark for equal coverage between different districts

16%

2015: **16%** 2020 target: **26%**

Vaccine goal p15

Strengthen capacity

Supply chain performance

Percentage of Gavi-supported countries that meet the benchmark of WHO's effective vaccine management assessment, which measures supply chain performance

19%

2015: **16%** 2020 target: **43%**

Data quality

Percentage of countries meeting our benchmark for quality of immunisation coverage data

49%

2015: **45%** 2020 target: **53%**

First-dose pentavalent vaccine coverage and percentage point difference between the first and third dose

Percentage of children immunised with a first dose of pentavalent vaccine – showing the reach of health systems – and the difference between first- and third-dose coverage. Weak health systems may reach children with the first dose, but not the third.

87%

2015: **87%** 2020 target: **91%**

6% points 7% points 4% points

Integrated health service delivery

Percentage of countries meeting the benchmark for integrated delivery of immunisation and other health interventions

26%

2015: **26%** 2020 target: **36%**

Civil society engagement

Percentage of countries meeting benchmarks for civil society engagement in national immunisation programmes to improve coverage and equity

40%

2015: **n/a** 2020 target: **n/a**

Health systems goal p21

Improve sustainability

Countries on track to successful transition

Percentage of transitioning countries that are on track to do so successfully

79%

2015: **63%** 2020 target: **75%**

Co-financing

Percentage of countries with a co-financing obligation to Gavi that meet their commitments

100%

2015: **85%** 2020 target: **100%**

Country investments in routine immunisation

Percentage of Gavi-supported countries that have increased their investment in routine immunisation per child relative to 2015

Data available Q4 2017

2015: **n/a** 2020 target: **100%**

Sustainability goal p27

Shape markets

Sufficient and uninterrupted supply

Number of Gavi vaccine markets where supply meets demand

9

2015: **7** 2020 target: **11**

Vaccine price reduction

Weighted average price of fully immunising a child with pentavalent, pneumococcal and rotavirus vaccines

US$ 19

2015: **US$ 20** target: **not published**

Innovation

Number of vaccines and immunisation products with improved characteristics procured by Gavi

3

2015: **n/a** 2020 target: **10**

Healthy market dynamics

Number of vaccine markets classified as having moderate or high healthy market dynamics

2

2015: **1** 2020 target: **6**

Market shaping goal p31

Note: the source for each indicator is given in the respective strategic goal chapters.

Gavi-supported countries: at a glance

Overview of key country data, from immunisation coverage and child mortality rates to Gavi-funded vaccine programmes and transition status.

Country	Surviving infants (surviving to 1 year (2016))	Child mortality rate (deaths <5 years per 1,000 births (2015))	Immunisation coverage (DTP3) (2016)	Gavi-supported vaccine introductions (2016) (R = routine, C = campaign, D = demonstration project)	Previous (2000–2015)	Pentavalent	Rotavirus	Pneumococcal	Human papillomavirus	Inactivated polio	Oral cholera	Japanese encephalitis	Measles	Measles-rubella	Meningitis A	Yellow fever	Gross national income per capita, US$ (2014)	Transition status (2016) (see note below)
African region																		
Angola	1,134,119	15.7	64%		R	R	R										5,300[a]	
Benin	377,805	10	82%	HPV D	R		R		R					C	RC		810	
Burkina Faso	685,547	6.1	91%	MenA C	R	R	R	D				R	C	C	C		710	
Burundi	414,610	8.2	94%	HPV D	R	R	R		R			R					270	
Cameroon	799,954	8.8	85%		R	R	R	D	R				C	C	RC		1,350	
Central African Republic	151,820	9.2	47%		R		R		R						RC		330	
Chad	574,517	13.9	46%	Meas C	R				R			C		C	R		1,010	
Comoros	24,727	7.4	91%		R				R								840	
Congo, DR	3,110,732	9.8	79%	Meas C MenA C	R		R		R			C			R		410	
Congo	170,713	4.5	80%	IPV R	R	R	R								R		2,680	
Côte d'Ivoire	820,166	9.3	85%		R		R	D	R						C		1,550	
Eritrea	154,056	4.7	95%		R	R	R					R					530	
Ethiopia	3,130,076	5.9	77%		R	R	R	D	R			C		C			550	
Gambia	76,862	6.9	95%	MR C	R	R	R	D	R			R		C			450	
Ghana	838,964	6.2	93%	MenA C MenA R	R	R	R	D				R	C	C	RC		1,620	
Guinea	421,965	9.4	57%		R				R					C	RC		480	
Guinea-Bissau	61,584	9.3	87%	IPV R MenA C	R	R	R								R		570	
Kenya	1,465,529	4.9	89%	MR C	R	R	R	D	R						R		1,280	
Lesotho	58,221	9.0	93%	IPV R	R		R										1,350[a]	
Liberia	150,946	7.0	79%	Rota R HPV D	R		R								RC		400	
Madagascar	801,052	5.0	77%		R	R	R	D	R								440	
Malawi	625,660	6.4	84%		R	R	R	D				R					250	
Mali	716,209	11.5	68%	IPV R	R	R	R							C	RC		720	
Mauritania	137,377	8.5	73%		R	R	R		R					C			1,260	
Mozambique	1,052,399	7.9	80%		R	R	R	D	R			R					630	
Niger	939,175	9.6	67%		R	R	R	D	R					C	R		430	
Nigeria	6,754,000	10.9	49%		R		R		R			C		C	RC		2,950	
Rwanda	356,828	4.2	98%		R	R	R	D				R	C				650	
São Tomé and Príncipe	6,484	4.7	96%	Rota R IPV R MR C	R		R					R			R		1,570	
Senegal	528,240	4.7	93%		R	R	R	D	R			R	C	C	C		1,050	
Sierra Leone	237,764	12.0	84%		R	R	R	D				R			RC		720	
South Sudan	409,113	9.3	26%	MenA C	R				R								960	
Togo	245,701	7.8	89%		R	R	R	D						C	RC		580	
Uganda	1,653,663	5.5	78%	IPV R	R		R	D									660	
Tanzania, UR	2,041,235	4.9	97%		R	R	R	D				R	C				930[b]	
Zambia	603,358	6.4	91%	MR C	R	R	R					R	C				1,760	
Zimbabwe	512,200	7.1	90%		R	R	R	D					RC				860	

Transition status: 1 – Initial self-financing; 2 – Preparatory transition; 3 – Accelerated transition; 4 – Fully self-financing

a – Figures from 2013 or 2012.

b – Covers mainland Tanzania only.

c – 2014 data not available; ranking is approximate.

d – Excludes Abkhazia and South Ossetia.

e – Excludes Transnistria.

f – Based on data from official statistics of Ukraine and Russian Federation; by relying on this data, the World Bank does not intend to make any judgment on the legal or other status of the territories concerned or to prejudice the final determination of the parties' claims.

g – Gavi's support to the Ukraine ended before the co-financing and transition policies were implemented.

Estimated income: **low-income** (US$ 1,045 or less), **lower-middle-income** (US$ 1,046–4,125), **upper-middle-income** (US$ 4,126–12,735).

Country	Surviving infants surviving to 1year (2016)	Child mortality rate deaths <5years per 1,000 births (2015)	Immunisation coverage (DTP3) (2016)	Gavi-supported vaccine introductions (2016) R = routine C = campaign D = demonstration project	Previous (2000–2015)	Pentavalent	Rotavirus	Pneumococcal	Human papillomavirus	Inactivated polio	Oral cholera	Japanese encephalitis	Measles	Measles-rubella	Meningitis A	Yellow fever	Gross national income per capita, US$ (2014)	Transition status (2016) (see note below)
Region of the Americas																		
Bolivia	243,945	3.8	99%	IPV R			R	R									2,830	
Cuba	123,851	0.6	99%	IPV R													Up/Mi	
Guyana	15,387	3.9	97%				R	R		R							3,970	
Haiti	250,891	6.9	58%	IPV R		R	R										830	
Honduras	193,163	2.0	97%	HPV R			R	R		R							2,190	
Nicaragua	117,926	2.2	98%				R	R		R							1,830	
Eastern Mediterranean region																		
Afghanistan	1,082,647	9.1	65%			R		R				C					680	
Djibouti	20,548	6.5	84%	IPV R		R	R	R									Low/Mi	
Pakistan	5,093,857	8.1	72%			R		R		R		R					1,410	
Somalia	577,926	13.7	42%			R				R							Low	
Sudan	1,246,235	7.0	93%	MenA C MenA R		R	R	R		R					C	C	1,740	
Yemen	834,461	4.2	71%			R	R	R		R				C			1,370[c]	
European region																		
Armenia	38,776	1.4	94%	IPV R		R	R	R									3,810	
Azerbaijan	167,789	3.2	97%	IPV R		R		R									7,590	
Georgia	53,027	1.2	92%			R	R	R									3,720[d]	
Kyrgyzstan	147,873	2.1	96%	Pneu R		R											1,250	
Republic of Moldova	41,293	1.6	89%			R	R	R									2,550[e]	
Tajikistan	242,863	4.5	96%			R	R										1,060	
Ukraine	469,514	0.9	19%														3,560[f]	[g]
Uzbekistan	640,556	3.9	99%			R	R	R									2,090	
South-East Asian region																		
Bangladesh	3,001,023	3.8	97%	HPV D		R		R		R				R	C		1,080	
Bhutan	14,115	3.3	98%			R				R							2,390	
Korea, DPR	345,644	2.5	96%			R				R				R			Low	
India	24,277,064	4.8	88%	Rota R		R				R							1,610	
Indonesia	4,842,706	2.7	79%	IPV R		R											3,650	
Myanmar	901,525	5.0	90%	Pneu R		R				R				R	C		1,270	
Nepal	555,790	3.6	87%	HPV D JE R JE C		R		R		R				R	R		730	
Sri Lanka	315,642	1.0	99%			R				R							3,400	
Timor-Leste	42,776	5.3	85%	IPV R		R											3,120	
Western Pacific region																		
Cambodia	358,422	2.9	90%	JE C		R		R		R				R	C		1,010	
Kiribati	3,088	5.6	81%			R		R		R							2,280	
Lao PDR	154,902	6.7	82%			R		R	D	R		C			R		1,600	
Mongolia	70,725	2.2	99%	Pneu R		R											4,320	
Papua New Guinea	213,069	5.7	72%	MR R		R		R		R					C		2,020[c]	
Solomon Islands	16,766	2.8	99%			R		R	D	R					C		1,830	
Vietnam	1,549,309	2.2	96%			R									R	C	1,890[a]	

Transition status
1 – Initial self-financing
2 – Preparatory transition
3 – Accelerated transition
4 – Fully self-financing

Strategic enablers

In addition to the strategic goals, Gavi's 2016–2020 strategy includes four "strategic enablers", which are critical to achieving our mission.

1

Country leadership, management and coordination

Together with our partners, we support countries in strengthening the management of their immunisation programmes, including coordination of all relevant stakeholders. This will only be possible if local and national authorities are empowered to collect, analyse and act on reliable data.

Read more about our 2016 progress in this area → p26.

2

Resource mobilisation

Our resource mobilisation model is multi-faceted, comprising country co-financing and other domestic investments in immunisation, long-term donor financing and active market shaping efforts for both Gavi-supported and transitioning countries.

We are continuing to expand and broaden our donor base to include public, private and other donors, such as emerging countries, all of whom play a critical role in supporting vaccine programmes in the lowest-income countries.

For a full overview of our 2016 activities, see the funding update → p35–38.

3

Advocacy

Political commitment at the global, national and subnational level is crucial to reach all children with vaccines. We strive to ensure that the value of vaccines is well recognised and that immunisation remains a priority at all levels. This includes raising awareness of the links between immunisation, good health and economic prosperity.

4

Monitoring and evaluation

We rely on high-quality monitoring and evaluation to make sure that our support is delivering the expected results, that we are using our resources effectively and that we can adjust our approach if needed. We work with our partners to strengthen surveillance, programme monitoring and management, as well as conduct regular evaluations of our investments.

Read about how we are supporting countries to improve data quality, quantity and use → p24.

Strategic goal updates

The vaccine goal

accelerate equitable uptake and coverage of vaccines

p15

The health systems goal

increase the effectiveness and efficiency of immunisation delivery as an integrated part of strengthened health systems

p21

The sustainability goal

improve sustainability of national immunisation programmes

p27

The market shaping goal

shape markets for vaccines and other immunisation products

p31

To find out more and keep track of our performance, visit:

2016–2020 strategy overview
www.gavi.org/about/strategy/

Gavi/2017/Nguyen Thanh Da

The vaccine goal

accelerate equitable uptake and coverage of vaccines

2016 at a glance:

- There were significant improvements in coverage for pentavalent, rotavirus, pneumococcal and inactivated polio vaccines.
- Delayed introductions, largely because of supply shortages, meant that we only achieved 45 of the 72 introductions expected in 2016.
- Routine coverage with a full course of diphtheria-tetanus-pertussis-containing vaccine (such as pentavalent) and a first dose of measles vaccine in Gavi-supported countries failed to rise for the third consecutive year.
- For the second year in a row, just 16% of Gavi-supported countries met our benchmark for equitable immunisation coverage across all districts.
- We continued to evolve our approach to delivering measles, meningitis A, human papillomavirus (HPV) and yellow fever vaccine support.
- Ghana and the Sudan became the first Gavi-supported countries to introduce meningitis A vaccine into their routine immunisation programmes – an important step towards ensuring long-term protection.

Protecting every child through routine immunisation

Every child, including those living in hard-to-reach places like urban slums and remote rural locations, should be protected by vaccines – regardless of poverty, geography, gender and other possible obstacles.

To ensure that all children in developing countries receive the level of protection they need, our Alliance subsidises countries' access to 12 life-saving vaccines via routine immunisation programmes, preventive campaigns and, in emergencies, global stockpiles.

Making sure that vaccines are part of basic healthcare systems everywhere is vital to prevent disease outbreaks and help safeguard the lives of children born today and those in generations to come.

An evolving goal

During the 2016–2020 strategic period, we will be supporting countries to conduct more vaccine introductions and campaigns than ever. The majority of Gavi-supported countries have already introduced pentavalent, pneumococcal and rotavirus vaccines into their routine systems. Now their attention is turning towards vaccines protecting against HPV, yellow fever, meningitis A and rubella.

Continuing to help countries expand their national immunisation programmes in terms of the number of diseases prevented is a key objective going forward. At the same time, we remain strongly committed to helping countries reduce gaps in immunisation coverage.

Acutely aware that we fell short of our targets for immunisation coverage and equity in the previous strategic period, we have set new ambitious goals for increasing the equitable uptake and coverage of all vaccines. We aim to:

- increase coverage and equity of immunisation;
- support countries to introduce and scale up vaccines against new and important diseases; and
- respond flexibly to meet the needs of children in fragile countries.

Previously, we used a set of performance indicators to track immunisation coverage for our three main vaccines: pentavalent, pneumococcal and rotavirus. In this period, we are widening our scope to measure coverage for all WHO-recommended vaccines in every country we support.

We also track the reach of routine immunisation, as well as gauge the impact of key barriers to equitable coverage. This will help us identify where the underimmunised live and how we can best ensure that all children receive the vaccines they need.

Our vaccine portfolio

Vaccine	Purpose	Gavi supports	Introductions and campaigns 2016	Introductions and campaigns from programme start to 2016	Total reached from programme start to 2016
Pentavalent vaccine	Protects against five major infections in one shot: diphtheria, tetanus, pertussis (whooping cough), hepatitis B and *Haemophilus influenzae* type b (Hib).	**Routine immunisation**	**0**	**73**[a]	**>355m**
Pneumococcal vaccine	Helps prevent the primary cause of bacterial pneumonia, a leading cause of vaccine-preventable deaths among under-fives.	**Routine immunisation**	**3**	**57**	**>109m**
Rotavirus vaccine	Protects against a leading cause of severe diarrhoea, which kills hundreds of thousands of children each year.	**Routine immunisation**	**3**	**40**	**>54m**
Human papillomavirus (HPV) vaccine	Protects against the main cause of cervical cancer. Vaccination is vital in poor countries where access to screening and treatment is limited.	**Routine immunisation** **Demonstration projects**	**1** **5**	**3** **24**	**1.1m girls**
Inactivated polio vaccine (IPV)	Protects against a highly contagious viral infection, mainly affecting children under the age of five, which can lead to paralysis or even death.	**Routine immunisation**	**14**[b]	**54**	**>40m**
Japanese encephalitis vaccine	Prevents the main cause of viral encephalitis, especially in Asia. Case–fatality rates can be as high as 30%, while up to 50% of survivors suffer permanent disability.	**Routine immunisation** **Catch-up campaigns** For children aged 9 months to 14 years, on the condition that countries subsequently co-finance the introduction of the vaccine into the routine system.	**1** **2**	**2** **3**	**~100,000** **>9m**
Measles and measles-rubella vaccines	Measles vaccine helps prevent against infection and associated complications, which claim over 100,000 lives each year. Rubella vaccine protects against congenital rubella syndrome. Every year, 80,000 children in countries we support are born with malformations and disabilities caused by the disease.	**Routine immunisation** Measles second dose Measles-rubella (MR) first and second dose **Campaigns** Measles follow-up[c] MR mass, catch-up[d] and follow-up **Outbreak response fund** Managed by the Measles & Rubella Initiative	 **0** **1** **2** **4**	 **19** **17**[e] **9** **18**	**41m** **>132m** **>196m**
Meningitis A vaccine	Protects against seasonal epidemics of meningitis A, which threatens 450 million people in Africa's meningitis belt. Survivors can face brain damage, deafness and other disabilities.	**Routine immunisation** **Campaigns** Mass Catch-up	**2** **3** **3**	**2** **22**	**620,000** **>268m**
Meningitis vaccine stockpile	Protects against meningococcal strains that continue to cause outbreaks across parts of Africa and elsewhere in the world.	**Stockpile** Containing a variety of vaccine types protecting against bacterial strains A, C, W and Y.	accessed **5x** by **3 countries**	accessed **38x** by **12 countries**	**>15.7m doses distributed**
Oral cholera vaccine	Prevents cholera, an acute intestinal infection caused by contaminated food or water. It can lead to severe dehydration and, in its extreme form, can be fatal.	**Global stockpile**	accessed **12x** by **8 countries**	accessed **17x** by **12 countries**[f]	**>2m**[f]
Yellow fever vaccine	Helps prevent a deadly viral disease spread by mosquitoes. Death rates can be as high as 50% among those severely affected.	**Routine immunisation** **Mass campaigns**	**0** **0**	**17** **14**	**>102m** **>98m**

notes: a – Five of the 73 countries introduced pentavalent vaccine programme independently of Gavi support.
b – In addition, Georgia and Ukraine introduced the vaccine without Gavi support.
c – Nationwide follow-up campaigns target children aged 9–59 months every 2–4 years.
d – Initial, nationwide catch-up campaigns target all children aged 9 months to 14 years.
e – Supported through vaccine introduction grants.
f – Limited to Gavi-supported campaigns, starting with the 2015 campaign in Cameroon.

A closer look at 2016:

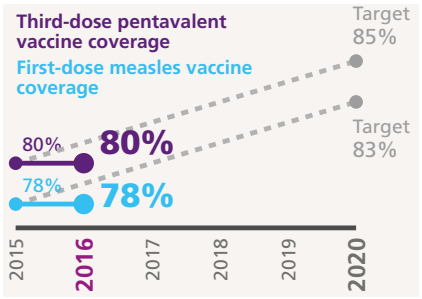
The performance indicators: vaccine coverage

1 Routine immunisation coverage

What we measure: percentage of children reached with the third dose of a vaccine containing antigens against diphtheria, tetanus and pertussis (DTP), such as pentavalent, and the first dose of measles vaccine in Gavi-supported countries.

Pentavalent vaccine is given in three doses, all within the first six months of a child's life. Children are given the first dose of a measles-containing vaccine before their first birthday. Universally present in the routine schedules of Gavi-supported countries, coverage estimates for these two vaccines provide a reliable indicator of the proportion of children with access to basic immunisation services.

2016 performance: coverage of the third dose of pentavalent and the first dose of measles vaccine in Gavi-supported countries has stalled over the past three years at 80% and 78%, respectively – some way below our 2020 targets. On the upside, coverage of a second dose of measles vaccine across Gavi-supported countries increased by 7 percentage points between 2015 and 2016, from 43% to 50%.



Source: WHO/UNICEF Estimates of National Immunization Coverage, 2017

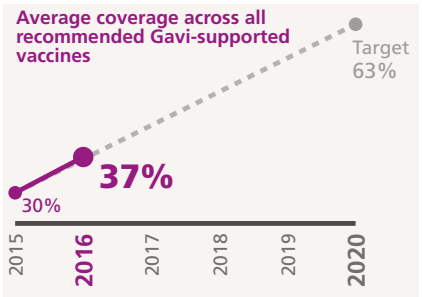
2 Breadth of protection

What we measure: percentage of children reached with the last dose of seven vaccines recommended across all Gavi-supported countries and of three vaccines specific to certain regions.

2016 performance: average coverage for these 10 vaccines amounted to 37%, an increase of 7 percentage points compared with the year before. Countries have made significant headway in improving coverage of several vaccines. This includes *Haemophilus influenzae* type b (part of the pentavalent vaccine), which rose by 11 percentage points between 2015 and 2016.

However, progress towards our target was affected by delays in vaccine introductions, especially for inactivated polio vaccine (IPV) but also human papillomavirus (HPV) and rotavirus vaccines. Introductions of IPV were delayed in 18 countries (due to supply shortages), rotavirus vaccine in 4 countries and HPV vaccine in 3.

2016–2020 strategy overview
www.gavi.org/about/strategy/



Sources: WHO/UNICEF Estimates of National Immunization Coverage, 2017; WHO/UNICEF Joint Reporting Form, July 2017

2016

Inactivated polio vaccine

Throughout 2016, Gavi continued to work with the Global Polio Eradication Initiative (GPEI) to support one of the fastest roll-outs of a new vaccine in the history of vaccination.

By the end of the year, 54 countries had added IPV to their routine immunisation schedules, with 16 launching in 2016 alone. But the sheer pace and scale of the introductions, coupled with the technical difficulties of increasing production, have led to severe supply constraints.

Manufacturers were only able to deliver 50% of projected supply in 2016, delaying introductions in 18 countries and interrupting existing programmes in a further 15. Priority was however given to countries at high risk of polio outbreaks to make sure they were not among those affected by supply constraints.

WHO's Strategic Advisory Group of Experts (SAGE) advised countries to consider switching to fractional doses of IPV to help mitigate global supply shortages. This approach, adopted by Bangladesh, India and Sri Lanka, provides protection while reducing the risk of vaccine stock-outs.

Encouragingly, coverage with the first dose of IPV in Gavi-supported countries more than trebled from just 12% in 2015 to 39% in 2016.

Human papillomavirus vaccine

By the end of 2016, a total of 24 Gavi-supported countries had completed HPV vaccine demonstration programmes, paving the way for national introductions.

However, it has been taking longer than expected for countries to step up from a demonstration project to offering HPV immunisation as part of their routine programmes. Only three countries – Honduras, Rwanda and Uganda – had achieved this by the end of 2016. Elsewhere, cost issues, lack of prioritisation and a complex application process all contributed to delays in national introductions. As a result, the Alliance was at risk of not meeting its target of vaccinating 30 million girls against HPV infection by 2020.

Following a recommendation made by WHO's Strategic Advisory Group of Experts (SAGE) in October, we revised the way in which we deliver HPV vaccine support. Our new programme, which builds on lessons learned, introduces two important developments:

- countries can now apply for support for a national introduction without first conducting a demonstration programme; and
- we will support countries to vaccinate multiple age cohorts of girls (within the target age group of 8–14 years) if they wish to do so.

While these changes will help us protect more girls against cervical cancer, recent supply shortages could jeopardise our targets. Alliance partners are working with manufacturers to plan more effectively for the future.

▲ **27**% points

Increase in coverage with the first dose of IPV in Gavi-supported countries in 2016

Rotavirus vaccine

Four scheduled rotavirus vaccine launches were missed in 2016, largely because most countries prefer to use the two-dose, rather than the three-dose, presentation.

Alliance partners are taking steps to manage existing supply while developing an action plan in collaboration with manufacturers to ensure that country preferences can be met.

Slower than expected introductions in a few highly-populated countries have also contributed to rotavirus vaccine coverage rates failing to increase at the same rate as other new vaccines. Just one quarter of all children in Gavi-supported countries received a full course of the vaccine in 2016.

Four countries with large birth cohorts – Bangladesh, the Democratic Republic of the Congo, Nigeria and Pakistan – applied for rotavirus vaccine support in 2016. This will have a significant impact on coverage rates going forward.

Pneumococcal vaccine

Three new country introductions meant that by the end of 2016, more than two thirds of Gavi-supported countries had successfully introduced the pneumococcal vaccine.

Coverage increased by 6 percentage points between 2015 and 2016 to reach 41%. This puts Gavi-supported countries almost on a par with the global average coverage for pneumococcal vaccine, which stood at 42% in 2016. Mongolia, which rolled out the vaccine in June, became the first transitioned country to fully self-fund its pneumococcal vaccine programme at the reduced price available through Gavi's Advance Market Commitment.

Girls holding their vaccination cards, Liberia.

Gavi/2016/Duncan Graham-Rowe

A closer look at 2016:

The performance indicators: equity in vaccine coverage

3 Geography 4 Poverty status 5 Education of mothers/female caregivers

Geography – what we measure: the percentage of countries we support in which coverage with a third dose of pentavalent vaccine is equal to or greater than 80% across all districts. As part of an increased effort to ensure accurate subnational data is available for measuring equity, WHO and UNICEF have started to report geographically disaggregated coverage data on an annual basis.

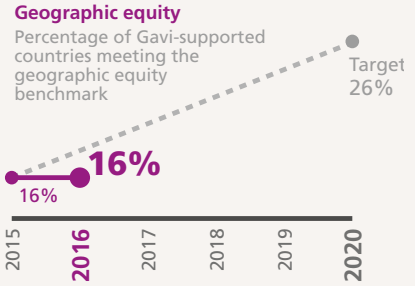
2016 performance: 16% of Gavi-supported countries reported pentavalent vaccine coverage (third dose) of at least 80% in all districts, the same proportion as in 2015. This mirrors the stagnation in national coverage estimates for pentavalent vaccine.

Poverty status – what we measure: the percentage of Gavi-supported countries in which coverage with a third dose of pentavalent vaccine among the poorest fifth of the population lies within 10 percentage points of the coverage among the richest 20%.

Education of mothers/female caregivers – what we measure: the percentage of Gavi-supported countries in which there is a less than 10 percentage point difference in immunisation coverage between children of non-educated mothers and those whose mothers have at least completed secondary school. We use three doses of pentavalent vaccine as the basis for this indicator.

The poverty status and female education indicators are based on survey data. Due to limited availability of this data, and the implications this has for interpreting trends over time and across Gavi-supported countries, we are not presenting these indicators in this report. We continue to use equity data to drive our coverage and equity work in countries, and will report on individual countries where appropriate. We will give a full update of these indictors at the mid-term (2018) and end of our current strategy period (2020).

Geographic equity



Sources: WHO/UNICEF Estimates of National Immunization Coverage, 2017; WHO/UNICEF Joint Reporting Form, July 2017

New tools to overcome barriers to equitable immunisation coverage

The partners' engagement framework (PEF), which came into force in 2016, is one of the tools we are using to overcome barriers to high and equitable immunisation coverage. Through PEF, partners are able to offer technical support matched to the specific needs of each country.

Priority is given to the 20 countries that face the most severe challenges. In 2016, these were: Afghanistan, Chad, the Central African Republic, the Democratic Republic of the Congo (DRC), Ethiopia, Haiti, India, Indonesia, Kenya, Madagascar, Mozambique, Myanmar, the Niger, Nigeria, Pakistan, Papua New Guinea, Somalia, South Sudan, Uganda and Yemen.

Most PEF funding is used for targeted country assistance – a significant change from our previous approach whereby activities were largely defined and funded at global and regional levels.

A health worker assists a mother at a health centre in Vaingandrano, Madagascar.

Gavi / 2016 / Randrianarivony Voara

Responding to disease outbreaks

Global health security p51

Immunisation is increasingly seen as an essential part of the solution to the health and humanitarian problems that continue to rise up the global agenda. While the rapid emergence of Zika and new flare-ups of Ebola grabbed the biggest headlines in 2016, other disease outbreaks were equally worrying.

Large-scale population movements and climate change are increasing the risk of epidemics, especially in the world's poorest and most vulnerable countries. According to WHO, by 2030 rising temperatures will be causing an additional 60,000 deaths from malaria and 48,000 from diarrhoea every year. Likewise, increasing urbanisation raises the risk of infectious diseases spiralling out of control. If a highly contagious disease like yellow fever starts spreading in a densely-populated urban slum, emergency supplies of vaccines alone will not be enough to stop it.

Antimicrobial resistance (AMR) is also emerging as a significant health threat. AMR occurs when micro-organisms like bacteria mutate in response to exposure to antimicrobial drugs such as antibiotics. Vaccines have the potential to protect people against bacterial infections and so avoid the need for antibiotics. This reduces the transmission of antibiotic-resistant strains of disease.

66%

of the world's population are expected to be living in urban areas by 2050

Helping to respond to disease outbreaks formed a vital part of our work in 2016. We did this by supporting a combination of routine immunisation programmes, preventive campaigns and vaccine stockpiles for those diseases that pose the greatest risks. This work is becoming even more important in the current strategic period, as we gear up to support a greater proportion of vaccination campaigns than ever before.

Support for emergency stockpiles

To help control outbreaks of infectious diseases, Gavi funds three emergency vaccine stockpiles: cholera, meningitis and yellow fever.

Each stockpile is managed by the International Coordination Group, which brings together four organisations: the International Federation of the Red Cross and Red Crescent Societies, Médécins Sans Frontières, UNICEF and WHO. Gavi has also committed to funding an Ebola vaccine stockpile once a vaccine has been licensed and recommended by WHO.

In the event of an outbreak, Gavi-supported countries can request vaccines from these stockpiles free of charge. We also provide financial support to help with the planning and implementation of an emergency vaccination campaign. Other countries can access Gavi-funded stockpile vaccines, but are required to reimburse the cost of the vaccines once the outbreak has come to an end.

Gavi also supports the Measles & Rubella Initiative, which helps eligible countries combat outbreaks of measles.

2016

Yellow fever

2016 saw outbreaks of yellow fever in Angola, the Democratic Republic of the Congo (DRC) and Uganda.

Thanks to prompt action and Gavi-funded yellow fever vaccine doses from the global stockpile, these outbreaks were brought under control by emergency vaccination campaigns. The last confirmed cases were reported in June in Angola and in August in DRC. A report released by WHO in November estimated 97.8% vaccination coverage in Kinshasa, DRC following the emergency campaign.

Despite the effectiveness of the emergency response, the evolving epidemiology of yellow fever means that efforts to strengthen routine immunisation need to be intensified. Alarmingly, yellow fever immunisation coverage in Gavi-supported countries has not risen above 40% since 2010.

The number and scale of recent outbreaks underlined the need to work with Alliance partners and manufacturers to tackle supply constraints. This has led to new investment in capacity and production improvements by all four yellow fever vaccine suppliers. Technical production issues were resolved by two of the suppliers, allowing WHO to lift prequalification suspensions.

To further mitigate the current shortages of yellow fever vaccine, WHO introduced a fractional dose strategy which was put into action in DRC. Studies have shown that one fifth of the usual dose of the yellow fever vaccine can provide immunity for at least a year, possibly longer.

Throughout the year, Gavi and other partners worked closely with WHO to develop a new Eliminating Yellow Fever Epidemics (EYE) strategy. Taking our cue from the approach set out in this strategy, our future support for yellow fever will involve a greater degree of integration between routine immunisation, mass campaigns and an expanded global vaccine stockpile. Countries that apply for preventive campaign support from Gavi will have to commit to introducing the vaccine into their routine immunisation system.

In the 2016–2020 period, we are providing additional funding of up to US$ 150 million to fight yellow fever.

Measles

Measles is so contagious that it can be caught by entering a room that an infected person has left, even after an interval of several hours.

A 95% vaccine coverage rate with two doses is required to achieve "herd immunity" – the point where a sufficient number of people are immunised to stop the spread of disease within a community. This makes measles a useful marker of a health system's readiness to cope with potential epidemics.

In Gavi-supported countries, routine coverage with the first dose of measles vaccine has plateaued at 78%, leaving them at high risk of further outbreaks. Towards the end of 2016, there were a number of serious measles outbreaks, for example in DRC and Nigeria.

Our new strategy for measles and rubella immunisation, which came into force in January 2016, is designed to help countries combat both diseases in a more coordinated way. As part of this strategy, countries began to receive technical support to assist them in the long-

term planning and implementation of their measles (and other) immunisation programmes.

They are also required to conduct independent surveys following an immunisation campaign to evaluate coverage more reliably. This allows them to carry out targeted vaccination in areas with low coverage. Of the countries that provided data in 2016, the Gambia, Kenya and Zambia met the 95% coverage target for their supplementary measles campaigns. Nigeria fell short of the target by 10 percentage points.

Polio

In a major setback to the global effort to eradicate polio, four cases of wild polio virus were detected in northern Nigeria in August.

This came nearly three years after the last confirmed case and just before Nigeria was due to be declared polio-free. Nigeria had introduced IPV just over a year before, with a reported coverage rate of 49% in 2016.

The Nigerian outbreak is a timely reminder of the difficulties of eliminating disease when health systems are weak and levels of routine immunisation low. GPEI partners supported both Nigeria and its neighbouring countries in their response to the outbreak.

Meningitis

While immunisation campaigns have dramatically reduced the burden of meningitis A in Africa, we continue to see outbreaks of other strains of the disease.

Togo managed to control its outbreak of meningitis W in early 2016 by using 550,000 Gavi-funded doses from the global stockpile of multivalent meningitis vaccine.

Throughout 2016, we continued to monitor the prevalence of different strains, or serotypes, of meningitis. We worked with partners to ensure the availability of vaccines that are effective against several strains.

To sustain the progress made in reducing the meningitis A disease burden, in 2016 we funded the first introductions of meningitis A vaccine into routine programmes. We also support catch-up campaigns to protect those children who were not immunised as part of earlier campaigns.

Cholera

After Hurricane Matthew devastated Haiti in October 2016, the Alliance funded a vaccination campaign to protect Haitians against cholera.

One million doses of cholera vaccine were drawn from the global cholera vaccine stockpile. The stockpile, which we support, is designed to provide a rapid response to crises like that caused by Hurricane Matthew.

Zambia also drew on the stockpile in 2016 to conduct one of the largest cholera campaigns ever recorded. In addition, Somalia advanced its plans to immunise close to half a million people in 2017.

India boosts commitment to new vaccines

India, which has the world's largest birth cohort and the second greatest number of underimmunised children, further stepped up its commitment to immunisation in 2016.

Under the leadership of Prime Minister Narendra Modi, the country has rolled out a range of new vaccines. All states have introduced IPV and pentavalent vaccine, and funding for both programmes was successfully transitioned to the Government of India in 2016. HPV vaccine was introduced in selected districts in one state with government financing.

Under the new Gavi–India strategic partnership, India applied for pneumococcal routine and measles-rubella campaign support in 2016. Plans for 2017 introductions of both vaccines were under way, with the pneumococcal vaccine launch first starting off in states with especially high disease burdens.

Preparations for the pentavalent vaccine launch in Jaipur and Rajasthan, India

Gavi/2014/Oscar Seykens

Looking ahead

In this strategic period, we have set ambitious goals to increase equitable uptake and coverage of all vaccines in every country we support. We will aim to do this by supporting more vaccine introductions and campaigns than ever before, and by helping countries to strengthen their routine immunisation systems.

Extending existing vaccination programmes to reach more children within countries will account for just over half of the projected rise in immunisation coverage across all Gavi-supported vaccines by 2020. New country introductions will drive the remaining 47%.

We will also look at supporting new vaccines. In June 2016, we approved support for the piloting of a malaria vaccine. While its efficacy is lower than hoped, early estimates suggest a significant impact if the vaccine is combined with other interventions, including spraying and bednets.

Health and humanitarian challenges will continue to shape the future of our support. These include an increasing number of fragile states, and failures to expand access to immunisation in some Gavi-supported countries. More and more people are becoming displaced as a result of conflict and climate change, causing spill-over effects in neighbouring countries. Among these is the spread of infectious disease.

Robust immunisation systems with high and equitable coverage have the potential to lessen all of these clear and present dangers. Strong childhood immunisation programmes in all countries will make the world a better and safer place for everyone.

The health systems goal

increase the effectiveness and efficiency of immunisation delivery as an integrated part of strengthened health systems

2016 at a glance:

- 90% of countries' applications for HSS support were recommended for approval on first review, having demonstrated a clear commitment to improving coverage and equity.
- The difference in coverage rates between the first and third dose of pentavalent vaccine in Gavi-supported countries has remained unchanged over the past few years – an indication that some delivery systems are still weak.
- 18 countries applied for support for more modern, energy-efficient cold chain equipment through our innovative platform.
- The proportion of Gavi-supported countries that meet our benchmarks for data quality increased from 43% in 2015 to 49% in 2016.

Building a foundation for universal access to healthcare

Since 2000, basic immunisation coverage in Gavi-supported countries has risen from 59% to 80%, despite a large population increase. In the last few years, however, progress has stalled, and health systems in the poorest countries are still not reaching an estimated one in five children with a full course of basic vaccines.

These remaining pockets of underimmunised children are often the hardest to find. They tend to live either unregistered with health clinics in urban slums or in remote rural areas where they are beyond the reach of health workers. Others are born into marginalised communities where parents may be unaware of the benefits of vaccination.

Vaccinating a child in a health clinic is just the final destination of a complex journey that spans a sequence of essential steps – from training supply chain managers and health workers to maintaining the cold chain, collecting data and raising awareness of the benefits of vaccination in local communities.

All of these activities have to be in place if vaccines are to be delivered at the right time and in the right quantity even to the poorest and hardest-to-reach communities. Importantly, they also provide a platform for delivering and prioritising other essential health services to children and their families.

Improving coverage and equity, one of the central tenets of our 2016–2020 strategy, requires new and enhanced strategies to reach these children, including a revised approach to strengthening health systems.

An evolving goal

Gavi's health system and immunisation strengthening (HSIS) framework, launched in early 2016, is designed to target bottlenecks to high and equitable immunisation coverage.

Our new approach ensures that our different types of support, including health system strengthening (HSS) and technical assistance from Alliance partners, complement each other and align with national health plans. HSIS also shifts decision-making processes closer to countries.

The bulk of our investment in health system strengthening is now directed towards "strategic focus areas" or SFAs. These are areas which we believe are most likely to yield sustainable improvements in coverage and equity, and where Gavi has a comparative advantage.

By the end of 2016, three SFAs had been introduced: data; supply chain; and in-country leadership, management and coordination of immunisation programmes. We had also started to explore demand promotion and community engagement as a potential fourth SFA.

Our 2016–2020 objectives reflect this shift in focus, and place greater emphasis on integrated immunisation programmes, investments in areas that are critical to improving coverage and equity, and enhanced partner collaboration. They are:

- to contribute to providing integrated and comprehensive immunisation programmes including fixed, outreach and supplementary components;
- to support improvements in supply chains, health information systems, demand generation and gender-sensitive approaches; and
- to strengthen engagement of civil society, private sector and other partners in immunisation.

Health system and immunisation strengthening support: removing barriers to coverage and equity

see indicators → 1 2 3 4

In the early days of HSS, our grants tended to support a wide range of improvements in health systems. In the 2011–2015 period, HSS funding was geared more towards resolving bottlenecks in immunisation, particularly in areas like supply chains and information systems. Now the focus of our HSS grant funding is shifting again, in favour of activities that will more directly improve immunisation coverage and equity.

Launched in mid-2016, Gavi's new HSIS framework provides for a more comprehensive approach to delivering support for immunisation. It will progressively integrate HSS funding, vaccine introduction grants and other cash support that collectively help to improve national programmes.

We have identified three SFAs, which are priorities for our HSS support in the current strategy period. In 2016, we also began to work with Alliance partners to boost community engagement and demand for immunisation – another critical component in improving coverage and equity.

Gender-related barriers to immunisation are one of the most important equity obstacles that we help countries address through our HSS grants.

Although boys and girls are vaccinated at similar rates globally, all children with uneducated mothers (or female caregivers) are less likely to be vaccinated than those whose mothers have completed secondary education.

This highlights the need for communication strategies that reach out to women with little or no education. Our HSS guidelines require country applicants to call out such gender-related barriers and encourage use of our support to tackle them.

Encouragingly, in 2016, 90% of HSS grant applications reviewed were assessed as being of sufficient quality on first review by independent experts, with many demonstrating a clear focus on coverage and equity. This is a substantial improvement compared with 2015, when just 64% of the first submissions were recommended for approval.

We continue to seek ways to improve the timeliness of our grants. The average time between recommendation for approval of cash grants and first disbursement to countries dropped from 13.6 months in 2015 to 11.6 months in 2016. While this represents a significant step forward, especially in light of the fact that we simultaneously tightened our risk management processes, it falls short of our year-end target of 9 months.

In 2016, the total amount of HSS disbursements was US$ 194 million, up from US$ 172 million in 2015.

A nurse in Moamba District, Mozambique, talks to a mother about her son's upcoming vaccinations.

Gavi/2017/Guido Dingemans

HSS grants support post-Ebola recovery

The Ebola crisis wreaked havoc on the health systems of Guinea, Liberia and Sierra Leone.

Hundreds of trained health workers died and many were forced to abandon their posts as the epidemic tightened its grip, leading to severe staff shortages. False rumours circulated throughout the region suggesting that childhood vaccines, such as those that protect against measles, were themselves linked to Ebola.

Immunisation and other essential health services were dealt a severe blow. Across the three countries, vaccination coverage dropped by approximately 50%.

Post-Ebola, Gavi disbursed a total of US$ 13 million to Guinea, Liberia and Sierra Leone to support the implementation of their Expanded Programme on Immunization (EPI) recovery plan in the 2015–2016 period. In the wake of the Ebola outbreak there were no large-scale epidemics of vaccine-preventable diseases, thanks partially to this support.

Liberia used some of its funds to revitalise outreach services for routine immunisation management in 15 counties. It also developed communication materials to rebuild trust and confidence in health services.

To support the continued recovery progress in all three countries, we have doubled the ceiling for their HSS grants to a total of US$ 61 million for the next five-year period.

An outreach worker in Liberia talks to a young girl after she has received the HPV vaccine.

Gavi/2016/Duncan Graham-Rowe

A closer look at 2016:

The performance indicators

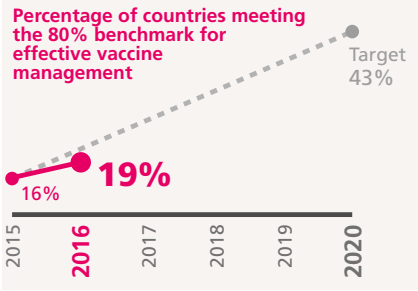
1 Supply chain performance

What we measure: the percentage of Gavi-supported countries meeting WHO's effective vaccine management (EVM) benchmarks.

This indicator helps countries to evaluate their immunisation supply chain performance over time against best practice standards, as well as to identify and respond to shortcomings. Among the supply chain features assessed are vaccine control, storage capacity, vaccine management, human resources and information systems.

2016 performance: 19% of Gavi-supported countries met the 80% EVM benchmark, slightly below the 2016 target of 20%. There were, however, encouraging signs that our supply chain strategy was beginning to make a difference:

- Supply chain leaders in 10 Gavi-supported countries met competency requirements. By 2020 we hope to have suitably qualified leaders in 35 countries.
- 47 countries have conducted two supply chain management EVM assessments, 32 of which demonstrated improvements. Our aim is for all Gavi-supported countries to have implemented supply chain management plans by 2020.
- 17 countries have expressed interest in improving information systems to oversee their supply chain and measure performance, and at least 11 have improved visibility in parts of the supply chain. Our 2020 target is 30–40 countries.
- System design analyses were initiated in 10 countries; 7 were already implementing their findings to improve the efficiency of their supply chains. By 2020 our goal is for 10 countries to have completed this process.
- A total of 18 countries had submitted requests for funding under our cold chain equipment optimisation platform. We aim to have upgraded cold chain equipment in 40–50 countries by the end of 2020.



Source: WHO effective vaccine management global data analysis

Strategic focus area: supply chain

As immunisation programmes expand, both in terms of the number of people vaccinated and the range of vaccines offered, many countries find themselves constrained by outdated supply chains. Strong, adaptable and resilient supply chains are essential to reach more children with safe and effective vaccines and to limit wastage.

Inefficient or poorly managed supply chains increase the likelihood of clinics running out of essential vaccines. In addition, vials may be exposed to damaging temperatures or pass their expiry date before they can be used.

Our support for supply chains is provided in five main areas: leadership, data, design, equipment and continuous improvement.

Cold chain equipment

Our cold chain equipment optimisation platform (CCEOP), launched in 2016, exists to modernise the way vaccines are kept safe and potent on their journey from manufacturer to community. It leverages Gavi's unique public-private partnership model and results in a "win-win" situation for countries and equipment manufacturers.

The CCEOP helps countries improve the efficiency and reliability of their cold chains by switching to equipment that requires less electricity or is solar-powered. This can result in lower costs, for example by removing the need for more expensive gas cylinders, as well as helping to protect the environment. Some CCEOP-supported products are guaranteed for up to 25 years.

Demand from countries has been strong, with 18 countries applying for funding in 2016. Of these, 15 were recommended for approval.

Manufacturers have also responded positively. Since January 2016, WHO has prequalified 15 new devices, increasing the quality and variety of cold chain equipment available to countries. The first-ever prequalified "Grade A" cold box, which is designed to reduce the risk of vaccines freezing during transportation and storage, is expected to be available towards the end of 2017.

Supply chain managers STEP forward

At the end of 2015, the East African Community Regional Centre of Excellence for Vaccines, Immunisation and Health Supply Chain Management, based in Rwanda, introduced Africa's first course on health supply chain leadership.

The Strategic Training Executive Programme (STEP) was set up with private sector expertise thanks to the frontline roles of our partners United Parcel Service (UPS) and the International Federation of Pharmaceutical Wholesalers (IFPW).

Gavi's partnership with UPS was also instrumental in the 2016 launch of STEP at Benin's LOGIVAC+ Centre. Additional support for the programme was received from Agence de Médecine Préventive.

Both courses have an innovative curriculum that combines a traditional classroom experience with distance learning and mentoring from private sector experts. The IFPW Foundation has also offered scholarships to budding supply chain managers for degree programmes and professional development courses.

So far, almost 50 future supply chain leaders have been trained at the two centres. By the end of 2020, as many as 400 immunisation supply chain leaders will have graduated from existing STEP programmes in Africa, as well as from future courses planned in Asia.

Nigeria's supply chain improvements

Nigeria recently overtook India as the country with the largest number of underimmunised children in the world – despite having just 14% of India's population. Nigeria's basic immunisation coverage averages just 49%, the fifth lowest of any Gavi-supported country. In some northern states, coverage is as low as 5–10%.

Of all the countries we support, Nigeria's immunisation supply chain faces some of the stiffest challenges. Nevertheless, 2016 saw some significant improvements in the country's supply chain infrastructure.

Nigeria now has logistics working groups that provide guidance to state immunisation teams and measure key performance indicators in all 36 states and at the federal level. Supply chain redesign projects have been piloted in Lagos and are also being tested in the northern states of Bauchi, Kano and Niger.

Funding from Alliance partners UNICEF and the Bill & Melinda Gates Foundation, as well as from the European Union and the Japan International Cooperation Agency, enabled Nigeria to purchase new cold chain equipment, including 1,200 cold boxes and solar fridges. Furthermore, over 1,000 staff at all levels have been trained in cold chain and temperature management.

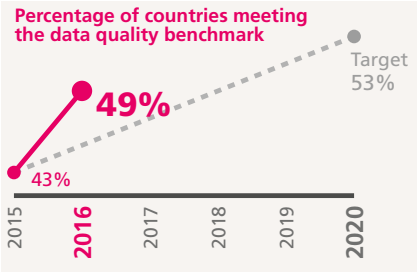
2 Data quality

What we measure: the proportion of Gavi-supported countries with a less than 10 percentage point difference between different estimates of immunisation coverage.

This indicator reflects the degree of consistency between available estimates of immunisation coverage. "Administrative coverage" refers to estimates based on national-level data reported annually by the country itself. "Survey coverage" refers to estimates based on data collected as part of household surveys, such as the demographic health survey, which is usually carried out every three to five years.

2016 performance: in 2016, 49% of countries reported administrative coverage data within 10 percentage points of survey estimates. This represents an increase of 6 percentage points compared with 2015, and puts us on track to achieve our 2020 target of 53%.

2016–2020 strategy overview
www.gavi.org/about/strategy/



Sources: WHO/UNICEF Estimates of National Immunization Coverage, 2017; multiple indicator cluster surveys; demographic health surveys; other household surveys

Strategic focus area: data

Data is part of the solution to inequity in coverage

Without reliable immunisation data we will not be able to find the children that are missing out on essential vaccines or understand the main barriers to reaching them. Our data SFA, launched at the end of 2015, aims to improve the amount, quality and use of available immunisation data.

The data SFA targets the 20 countries prioritised for immunisation coverage and equity improvements under the partners' engagement framework (PEF), and addresses the following areas:

- **Immunisation delivery, coverage and equity:** strengthening the quality of immunisation coverage data to help address bottlenecks.
- **Vaccine-preventable disease (VPD) surveillance:** helping countries strengthen their surveillance systems and use disease data to target and improve immunisation programmes. VPD surveillance systems are also a vital part of ensuring global health security and outbreak preparedness.
- **Vaccine safety surveillance and response:** establishing and improving data systems to detect adverse events and implement effective response and communication strategies.

In its first full year of implementation, the data SFA produced some significant results. Coverage estimates for the first dose of rubella and inactivated polio vaccines have been reported for the first time and there have been improvements in the availability of subnational immunisation coverage data.

Looking forward to 2017, investments made through PEF will support new ways to use data to inform immunisation programmes. This will include the mapping of cholera hotspots in Africa, which will help assess and target vaccination activities in the region.

A Kenyan health worker records a routine immunisation session.

Gavi/2013/Evelyn Hockstein

3 Coverage with a first dose of pentavalent vaccine and percentage point difference between the first and third dose

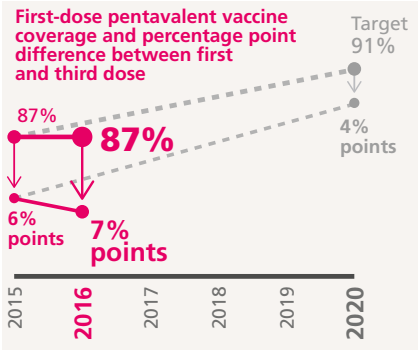
What we measure: coverage with the first dose of pentavalent vaccine and the percentage point difference between first- and third-dose coverage in countries we support.

Taken together, these two measures provide a good indication of the ability of the health system to deliver immunisation services. High first-dose coverage coupled with low rates of drop-out from the first to the third dose suggests a strong health system, capable of reaching and fully immunising children with the required number of doses. A weaker delivery system may succeed in reaching a child with the first dose but not the third.

2016 performance: coverage with a first dose of pentavalent vaccine in Gavi-supported countries stayed flat at 87% for the third consecutive year. The difference between coverage with the first and third dose increased from 6 to 7 percentage points.

As our new support model, with its focus on innovation, community demand and immunisation supply chains, comes into its own we hope to see rising rates of coverage with all required doses of basic vaccines.

2016–2020 strategy overview
www.gavi.org/about/strategy/



Sources: WHO/UNICEF Estimates of National Immunization Coverage, 2017; United Nations Population Division

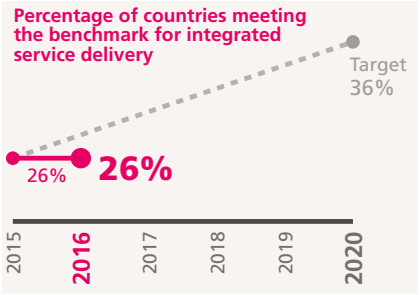
4 Integrated health service delivery

What we measure: the percentage of countries we support meeting our benchmark for integrated delivery of antenatal care and immunisation services. A country meets this benchmark if coverage levels for four interventions – antenatal care and administration of neonatal tetanus, pentavalent and measles vaccines – are within 10 percentage points of each other, and all above 70%.

This indicator reflects the level of integration between immunisation and other interventions delivered through the routine system. If these complementary services are achieving similar levels of coverage, it generally follows that the linkages and coordination between them are strong.

2016 performance: 26% of Gavi-supported countries met the benchmark for integrated service delivery – the same proportion as in 2015. The lack of movement on this indicator is likely due to several factors, including the fact that direct support for integrated service delivery is a recent development for the Alliance, and results will take several years to materialise.

Everything we do to improve immunisation coverage and equity is done with a view to integrating service delivery and using immunisation as a platform for the delivery of essential health services. In 2016 alone, 62 million children in Gavi-supported countries received three doses of a DTP-containing vaccine. This equates to more than 185 million points of contact between these children and the primary health system, providing an opportunity to reach both them and their families with other health interventions and information.



Sources: WHO/UNICEF Estimates of National Immunization Coverage, 2017; UNICEF ANC1 survey data

5 Civil society engagement

What we measure: the percentage of countries we support meeting our benchmarks for civil society engagement in national immunisation programmes to improve coverage and equity.

We use three criteria to assess the level of civil society engagement:

- inclusion of civil society organisations (CSOs) in national immunisation plans with clearly stated activities;
- defined allocations in the EPI budget for CSO plans and activities (or justification given as to why these are not included); and
- documented evidence that CSO plans have been completed and/or are being implemented.

2016 performance: Four of the 10 countries for which data are available meet all of the three criteria. CSOs feature in the national immunisation plans of seven of these countries, seven have clear budget allocations for CSO plans and activities, and six show evidence of CSO plans being implemented. A target for this indicator will be developed after one full year of reporting.

Source: Gavi, the Vaccine Alliance, 2017

Supporting civil society organisations to improve coverage and equity

Civil society organisations (CSOs) are key partners in our work to boost immunisation coverage and equity and to strengthen health systems. They play a vital role in ensuring that vaccine introductions and campaigns are successful by creating demand and working with communities that are marginalised or hard to reach.

Around 7% of our 2016 support to HSS was allocated to CSOs. The majority of the funding was used to finance activities for community empowerment, awareness-raising and advocacy.

To further strengthen our collaboration with civil society, we have committed an additional US$ 10 million for the 2016–2017 period to be used for capacity building and technical assistance. The grant, which is currently available to 26 countries, is managed through contracts with Catholic Relief Services and the Network of Platforms of National NGOs of West and Central Africa. This type of support is designed to assist CSOs in building the skills and partnerships they need to tailor their country-level activities to immunisation goals.

Two examples illustrate the breadth of CSO activities in 2016. In Sierra Leone, both modern and traditional communication methods were used to mobilise demand for immunisation. Taking advantage of the fact that 59% of homes in the country own a radio, CSOs used local radio programmes to persuade people to attend vaccination sessions. Use of WhatsApp allowed real-time reporting during immunisation campaigns.

In Madagascar, CSOs were instrumental in selecting Black Nadia, a popular national singer, as an immunisation champion. Through her songs, Black Nadia does much to promote immunisation, including improving community dialogue and raising public awareness of the value of vaccines.

Women and their children wait for routine vaccinations at a health clinic in Moyamba, Sierra Leone.

Gavi/2016/Kate Holt

Strategic focus area: in-country leadership, management and coordination of immunisation programmes

Without effective institutions in place to oversee and coordinate national vaccination programmes, countries are unlikely to achieve long-term improvements in coverage and equity. The Alliance has therefore identified strengthening in-country leadership, management and coordination as one of our focus areas for the current strategic period.

This approach directs efforts towards:

- strengthening the management capacity of EPI teams in ministries of health;
- improving the functionality of national coordination forums such as interagency coordination committees; and
- enhancing the ability of national immunisation technical advisory groups to advise countries on their immunisation programmes.

Throughout 2016, Gavi began to roll out a series of interventions aimed at strengthening EPI teams and national coordination forums. This included embedding peer coaches within the EPI teams in Malawi and Papua New Guinea, for example. This initiative is run in partnership with the Aspen Management Partnership for Health and Dalberg Global Development Advisors. We also developed a set of tools and training courses to help strengthen the capacity of coordination forums.

A new training programme for EPI managers will combine a mentoring component with online learning and in-person group sessions. We will further boost the management capacity of EPI teams by funding critical positions for a time-limited period.

A new support model: putting countries first

We recognise that a "business as usual" approach will not be sufficient to reach our goals. Long-term improvements in immunisation coverage and equity require a more focused model, with support and interventions tailored to each country's needs and priorities.

In 2016, we worked to build more capacity at country level, while strengthening ownership and political commitment. A package of new tools and frameworks, which put countries at the centre of everything we do, helps us provide more appropriate support, mitigate risks and deliver better results.

These tools and frameworks include our new **HSIS model**, tailored technical support from Alliance partners through the **partners' engagement framework (PEF),** a **grant performance framework** that enables us to monitor our support more effectively and **programme capacity assessments**, which evaluate countries' ability to implement programmes before they start.

→ The road to reaching every child: a more country-centric model p6

eVIN coverage

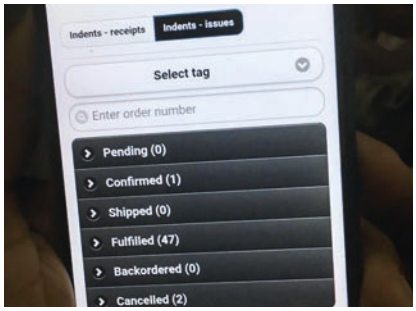
A new initiative designed to transform India's supply chain made significant strides in 2016

The Electronic Vaccine Intelligence Network (eVIN), which is supported by a Gavi HSS grant, uses mobile technology to help ensure vaccines are available when and where they are needed. This will contribute to reducing wastage and overcoming inequities in vaccination coverage.

eVIN strengthens management information systems for improved decision-making in vaccine delivery, procurement and planning. It supports the Government in overcoming constraints in infrastructure, monitoring and human resources. Weaknesses in any of these areas can result in either overstocking or stock-outs of vaccines in storage centres.

Robust cloud-based and mobile technology, coupled with standardised procedures to collect and store good quality data, are at the heart of eVIN. Its easy-to-use smartphone application allows users to monitor stocks and check the storage temperature of vaccines as they move through the cold chain.

In 2016, its use was expanded to 12 states in India, reaching roughly 40% of the 27,000 cold chain points in the country. Preliminary results show reductions in both stock-outs and vaccine wastage.



eVIM mobile phone technology
Gavi/2017

Looking ahead

Immunisation is one of the cornerstones of health systems, and a key component of universal health coverage. Yet children do not immunise themselves. Delivering vaccines requires a well-oiled machine of trained staff, efficient supply chains, equipped health clinics, functioning information systems, sufficient resources, and parents and communities who are aware of the benefits of immunisation.

Going forward, we will continue to find innovative solutions, drive the use of data and new technology, and work nimbly across the public and private sectors. This will help improve access not only to vaccines, but to other health services as well. Importantly, our support to HSS will help countries prevent and manage outbreaks of infectious diseases.

We will continue to build on our more country-centric support model to provide flexible solutions that help each country tackle its specific barriers to immunisation. It will also help us to manage risks more effectively.

Immunisation, at its most basic level, currently reaches 86% of the world's children. It is the only intervention that has the potential to bring the vast majority of families into contact with a country's health system five or more times during the first year of a child's life. If we expand this reach even further, we have a solid platform in place for universal health coverage.

↓
2016–2020 strategy overview
www.gavi.org/about/strategy/

Gavi/2017/Asad Zaidi

The sustainability goal

improve sustainability of national immunisation programmes

2016 at a glance:

- 14 countries fully self-financed 21 vaccine programmes originally introduced with Gavi support.
- Self-financing represented 15% of all country co-financing of vaccine programmes (roughly US$ 20 million).
- Countries contributed a total of US$ 133 million to the cost of their vaccines, the highest amount to date.
- All countries that had failed to pay their 2015 commitments on time paid their arrears in 2016.
- Four countries transitioned out of Gavi support.

Supporting countries to become self-sufficient

Empowering countries to take ownership of their vaccine programmes lies at the heart of the Alliance's vision. When we partner with a country, it is on the understanding that it also commits resources to developing its own immunisation programme. This begins with all countries self-funding a portion of the cost of the vaccines introduced with our support.

We adjust the level of our support according to a country's ability to contribute towards the cost of its vaccines. As its income grows, so does its vaccine co-financing obligation. At a certain pre-defined income level, we start to phase out our financial support, usually over a five-year period, until the country is fully self-financing. This process is called "transitioning".

In the 2016–2020 period, 20 countries are expected to start fully self-financing their vaccines. Of these, four transitioned in 2016.

An evolving goal

Financial sustainability has been a key principle for Gavi from the start. Over time, our model has evolved to also incorporate programmatic sustainability. Our aim now is to make certain that all immunisation programmes established with Gavi support are sufficiently strong and resourced to continue delivering life-saving vaccines after a country transitions.

Our new approach sets a long-term sustainability goal for all our investments in each of the countries we support. To achieve this goal, we apply a series of investment principles that guide the way in which a country programme is designed and implemented.

This vision lies behind our three new sustainability objectives for the 2016–2020 period. These are:

- to boost national and subnational political commitment to immunisation;
- to help enable national human and financial resources to be allocated to immunisation appropriately by legislative and budgetary means; and
- to prepare countries to sustain immunisation performance after they transition.

The path to sustainability: how it works

Gavi's sustainability model requires all countries to pay a portion of the costs of their vaccines. That proportion rises over time as countries increasingly take responsibility for their own immunisation programmes. To help lay the foundations for financial sustainability, co-financing payments are not made to Gavi but directly to the supplier through the country's own procurement process.

The size of the co-financing contributions is based on each country's ability to pay, as measured by its gross national income (GNI) per capita. For co-financing purposes, countries are divided into three groups:

- **Initial self-financing:** country contributions are set at US$ 0.20 per dose – sufficient to build country ownership but not high enough to deter the lowest-income countries from introducing new vaccines.
- **Preparatory transition:** co-financing payments increase by 15% each year.
- **Accelerated transition:** a five-year period when co-financing rises to 100% of vaccine costs. Two additional years of preparation are allowed for countries whose GNI has increased exceptionally fast.

As a country progresses through these different stages, Gavi offers appropriate interventions to ensure long-term programmatic sustainability in the post-transition period.

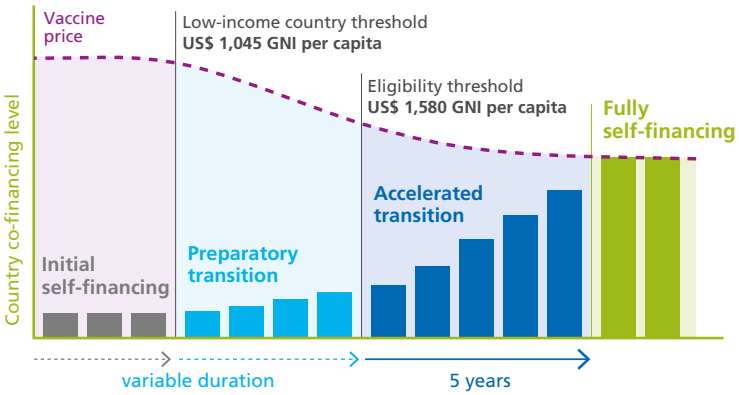
Gavi begins by conducting an assessment of what a country needs to transition sustainably. This leads to the development of an integrated plan unique to each country's journey, mapping out the strengths, weaknesses, opportunities and any threats to successful transitioning. Throughout this process, we provide advice and guidance, drawing on the expertise of Alliance partners.

By working together, we never lose sight of our ultimate objective – to make sure that progress in immunisation is sustained while our support is phased out in a responsible way.

Even after countries have transitioned, we continue our efforts to help ensure vaccines remain affordable. Transitioned countries can choose to procure through UNICEF or self-procure their vaccines. Gavi works with UNICEF and vaccine manufacturers to make sure that countries that continue to procure through UNICEF, and are able to meet its requirements, do not face sudden price increases once they transition out of our support.

Several suppliers have committed to offering selected vaccines to transitioned countries at prices similar to those Gavi pays under specific circumstances and for a specified time period.

Gavi's co-financing model



Vaccine Independence Initiative

To help countries meet their co-financing commitments on time, our Alliance has introduced new financial mechanisms, one of which is UNICEF's Vaccine Independence Initiative (VII).

The VII provides credit to countries for vaccines purchased through UNICEF. Repayment is due 30 days after vaccines are delivered. Gavi has provided a catalytic investment of US$ 5 million towards the VII.

In 2016, the VII provided support to the governments of the Central African Republic, Djibouti and Myanmar. Gavi-supported countries have also drawn on VII funding to conduct their polio and yellow fever outbreak response campaigns.

Staff check vaccine delivery at the central cold store in Yangon.

©UNICEF Myanmar/2015/Myo Thame

A closer look at 2016:

The performance indicators

1 Countries on track to successful transition

What we measure: the percentage of countries in the accelerated transition phase that are on track for a successful transition. A country is on track if:

- it shows substantial progress in implementing its transition plan (that is, at least 75% of milestones and activities, such as having a functional national regulatory agency, have been completed on time);
- its coverage with the third dose of diphtheria-tetanus-pertussis vaccine (DTP3) has increased over the last three years (if the country has already reached DTP3 coverage of at least 90%, it should have sustained this level for three years); and
- it is meeting its co-financing obligations and did not default on its payments in the previous year.

2016 performance: 79% of countries in the accelerated transition phase were on track for successful transition. Many countries made impressive strides in preparing for their transition out of Gavi support.

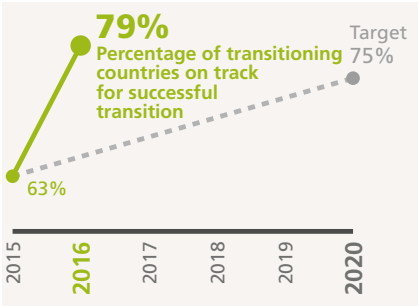
In total, 14 countries fully self-financed 21 vaccine programmes originally introduced with Gavi support. This equates to approximately US$ 20 million, or around 15% of the total value of vaccine co-financing in 2016, and provides proof that our sustainability model is working.

The four countries that transitioned in early 2016 (Bhutan, Honduras, Mongolia and Sri Lanka) are now fully financing the vaccines they introduced with Gavi support. In 2016, these countries continued to show an outstanding commitment to immunisation. Mongolia was able to self-finance its 2016 introduction of pneumococcal vaccine, taking advantage of the lower price offered through our Advanced Market Commitment.

Honduras and Sri Lanka both drew on our catalytic support for routine immunisation with the human papillomavirus (HPV) vaccine. Gavi only contributed 50% of the cost of the vaccine during the first year of introduction. Both countries had access to the reduced price negotiated by Gavi.

Building on this success, another four countries – Guyana, Indonesia, Kiribati and the Republic of Moldova – stopped receiving Gavi vaccine support at the end of 2016 and will transition fully in 2017. Guyana contributed more towards its vaccine costs than required – testament to its determination to become self-sufficient.

Although Indonesia is transitioning successfully, the country faces significant challenges. Coverage remains low and HPV, pneumococcal and rotavirus vaccines are not yet part of the national immunisation programme. In 2016, Indonesia was approved for catalytic support to introduce the measles-rubella vaccine nationwide.



Sources: Gavi, the Vaccine Alliance, 2017; WHO/UNICEF Estimates of National Immunization Coverage, 2017

2 Co-financing

What we measure: the percentage of countries that fulfil their co-financing commitments by the end of the year, or who pay their arrears in full within 12 months.

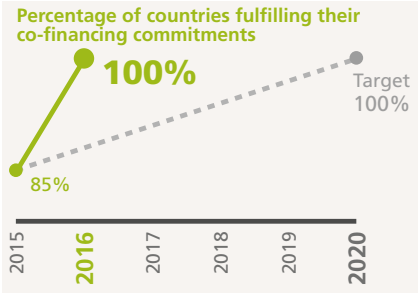
Where necessary, we adapt our deadlines to countries with a different fiscal cycle, such as Kenya and Pakistan.

2016 performance: all countries with co-financing obligations fulfilled their commitments within the 12-month window, a clear sign that they are fully committed to co-financing. All 10 countries that defaulted on their payments in 2015 had cleared their arrears by the end of 2016.

Overall, 2016 proved to be our most successful year ever in terms of co-financing. Countries co- or self-financed 184 programmes introduced with our support – an 11% increase from 2015. In addition, the amount of co-financing contributions received by December 2016 was up 25% on the figure for December 2015.

Only six countries defaulted on their 2016 obligations:

- **The Democratic Republic of the Congo** ended the year in default, although its vaccine funding has increased consistently since 2014 following Gavi's adoption of a more country-tailored approach.
- **Ghana** struggled with severe budget restraints and economic hardship, a particularly worrying development as it was about to enter the accelerated transition phase.
- **Madagascar** was only able to pay around half of its co-financing requirements.
- Due to health budget constraints, the **Niger** could not mobilise sufficient domestic resources on time.
- Two fragile states failed to make their payments before the end of the year: **South Sudan**, which was embroiled in a civil war, and **Yemen**. The latter received an extension of the waiver granted by our Board in late 2016 for its co-financing requirements.



Sources: UNICEF Supply Division; the PAHO Revolving Fund; Gavi, the Vaccine Alliance, 2017

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www.gavi.org/about/strategy/

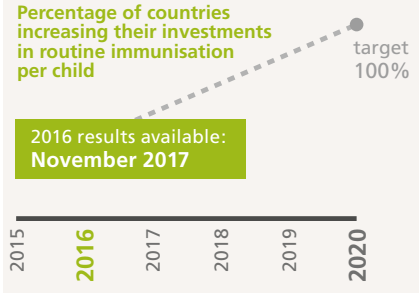
3 Country investments in routine immunisation

What we measure: the percentage of countries that have increased their investment in routine immunisation per child, relative to 2015.

This indicator covers every vaccine in a country's national programme, not just those supported by Gavi. It also includes expenditure on related products beyond vaccines, such as injection supplies.

2016 performance: results for this indicator will be available in November 2017.

→ Talking about the road to self-sufficiency with Sri Lanka, Honduras and Angola p40



Sources: WHO/UNICEF Joint Reporting Form; United Nations, Department of Economic and Social Affairs, Population Division; World Bank, World Development Indicators

4 Institutional capacity

What we measure: the percentage of Gavi-supported countries that meet our minimum criteria for national decision-making, programme management and monitoring.

Strong institutional capacity is vital if a country is to become programmatically and financially sustainable. This indicator assesses the performance and effectiveness of key immunisation management bodies such as the Expanded Programme on Immunization (EPI) and national immunisation technical advisory groups (NITAGs).

2016 performance: initial data highlighted the need for Gavi to revisit the way in which the indicator is measured to better capture countries' progress. The revised indicator results will be available in October 2017.

2016 results available: **October 2017**

Looking ahead

We are entering a period in which our transition model will be tested as it never has been before.

Between 2017 and 2020, another 12 countries are set to transition: Angola, Armenia, Azerbaijan, Bolivia, the Congo, Cuba, Georgia, Nicaragua, Papua New Guinea, Timor-Leste, Uzbekistan and Vietnam.

Most of the countries that are on track for successful transition have a number of characteristics in common, principally strong political commitment to immunisation and resilient health systems.

However, others will transition without having introduced some of the key life-saving vaccines, and many face low levels of immunisation coverage and equity. Of these, five are at risk of not being fully ready to transition, or transitioning with low coverage rates. This group includes Angola and the Congo, who have both repeatedly defaulted on their co-financing payments.

We will continue to strengthen our engagement with at-risk transitioning countries. Although they will still be expected to take over full financing of their existing programmes, there may well be a case for maintaining our involvement after they transition to build on the progress they have already made.

Whatever happens, we will continue to find new ways to improve how we work, so that we can help all countries sustain their achievements well into the future.

Immunisation and health training for nurses in Sri Lanka

Gavi/2013/Sanjit Das

The market shaping goal

shape markets for vaccines and other immunisation products

Gavi/2016/Randrianarivony Voara

2016 at a glance:

- By the end of 2016, nine markets had sufficient and uninterrupted supply. This is 82% of our 2020 target.
- The weighted average price per course of pentavalent, pneumococcal and rotavirus vaccines was US$ 19, down 5% from 2015.
- Three products with improved characteristics became available to countries we support: an oral cholera vaccine with an improved vial opening system, a human papillomavirus (HPV) vaccine approved to be used outside of the cold chain for a limited period and a pentavalent vaccine with a smaller vial size.
- Two vaccine markets were assessed to have moderate to high market health – our target for 2020 is six.

Shaping markets to support increased immunisation

The Alliance exists to support countries' efforts to introduce new vaccines and immunise as many children as possible. Through the comparative advantage of Alliance partners, we are in a unique position to shape markets for the benefit of the countries we work with.

Healthy markets allow manufacturers to produce the right vaccines and immunisation products in quantities and at prices that are appropriate and sustainable. This enables developing countries to access suitable products at prices they can afford, even after they transition out of Alliance support. Donors are also able to maximise their investments.

By the end of 2015, we had met or exceeded our key market shaping goals for the 2011–2015 strategic period. We had been able to identify and attract new manufacturers with suitable products in several markets – pentavalent vaccine, for instance. The cost per child to fully immunise with pentavalent, pneumococcal and rotavirus vaccines had decreased, while our product offering had increased with eight new products.

Throughout the five-year strategy, we improved transparency and information sharing.

Despite good progress, challenges remained. For example, the vaccine market landscape evolved significantly from 2011. At the same time, Gavi's vaccine portfolio doubled from 6 to 12 vaccines.[a]

These developments, coupled with the current Gavi strategy that strongly focuses on improving coverage and equity, have guided the development of a new supply and procurement strategy for the 2016–2020 period. This takes a more holistic view of healthy markets, applies a longer-term approach to market shaping and clearly defines our role in product innovation.

a – Gavi has committed to funding a stockpile for a 13th vaccine, Ebola, once it has been licensed and recommended by WHO.

An evolving goal

Our 2016–2020 market shaping goal aims to make markets for vaccines and other immunisation products work better for lower-income countries.

The Alliance's approach reflects our constantly evolving comprehension of markets for vaccines and immunisation products, resulting in a more sophisticated and precise strategy. In this period, our market shaping activities are extending beyond vaccines to include other immunisation products, such as cold chain equipment.

While our new objectives are grounded in our achievements during 2011–2015, we now place greater emphasis on coverage and equity and taking a long-term view of markets.

This reflects both our Alliance goals and our relationship with the growing number of transitioning countries who will finance future immunisation programmes independently.

We aim to:

- make certain there is a sufficient and secure supply of quality vaccines;
- reduce prices of vaccines and other immunisation products to an appropriate and sustainable level; and
- incentivise the development of innovative vaccines and other immunisation products.

With Gavi support, Haiti is installing innovative solar-powered fridges to modernise its cold chain equipment.

Gavi/2017/Frederique Tissandier

Transforming the cholera vaccine market

see indicator 1

In late 2013, the Gavi Board approved support for the previously established oral cholera vaccine (OCV) stockpile as part of our vaccine investment strategy: to contribute over US$ 110 million during the period 2014–2018 to increase access to OCV during emergencies and in countries that regularly experience cholera outbreaks.

From 2014, the OCV stockpile was developed as a collaboration between the WHO's International Coordinating Group on Vaccine Provision, the Global Task Force on Cholera Control, UNICEF Supply Division, manufacturers and ourselves.

Technology transfers from the International Vaccines Institute (IVI) to manufacturers in Bangladesh, India, the Republic of Korea and Vietnam were key to the development of a vaccine more suitable for use in emergency conditions. Shantha Biotechnics, a Sanofi company, and EuBiologics (profiled in this report) are the two manufacturers supplying prequalified vaccines to the stockpile. Gavi is also looking at supporting oral cholera vaccine for use in endemic settings, as part of our next vaccine investment strategy.

Health workers vaccinate children against cholera at the Banadir hospital in Mogadishu, Somalia.

Gavi 2017/Karel Prinsloo

By the end of 2016, we were well on our way to breaking the low supply and low demand cycle. We have already seen a change in market dynamics with nearly a four-fold increase in demand for, and supply of, OCV between 2014 and 2016.

This was one of our goals when we started investing in the vaccine just three years ago.

Alliance partners support introduction of new oral cholera vaccine from EuBiologics

In 2016, more than 40% of the doses supplied by the OCV stockpile were Euvichol, a new oral cholera vaccine produced by Korean biopharmaceutical company, EuBiologics.

Alliance partners including the International Vaccines Institute (IVI), WHO and the Bill & Melinda Gates Foundation played key roles in supporting the development of Euvichol, the first vaccine to be developed and licensed by EuBiologics.

EuBiologics' mission is to build a portfolio of vaccines designed to improve global public health. The company was selected through the Cholera Vaccine Initiative (CHOVI) programme financially supported by the Bill & Melinda Gates Foundation. Technology necessary for EuBiologics to produce Euvichol, a safe and effective oral cholera vaccine, was licensed from the IVI in September 2010.

Jerome H. Kim, MD, Director General of the IVI commented "We are very proud of the contributions of Euvichol and of the role that IVI has played in increasing the supply of a suitable, prequalified vaccine." IVI is the world's only international organisation devoted exclusively to developing and introducing new and improved vaccines for global public health.

As Yeong-Ok Baik, CEO of EuBiologics said, "Gavi's decision to fund a stockpile through to 2018 greatly encouraged us to proceed with developing Euvichol. In 2014, the Alliance's market shaping team introduced us to UNICEF Supply Division, informed us of tender opportunities and also visited our manufacturing site."

In August 2014, EuBiologics entered into a global access agreement with IVI to make sure the vaccine would be made available and accessible at an affordable price for the public sector. EuBiologics received prequalification from WHO in December 2015.

EuBiologics was able to incorporate feedback from Alliance partners into their vaccine packaging and has developed a pull tab mechanism to make it easier to remove the vaccine's foil covering. Other presentations require a cruder method which is not ideal when dealing with a glass vial containing an oral vaccine.

In the near future, EuBiologics will be introducing Euvichol in a plastic tube presentation with the objective of further improving the convenience of administering the vaccine and striving for lower costs.

A closer look at 2016:

The performance indicators

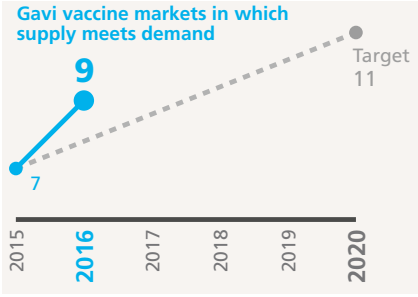
1 Sufficient and uninterrupted supply

What we measure: number of Gavi vaccine markets with sufficient and uninterrupted supply of appropriate vaccines.

2016 performance: at the end of 2016, 9 of the vaccine markets in which we work had sufficient and uninterrupted supply. This is 82% of our 2020 target, which is 11 markets.

Supply levels for the inactivated polio vaccine (IPV) and yellow fever vaccine remained lower than they should be. IPV programmes have been delayed or interrupted. Shortages of yellow fever vaccine meant it was not possible to fully meet increases in demand for vaccination campaigns without interfering with routine immunisation programmes.

Our support in helping a second oral cholera vaccine (OCV) become available to UNICEF was a significant step forward. Supply is now sufficient to meet demand.



Sources: Gavi, the Vaccine Alliance, 2017; UNICEF Supply Division, 2017

2 Cost of fully vaccinating a child with pentavalent, pneumococcal and rotavirus vaccines

What we measure: change in the weighted average vaccine price per child to fully vaccinate him or her with pentavalent, pneumococcal and rotavirus vaccines.

2016 performance: in 2016, the weighted average price per course of pentavalent, pneumococcal and rotavirus vaccines was US$ 19, down 5% from 2015. This reduction follows a 43% drop between 2010 and 2015, and marks the first time we broke the US$ 20 barrier.

The decrease in cost was driven by an 8% reduction in the weighted average price for pentavalent vaccine and the effects of the exchange rate on the cost of the rotavirus vaccine.

Because this indicator is unchanged from the 2011–2015 period, we will be able to monitor trends in price reduction over a continuous period of 10 years to 2020.

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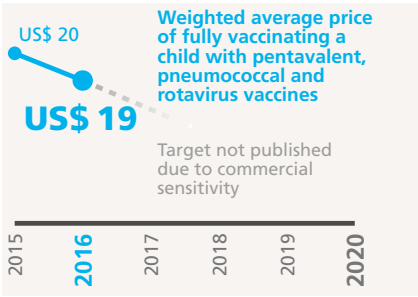
www.gavi.org/about/strategy/



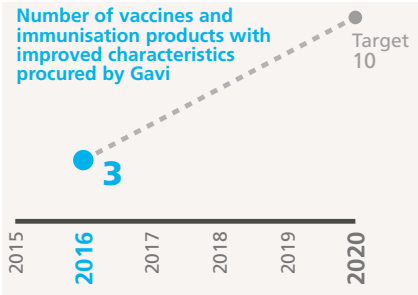
Source: UNICEF Supply Division, 2017

3 Innovation

What we measure: the number of vaccine products with improved characteristics procured as compared to the baseline year.

This indicator uses straightforward, objective criteria, published by WHO, the Alliance partner responsible for technical guidance on vaccines. The indicator includes all antigens supported by Gavi.

2016 performance: in 2016, three products with improved characteristics became available to countries we support. Our 2020 target is 10. These included a new presentation of OCV with an improved vial opening system, an HPV vaccine approved to be used outside of the cold chain for a limited period and a pentavalent vaccine with a smaller vial size.



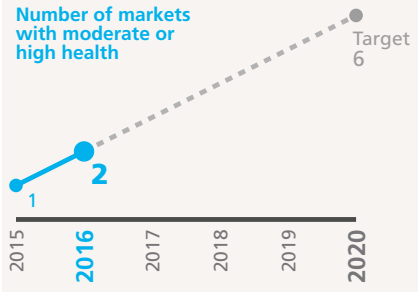
Source: Gavi, the Vaccine Alliance, 2017

4 Healthy market dynamics

What we measure: the number of Gavi vaccine markets with moderate or high healthy market dynamics. We rate this in terms of:

- high
- moderate
- low
- no healthy market dynamics.

2016 performance: of the vaccine markets in which Gavi operates, two (the pentavalent and HPV vaccine markets) enjoyed moderate to high market dynamics in 2016. The supply of vaccines met country demand and presentation preference and the markets showed moderate supply security. By 2020, we aim to have six healthy vaccine markets.



Sources: Gavi, the Vaccine Alliance, 2017; UNICEF Supply Division, 2017; SG4 partners' analyses of multiple market data sources

The healthy market framework – defining "healthy"

Developed jointly by Gavi, UNICEF and the Bill & Melinda Gates Foundation, the healthy market framework (HMF) is a framework for assessing the attributes of a "healthy" market.

In a healthy market, supply meets demand. Products are of high quality and available presentations align with country preferences. Supply is consistent, timely and reliable as regulatory processes are efficient and potential risks related to individual suppliers are minimised. Manufacturers have resources, information and an incentive to overcome barriers to compete in the market. Customers consider cost comprehensively – that is, beyond price per unit – and product innovation is encouraged.

The HMF puts in place a common way of thinking about market health for vaccines. It aims to better communicate how we assess individual vaccine markets and their ability to best meet the needs of Gavi-supported countries. The HMF also improves how we analyse potential trade-offs between different market attributes.

All HMF attributes for every market are considered and adapted to specific markets.

By the end of 2016, the HMF was rolled out at multiple levels of the Alliance to create consistency between each level of implementation. It will help inform market shaping strategies as well as procurement and decision-making.

How the healthy market framework works: the yellow fever vaccine market

From 2011 to 2015, the yellow fever vaccine market had no healthy market dynamics, as supply was 27% below demand. The HMF helped us focus our efforts to achieve a healthier market.

We used the HMF to analyse potential trade-offs between different market attributes. Further, it helped guide the development of a market shaping and procurement strategy for the vaccine.

At the end of 2016, the yellow fever vaccine market was in a low level of healthy market dynamics. This means that supply may not reliably meet demand for the next five years. There may also be supply shortages due to spikes in demand triggered by an outbreak or by problems encountered in increasing supply.

Countries will have little choice in terms of the different presentations of the vaccine that they can request from Gavi.

We continue to focus our efforts on improving supply, including monitoring manufacturing progress. Using the HMF, we aim to move the yellow fever vaccine market to a moderate level of market health by 2020.

Supporting transitioned countries with reduced pentavalent vaccine prices

Over the past 15 years, we have worked hard with our partners, particularly the Bill & Melinda Gates Foundation and the UNICEF Supply Division, to improve the health of the pentavalent vaccine market. In recent years, it has become more stable – and highly competitive – through an increasing number of prequalified vaccines and supply that now exceeds the steady demand from countries.

In October 2016, this market offered ideal conditions to launch an innovative phased approach to tendering. This tender sought to cultivate and maintain a healthy market for pentavalent vaccines, preserving long-term market competition with multiple suppliers, and achieving appropriate and sustainable pricing for developing countries.

In the 2017–2019 period, more than 400 million doses of pentavalent vaccine available at lower prices will help to protect children in countries we support, as well as those transitioning out of our support.

+400m

doses of pentavalent vaccine to be made available at lower prices

Looking ahead

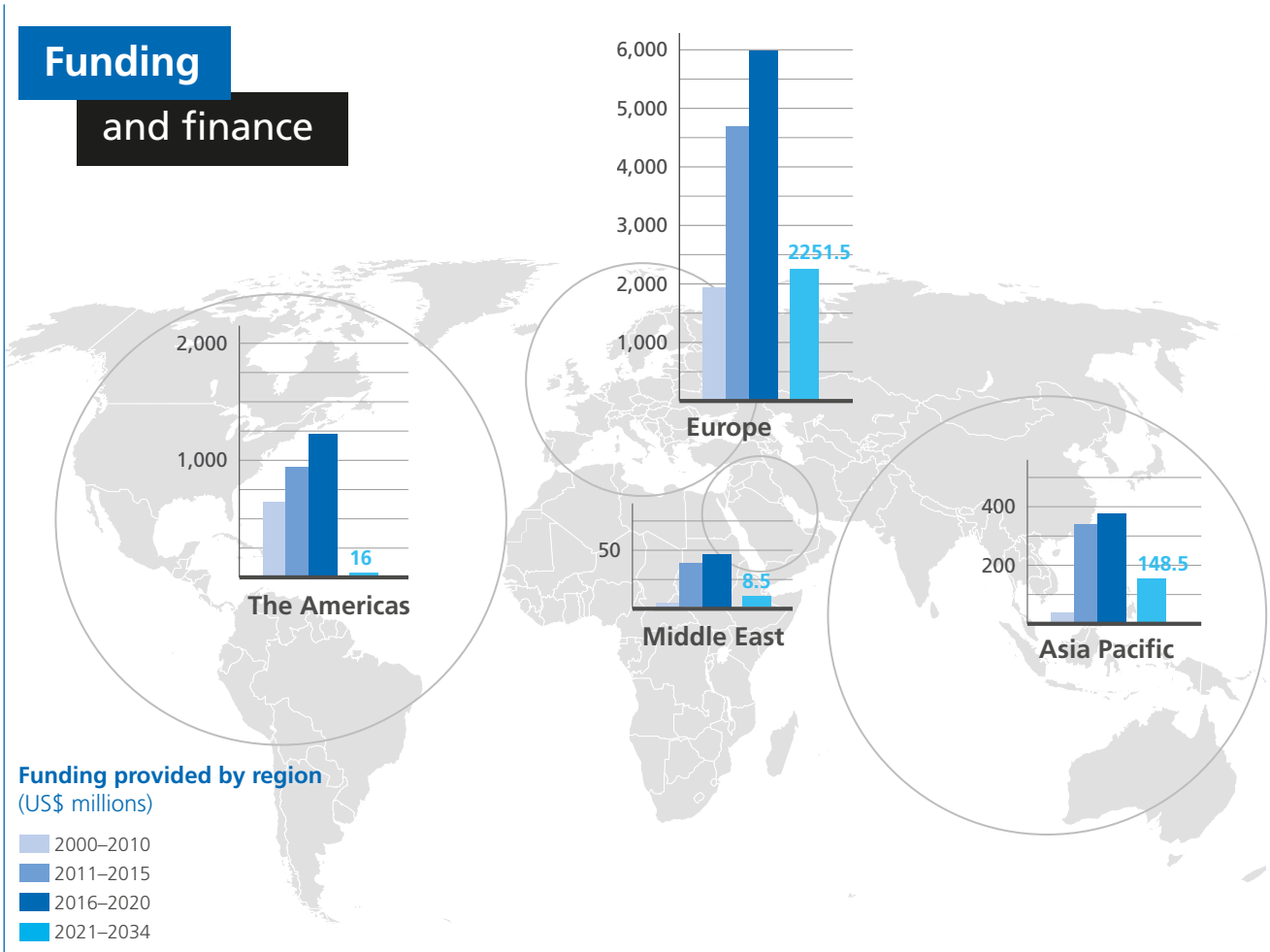
To deliver on our 2016–2020 goal of healthy markets, it is important to recognise that each market is unique and evolves at a different pace depending on a range of factors. This requires moving beyond assessing supply, cost and innovation as separate objectives to improving the overall "health" of each vaccine market.

Suitable product innovation is key to better meet the needs of the countries we support and to improve coverage and equity. Over the current strategic period, our Alliance will develop common principles to guide our approach to product innovation. We will take into account not only the cost of these innovations but also the potential impact on our coverage and equity goals.

In everything we do, we will take a longer-term view of markets. This includes equipping countries that transition out of our support to sustain their immunisation programmes as well as to become strategic customers in the vaccine market. We will share our knowledge to help countries make well-informed decisions about which vaccines to introduce and procure.

We have already helped to transform several vaccine markets – including the market for pentavalent vaccine. Over time, we will aim to have a positive impact on more markets, stretching well beyond the countries we support.

Funding and finance



Funding from donors and investors

Breaking new ground

Donors demonstrated their confidence in the Gavi business model in 2016 by investing US$ 1.8 billion in our mission – the highest amount ever in a single calendar year.

By the end of 2016, we had turned 79% of total donor commitments made at the 2015 pledging conference in Berlin into grant agreements, a record for the first 12 months of a new funding period.

This was achieved against a backdrop of unprecedented political change. Elections caused government changes in several large donor countries while, from Syria to Somalia, a series of humanitarian and security crises led to shifting priorities in the global development agenda.

In response, Gavi engaged early with new governments, working across the political spectrum, and continued to advocate for immunisation through civil society. By the end of the year, every donor had fulfilled their commitments to fund Gavi programmes, whether through direct contributions or our innovative financing mechanisms. Cumulative funds received since our Alliance's foundation in 2000 totalled US$ 13.9 billion.

Wider donor base

In 2016, Gavi expanded its donor base, welcoming first-ever pledges from the Principality of Monaco and Switzerland. In another historic first, Japan became a multi-year donor.

We received contributions for 2016 from the European Commission and 20 donor governments: Australia, Canada, China, France, Germany, India, Ireland, Italy, Japan, the Kingdom of Saudi Arabia, Luxembourg, the Netherlands, Norway, the Republic of Korea, the State of Qatar, the Sultanate of Oman[a], Sweden, Switzerland, the United Kingdom (UK), and the United States of America (USA).

Effective, transparent business model

The UK's Department for International Development (DFID) awarded the highest possible rating to Gavi in its 2016 Multilateral Development Review. Ranked alongside 38 other global organisations and programmes, Gavi was one of only three placed in the top category. The review marked Gavi highly for its comparative advantage, tightly controlled costs, transparency and geographic reach.

Raising the standard: the Multilateral Development Review 2016

UK aid/Department for International Development

→ https://www.gov.uk/government/publications/raising-the-standard-the-multilateral-development-review-2016

a – The contribution from the Sultanate of Oman was paid in 2015.

Innovative financing

In addition to direct contributions, Gavi also attracts a diverse range of donors and investors through its innovative financing mechanisms. They deliver both the long-term, predictable funding that gives countries security to adopt new vaccines and the private sector expertise that helps modernise immunisation delivery systems.

Loan buydown: affordable loans for immunisation programmes

In 2016, we expanded our innovative financing portfolio with the addition of a buydown facility, which will provide Gavi with low-interest loans to improve immunisation coverage across Africa's Sahel region. Developed by France and the Bill & Melinda Gates Foundation, the €100 million, three-way financing mechanism will help purchase vaccines and strengthen immunisation programmes in Burkina Faso, Chad, Mali, Mauritania, the Niger and Senegal.

IFFIm: doing well, doing good

Over 10 years since its launch in 2006, donor and investor confidence in Gavi's first innovative funding mechanism, the International Finance Facility for Immunisation (IFFIm), continued to grow. Australia, France and the Netherlands signed new IFFIm agreements, while a US$ 500 million, three-year vaccine bond was issued to secure predictable funding for Gavi-supported immunisation programmes.

By leveraging long-term donor pledges to issue and sell vaccine bonds in the capital markets, IFFIm helps countries accelerate investment in their immunisation programmes. It also encourages socially responsible investment in capital markets that "do well and do good". To date, the mechanism has raised more than US$ 5.7 billion in the bond market and disbursed US$ 2.5 billion to support immunisation programmes.

> "The IFFIm issuance is perfectly attuned to the substantial rise we're seeing in investor interest in socially responsible investing."
>
> **Philip Brown** Managing Director, Head of Public Sector Origination, Citi

Advance Market Commitment: a decade of protecting children from pneumonia

Ten years after the launch of the Advance Market Commitment (AMC), an independent evaluation confirmed the funding mechanism's lead role in accelerating access to pneumococcal vaccines in the world's poorest countries.

To date, more than 109 million children have been immunised against pneumococcal disease, the primary cause of fatal pneumonia among the under-fives. The report also singled out the role of the AMC's supply arrangements in encouraging vaccine manufacturers to expand their capacity to produce safe, effective vaccines at a fraction of the price paid in high-income countries.

Prior to the AMC, it took more than a decade for the first children in the lowest-income countries to access the same vaccines as children in rich countries. Through the AMC's unique approach, developing countries introduced the pneumococcal vaccine less than 12 months after its development.

By the end of 2016, 57 countries had introduced pneumococcal vaccines as part of their routine childhood immunisation schedules. The number of doses of pneumococcal vaccine purchased through the AMC increased by almost 25% compared with the previous year. By working with vaccine manufacturers, Gavi and the AMC also helped reduce the pneumococcal vaccine's average tail price[a] in Gavi-supported countries by 2.7% in 2016 – equivalent to a total tail price reduction of 5.7% since 2010.

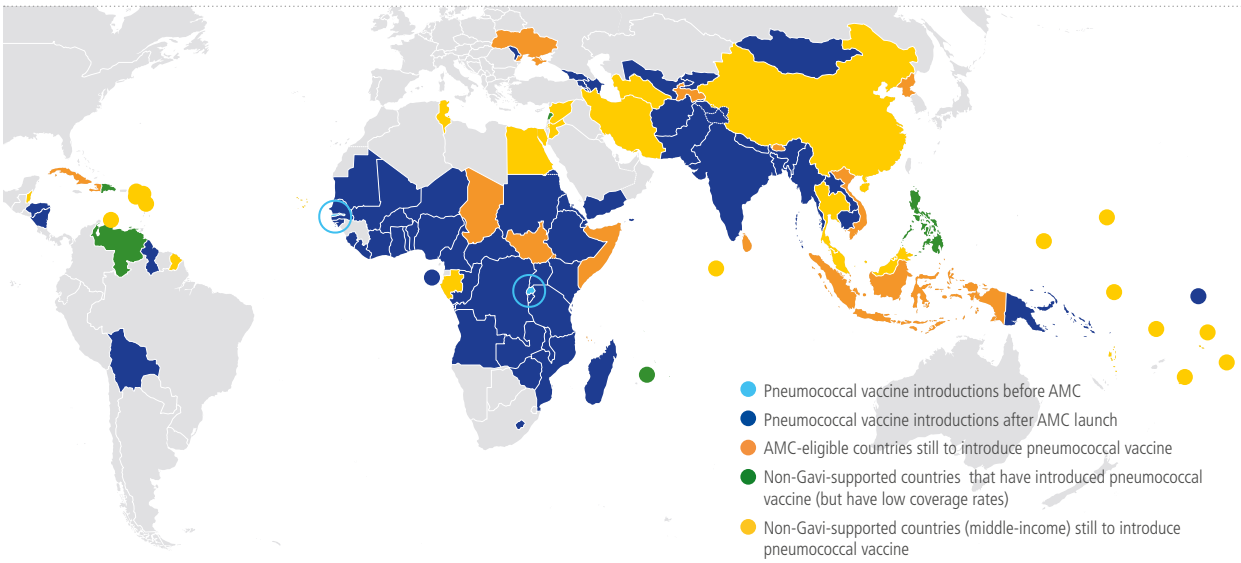
Donors have contributed a total of US$ 1.1 billion in AMC funds via the World Bank, while an additional US$ 0.4 million is pledged for future Gavi-supported programmes. The AMC model has proved so successful that it is now being considered as a tool to help spur innovation and build sustainable markets in other sectors, including agriculture and climate change.

109m+

children immunised to date plus a 5.7% reduction in vaccine cost since 2010

a – Tail price refers to the maximum price that a Gavi-supported country pays per pneumococcal vaccine dose under the terms of the AMC.

Pneumococcal vaccine introduction: status as of 31 December 2016



Private sector partnerships

In 2016, we expanded our private sector engagement approach to leverage innovation and expertise from partners who can help deliver on our ambitious coverage and equity goals.

Increasing demand for new vaccines is placing ever greater pressure on immunisation delivery systems in developing countries. With new technology and approaches needed to modernise these systems, Gavi is looking to the world's biggest engine of innovation – private businesses and industry.

Collaboration with the private sector has been essential to the Vaccine Alliance since its inception. Initially, our partnerships focused on vaccine manufacturers to ensure a secure supply of vaccines at affordable prices to developing countries. We then partnered with companies and foundations to help fund immunisation programmes – and accelerated those investments with the launch of the Gavi Matching Fund in 2011.

Our private sector and foundation partners continued to invest in Gavi in 2016, with the total value of financial contributions, including that from the Bill & Melinda Gates Foundation, totalling US$ 295.7 million. Now, however, we are also forging operational partnerships and joint initiatives with proven potential to address three key obstacles to improving immunisation coverage: outdated supply chains, poor data management and demand generation for vaccines.

Strengthening vaccine supply chains

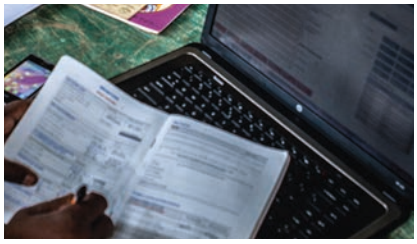
Zipline/2016

In 2016, Rwanda launched the world's first medical drone delivery service. Supplied by the California-based robotics company, **Zipline**, the drones are delivering emergency blood supplies to health clinics throughout the country. Gavi has joined up with Zipline and the **United Parcel Service (UPS) Foundation** to consider using the same technology to transport vaccines to hard-to-reach communities.

Gavi and **UPS** also launched a new regional training centre in Benin as part of the Strategic Training Executive Programme (STEP) to improve immunisation supply chain management. By the end of 2016, almost 50 supply chain managers from 14 countries in east and west Africa had attended the UPS executive-level course and mentorship programme.

The International Federation of Pharmaceutical Wholesalers (IFPW) continued to contribute funding and technical assistance to supply chain training centres in Rwanda and Benin. While IFPW members are helping to nurture the next generation of supply chain managers through knowledge-sharing, leadership and financial support, the IFPW Foundation offers scholarships, both for degrees and professional development courses.

Improving data management



Capturing digital immunisation data
Gavi/2013/Evelyn Hockstein

Gavi is partnering with leading health technology company **Philips** to improve the quality and collection of immunisation data. By drawing on the company's expertise in connected health, data analytics and population health management, the partnership will help strengthen the planning and impact of national vaccination programmes.

Generating demand for vaccines

Gavi teamed up with **Unilever**'s leading health soap brand, Lifebuoy, to prevent disease and save children's lives by jointly promoting handwashing with soap and immunisation in India. The partnership is supported by the Government of Netherlands through the Gavi Matching Fund.

> "By taking a holistic approach, promoting both handwashing with soap and immunisation, our partnership will help save further lives and work towards achieving the sustainable development goals."
>
> **Paul Polman**, Unilever's CEO

Social and cultural barriers still prevent girls from being vaccinated against the human papillomavirus (HPV) – the primary cause of cervical cancer. In 2016, Gavi teamed up with **Girl Effect**, a UK charity supported by the Nike Foundation which builds brands to promote social change for girls. We will work together to educate African girls about the benefits of the HPV vaccine, encouraging them to take control of their health. The Dutch Government is supporting the partnership through the Gavi Matching Fund.

Recognising the direct relationship between low immunisation rates and access to education, we have also partnered with the **Education Above All Foundation**. Together, our organisations will promote education and immunisation in communities which struggle to fill both their class rooms and vaccination sessions.

Gavi Matching Fund: doubling investments to double the impact

Since its launch in 2011, the Gavi Matching Fund has played an important role in encouraging business to invest in immunisation.

By matching private sector contributions, the Matching Fund has helped Gavi secure significant financial and operational support

1+1=2

matching private sector investment

from several leading companies. Doubling each investment also means we can make double the impact.

In 2016, the Bill & Melinda Gates Foundation and the Government of the Netherlands committed US$ 75 million and €10 million respectively to the Gavi Matching Fund. Over the 2016–2020 period, these funds will be made available to match eligible private sector investments in Gavi programmes.

Private sector partnerships continued

Partnering for investments in vaccines

"la Caixa", Gavi's longest-standing private sector partner, renewed its commitment to immunisation with its highest-ever financial contribution to Gavi.

1=4

your donation is worth 4 times more

Thanks to its "1=4, your donation is worth 4 times more" campaign, the company contributed more than US$ 2.4 million, including a record-high €740,000 from employees and customers. The contribution was doubled by the Bill & Melinda Gates Foundation through the Gavi Matching Fund.

Thousands of UK citizens raised £2 million for immunisation by participating in **Sport Relief**, a televised fund-raising event organised by Gavi partner, **Comic Relief**. Meanwhile, Comic Relief's **Red Nose Day** teamed up with Gavi again, contributing US$ 2.5 million in the USA and £2 million in the UK to help ensure life-saving vaccines reach every child. These contributions were also matched by the Bill & Melinda Gates Foundation through the Matching Fund.

Saudi Arabia's **Alwaleed Philanthropies** committed more than US$ 1 million to help fund immunisation programmes in Armenia, Azerbaijan, Guyana, Kiribati, the Republic of Moldova and Timor-Leste from 2016 to 2020. US-based **LDS Charities** contributed US$ 1.2 million in direct funding, which will help fund Gavi-supported vaccine programmes in Benin.

Kiribati is the smallest and most remote country to receive Gavi support. 103,000 people live across its three islands.

Gavi/2013/Raj Kumar

INFUSE attracts new kind of private sector partner

Global markets p42

A key element of Gavi's new approach to private sector partnerships is INFUSE – Innovation for Uptake, Scale and Equity in Immunisation.

Launched at the 2016 World Economic Forum meeting in Davos, the INFUSE platform helps developing countries accelerate the introduction of tried and tested technology which will modernise their immunisation delivery systems.

In INFUSE's inaugural year, seven innovations were selected for focused support, with one of them fast-tracked for introduction into national immunisation systems through Gavi's partnership with Google.org.

Brainstorming immunisation innovation at INFUSE's inaugural workshop

Gavi/2016/Isaac Griberg

Immunisation: a global context

Immunisation sits at a crucial intersection between globalism and global health.

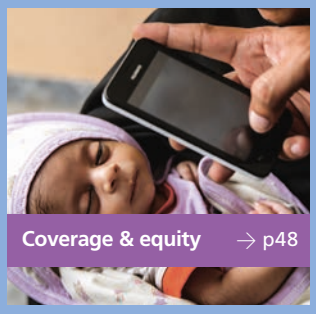
Natural, political, economic, social and technological forces shape the spread of infectious diseases, and our ability to immunise against them. Our Alliance's work has an important reciprocal impact on these same forces, helping to ensure a healthier, more secure world.

Five features demonstrate the interplay between immunisation and global affairs:

Sustainability → p40

Innovation → p42

Equality → p45



Coverage & equity → p48

Global health security → p51

Global sustainability

Talking about the road to self-sufficiency with Sri Lanka, Honduras and Angola

Representatives of three health ministries share their hard-won insights into what it takes to transition out of Gavi support.

Gavi/2013/Sanjit Das

Sri Lanka started fully self-financing its immunisation programme in January 2016.

Dr Yolani Batres
Secretary of State, Bureau of Health, Honduras

Dr Deepa Gamage
Ministry of Health, Sri Lanka

Dr Luis Sambo
Minister of Health, Angola

At the start of 2016, four countries transitioned out of Gavi support. For each of these countries, this historic milestone marked the end of the long road to fully self-financing their vaccines and sustaining their own immunisation programmes. But it also signalled the beginning of another, even tougher journey for our Alliance.

With 20 countries set to transition by 2020, the Gavi business model now faces the biggest test in its history.

The achievements of Bhutan, Honduras, Mongolia and Sri Lanka demonstrate the model does work as long as countries plan early, harness political will effectively and work closely with Gavi from the very start. But some countries that are set to transition, like Angola, are facing considerable challenges. For countries like these, the expert guidance that Gavi offers is especially important.

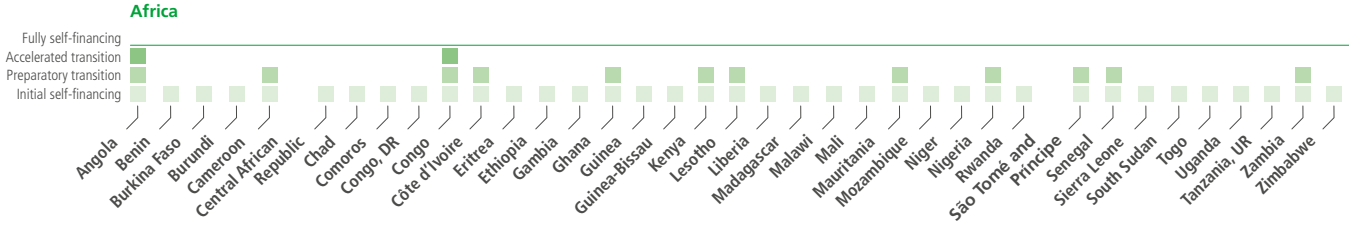
We invited Dr Yolani Batres, Secretary of State at Honduras's Bureau of Health, Dr Deepa Gamage, Consultant Medical Epidemiologist at the Sri Lankan Ministry of Health, and the Angolan Health Minister, Dr Luis Sambo, to share their insights into the challenges that countries will face along the road to transition in the coming years.

Drs Batres and Gamage, could you tell us how Honduras and Sri Lanka fared in their first year as transitioned countries?

Dr Yolani Batres: 2016 was a very good year for vaccination in Honduras. Coverage was above 95%, even in municipalities that had declining rates in 2015. We paid for 99% of vaccines out of our own budget. Gavi financed the introduction of inactivated polio vaccine (IPV) and 50% of the cost of introducing human papillomavirus (HPV) vaccine. In 2017, we will fund the addition of the human papillomavirus vaccine 100%. Last year, PAHO also confirmed that we had eliminated measles.

Dr Deepa Gamage: Sri Lanka was in a good position at the end of 2016. We weren't facing any special challenges. Apart from the pentavalent vaccine, we purchased all vaccines ourselves.

Road to transitioning out of Gavi support



Dr Sambo, where was Angola in the transitioning process?

Dr Luis Sambo: Angola was in the accelerated transition phase – the final phase before transitioning out of Gavi support in 2018. We faced a number of challenges. Oil prices had fallen, which reduced the national income and the amount of public funds available. Despite this, we had to finance the introduction of new vaccines, strengthen human resources and manage immunisation more efficiently. The yellow fever epidemic affected our progress but, because we'd begun preparing to transition as far back as 2013, it hasn't slowed our momentum down too much.

Dr Sambo, you paid off all of Angola's co-financing arrears for 2015 as well as paying in advance for 2016 and 2017. Why?

LS: Because I know that immunisation is a cost-effective public health intervention that's easy to administer. I see it as the spearhead for expanding our entire public health network and increasing the number of health service delivery points.

What were or are the most significant immunisation challenges for your countries?

YB: For us, it was achieving and maintaining the highest possible level of coverage. We also had to negotiate with Gavi to maintain our current level of vaccine prices and have the possibility to introduce new vaccines with Alliance support. We overcame these challenges by working hard, in partnership with Gavi.

DG: To be honest, we didn't face any significant challenges. There was no large-scale reluctance on the part of the population to be immunised. We continued to develop new cold chain technologies.

LS: We carried on with our work of strengthening the Angolan immunisation system and putting health reform in place. Among other things, this will guarantee that vaccines and other essential supplies are financed, improve our integrated logistics system and strengthen data capture and quality. We're opening new health posts across the country and I'd like every health post in Angola to be able to deliver immunisation services, with all health personnel trained to carry out vaccination.

How did Gavi help you overcome these challenges?

DG: Gavi covered 50% of the cost of introducing the HPV vaccine in 2016 and provided a vaccine introduction grant. To make sure that IPV supplies continued in the face of supply scarcity, Gavi helped us to introduce fractional dosing.

YB: Honduras passed a law in 2013 that guarantees free vaccines for the whole population and sufficient funds to sustain vaccine procurement. Gavi helped us draft the legislation and provided excellent technical support. This law is key to our work today.

LS: Apart from offering advice and guidance, the Gavi health system strengthening grant is helping us to grow our network of fixed vaccination posts, replace obsolete equipment and acquire cold rooms and continuous temperature control systems. It's also supporting the training of mid-level managers and front-line health staff. We've also been able to increase the number of transport vehicles in our fleet. The grant is helping us improve data quality and use.

What advice would you give countries transitioning out of Gavi support?

LS: I would say that countries should take responsibility for funding immunisation sustainably, despite the competing priorities of other health programmes. They should also address the gaps in Gavi support using national resources and those of other partners.

YB: Work as a team with Gavi. Don't attempt to do everything by yourselves. In the lead-up to transition, the Gavi technical team came to Honduras and we sat down and planned together. Gavi showed us the reality of our situation and what our needs genuinely were. In our experience, when a country is transitioning it's essential to administer funds correctly and have the right kind of technical support. This is what Gavi offered us and it was invaluable.

DG: Sri Lanka has always been determined to maintain ownership of our national immunisation programme and avoid being too dependent on support from outside the country, although we've accepted this when necessary. I would recommend that countries take decisions based on country-specific evidence.

What does the immediate future look like for your country and for immunisation and what is Gavi's role?

DG: We'll continue to sustain the high levels of coverage and equity we've achieved for immunisation. At the same time, we'll be implementing the introduction of the HPV vaccine.

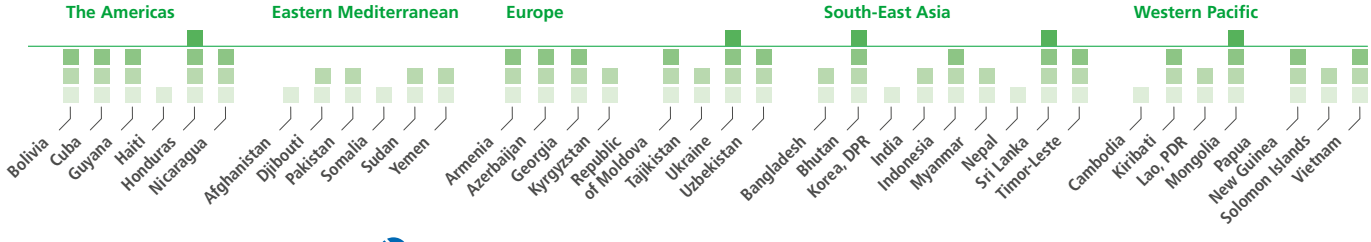
YB: Our immunisation programme has credibility with the Honduran people because it's very effective. We have the budget to maintain the vaccines in the programme. But we always want to have a window of access to new vaccines in the future. For example, for Zika and malaria, which are doing a lot of damage in Honduras. Being partners with Gavi will enable us to buy new vaccines.

One of the things I appreciate most about Gavi is their willingness to listen to the views of developing countries. It's not just about us receiving funds. And, with its fragility policy – especially in developing countries – Gavi is constructing a new agenda that gives us lots of hope for the future. Really, the relationship between Honduras and Gavi couldn't be better.

LS: Our immediate priorities are financing immunisation for long-term sustainability and strengthening health teams across the entire country. This is challenging, when you consider our financial crisis and shortages in the health budget. Gavi is monitoring our progress towards transition and making sure what we do is in line with what we actually should be doing.

We'll continue to work with Gavi to identify what it will take to keep our immunisation programme sustainable post-transition. Whatever happens, we have the political will to do everything we can to increase and sustain coverage and equity in Angola.

Measuring our progress: **sustainability goal**
p27



Sources and more detail p12–13

Global markets

When disrupting markets becomes a force for good

The disruption of failing markets can challenge old assumptions and cast light on new solutions.

Gavi/2016/Issac Griberg

Rustam Nabiev pitches the concept of MyChild, one of 2016's INFUSE Pacesetters.

Gavi was created in order to overcome a seemingly intractable problem: how best to address market failures that had led to stagnating global immunisation rates. Since inception, Gavi and its public and private sector partners have succeeded in dramatically reducing the price of several vaccines and have created a more sustainable supply for developing countries.

In 2016 Gavi began applying the same approach to immunisation delivery systems. We started by launching the cold chain equipment optimisation platform (CCEOP), which is aimed at stimulating the development and production of innovative cold chain equipment for developing countries. We haven't stopped there.

With our 2020 goals at the forefront of our thinking, the Alliance is directing its disruptive influence to new markets. In the past 12 months, we have forged partnerships with businesses, both large and small. Each supports a range of innovative products, from drones to data-aggregation devices, which have the potential to break critical barriers to universal immunisation coverage.

1 Driving up demand

Promoting the benefits of immunisation encourages parents to bring their children for vaccination. Gavi is partnering with corporations and foundations committed to using their expertise in social marketing to drive demand for immunisation in frontier[a] and emerging markets.

Unilever and Gavi, for example, have partnered to jointly promote immunisation and handwashing with soap – two of the most cost-effective ways to prevent diarrhoea and pneumonia. Building on Unilever's experience with Lifebuoy soap, the project will use 21st century tools to boost immunisation coverage and save children's lives.

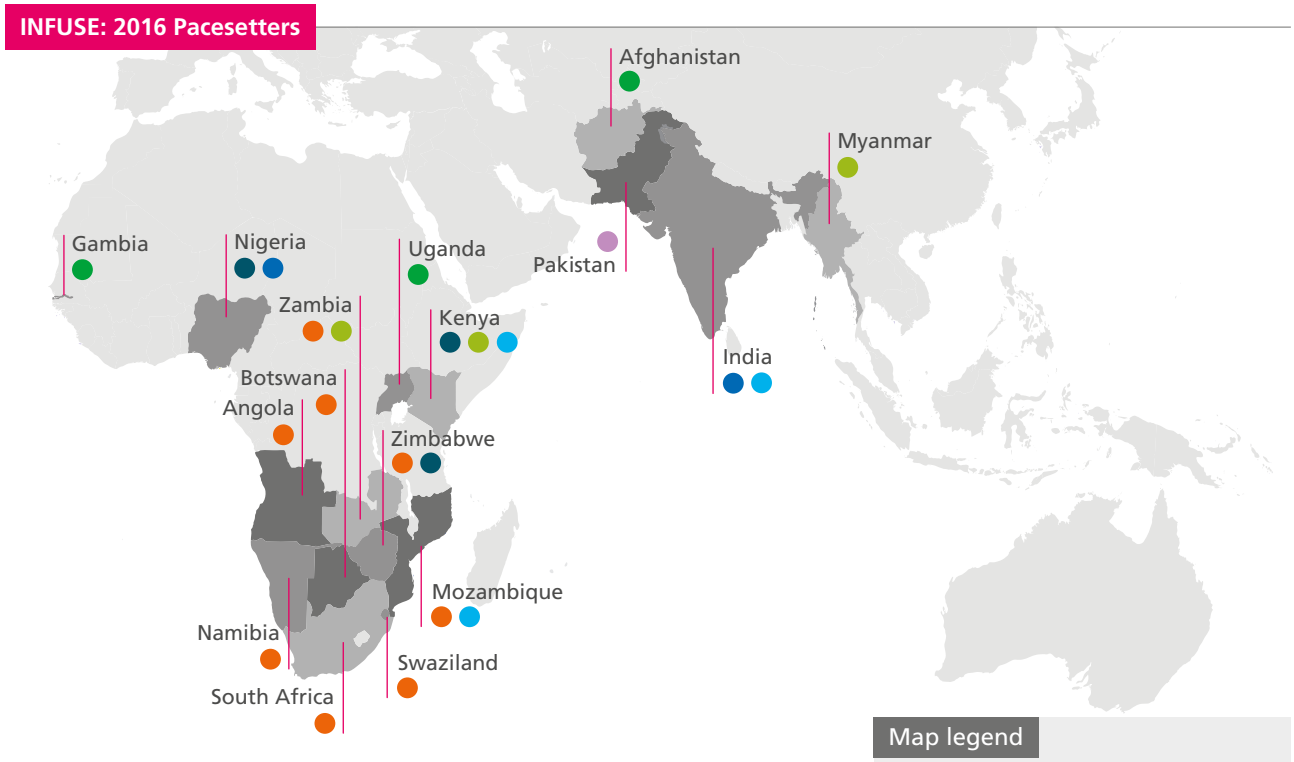
Highlighting the value of vaccines can also leverage markets for products and services outside the health sector, in education in particular. Recognising the strong correlation between low immunisation rates and access to education, we have started a partnership with Qatar's **Education Above All Foundation (EAA)**. Gavi will draw on existing EAA resources and partners across Asia and Africa to help communities with poor school attendance and low immunisation rates.

> "Overwhelming evidence demonstrates the benefits of immunisation as one of the most successful and cost-effective public health interventions."
>
> **Dr Ngozi Okonjo-Iweala** Gavi Board Chair

This initiative is the first of its kind and directly supports two of the United Nations sustainable development goals (SDGs): ensuring healthier lives (SDG 3) and promoting more equitable education (SDG 4). It is also an example of SDG 17, which emphasises the need for cross-sector partnerships to achieve sustainable development.

a – A frontier market is a type of developing country which is more developed than the least developing countries, but too small to be generally considered an emerging market.

INFUSE: 2016 Pacesetters



2 Creating a market for innovation

One of the biggest challenges facing immunisation delivery systems in developing countries is poor infrastructure. The supply chain that delivers vaccines from central repositories to primary healthcare clinics still relies on fridges, generators and other technology that has often not been updated in decades. This can slow down or even stop the delivery of life-saving vaccines. While there are many potential solutions, these frequently lack the right market conditions for scale up. Businesses that have developed a new technology struggle to secure the necessary funding to take it further, while governments find it difficult to select the most appropriate, cost-effective option.

In 2016, Gavi sought to address this failure of current markets with a new platform called **Innovation for Uptake, Scale and Equity in Immunisation**, or **INFUSE** for short.

Launched at the 2016 World Economic Forum meeting in Davos, INFUSE identifies tried and tested innovations that have the potential to improve vaccine delivery in developing countries. It then "infuses" them with capital and expertise to help take them to scale in Gavi countries – creating a new marketplace for innovative solutions within the countries that need them most.

In its inaugural year, a high-level review panel, composed of corporate leaders, technology pioneers, investors and global immunisation specialists, selected seven of the most promising innovations. Gavi will help accelerate their adoption in developing and emerging markets.

All the 2016 "Pacesetters" will improve data availability, quality and usage. If brought to scale, each will dramatically impact vaccine delivery.

3 Breaking into new markets

In a drive to open up new markets, Gavi has been working closely with governments, companies and organisations based in the Middle East and China.

In the wake of a financial contribution from Saudi-based **Alwaleed Philanthropies (AP)**, Gavi has expanded its presence in the Middle East. In 2016, AP committed more than US$ 1 million – which was doubled by the Bill & Melinda Gates Foundation – to help finance immunisation programmes throughout Gavi's 2016–2020 strategic period. Gavi-supported programmes are among thousands of projects in over 90 countries that AP has supported in the past 35 years.

7

innovative solutions chosen in the first year of INFUSE

13

countries

Map legend

Akros

Innovation: feeds live updates on vaccine stock levels into an electronic immunisation registry and sends automatic text reminders about upcoming vaccination sessions to patients.

Broadreach

Innovation: a user-friendly platform that analyses aggregated data and communicates operational solutions to help decision-makers achieve results.

Energize The Chain

Innovation: pulls electricity from mobile phone base stations to help extend the reach of the vaccine cold chain infrastructure.

Interactive Research & Development (IRD)

Innovation: mobile phones and online mapping adapted to track health workers when they visit patients.

Khushi Baby

Innovation: a necklace that doubles as a medical passport, storing children's health data, including vaccination histories.

Nexleaf Analytics ColdTrace

Innovation: uses data to help countries identify malfunctioning fridges before they threaten vaccine quality and safety.

Shifo's MyChild

Innovation: an immunisation information booklet equipped with smart paper technology that connects children in remote locations to a digital registry.

A "cool" partnership: Gavi, Nexleaf and Google

Within a few months of **Nexleaf Analytics** becoming one of INFUSE's first pacesetters, Gavi and **Google.org** announced a new partnership. This will see the company's novel sensor and data-aggregation technology, ColdTrace, used to strengthen vaccine cold chain systems in developing countries.

With Google and INFUSE's support, Nexleaf will create an analytics framework to aggregate real-time data from every point of a national health system. The data helps optimise vaccine cold chain performance and allow health ministries to make informed decisions about how to improve their systems and equipment.

Google's contribution of US$ 2 million, doubled by the Gavi Matching Fund to which the Bill & Melinda Gates Foundation is a major contributor, will be used to help countries make evidence-based decisions on the purchase and maintenance of vaccine refrigerators.

Health worker inspects vaccine fridge, monitored using the Nexleaf Analytics ColdTrace wireless remote temperature technology.

Nexleaf Analytics/2017

> "Nexleaf's use of innovative, low-cost sensor technology to support data-driven decision-making is the kind of cutting-edge work we need to address big global challenges like vaccine delivery."
>
> **Jacquelline Fuller,** Director of Google.org

Q&A with Nexleaf Analytics CEO and co-founder, **Nithya Ramanathan**

How has being chosen as a 2016 INFUSE Pacesetter helped Nexleaf scale up ColdTrace?

Being an INFUSE Pacesetter has been transformative for us as a company, as well as for the product. We've been able to get broader access to technological support and insights, and also a better understanding of how we as one player in the ecosystem can serve all of the ecosystem as a whole.

Through our partnership with Google.org, the Bill & Melinda Gates Foundation and Gavi, and with support from national governments, we've been able to scale our technologies in four additional countries.

What does the INFUSE community mean to you?

INFUSE means scale, innovation, technology solutions, partnerships and collaboration for impact. We're thrilled to be part of the INFUSE community – to see all the other innovators in the room, to learn from other ideas, and to feed on their energy and intensity. We're happy to be able to support them, provide feedback, share what we've learned along the way and help others tap into this incredible network that INFUSE has built.

Leapfrogging the "last mile" in delivery systems

In **Rwanda,** the long rainy season frequently washes away vast tracts of road, depriving remote health centres of life-saving vaccines and other critical medical supplies. In extreme medical emergencies where time is of the essence, the lack of basic medicines and blood for transfusion can make the difference between life and death. This state of affairs is common throughout the developing world, where more often than not it is the very last bit of the journey to the health clinic that is the most difficult and arduous of all.

To overcome these obstacles and leapfrog the "last mile" in the supply chain, the Rwandan Government has turned to cutting-edge drone technology, pioneered by the California-based robotics company, **Zipline**. Zipline is transporting emergency blood supplies to women suffering from postpartum haemorrhage. The new service is expected to cut average delivery times from hours to minutes.

Gavi laid the foundations for this partnership, both by easing government concerns about working with the private sector and by securing funding from the **United Parcel Service (UPS) Foundation**. UPS provided a US$ 1.1 million set-up grant and logistics expertise in order to support Zipline's deployment to Rwanda. In collaboration with the Government, Gavi is now exploring the potential for using Zipline drones to carry vaccines.

This initiative demonstrates how our Alliance can apply private sector innovation and expertise to improve immunisation delivery. By calling on UPS's logistics expertise, the Rwandan Government's leadership and Zipline's cutting-edge technology, Gavi may have found a way to cut out the last difficult step of the supply chain, that critical last mile. Transforming the marketplace for delivery of medical supplies could hold the key to reaching every child.

Zipline, 2016

Global equality

Collaboration in the community helps prevent cervical cancer

Routine immunisation with the HPV vaccine protects the health of women and girls.

UN Photo/Martine Perret

Infectious diseases do not always affect men and women equally. One virus in particular has a disproportionate impact on the health of the world's women and girls – the human papillomavirus (HPV).

Although this virus infects both men and women, it is women who suffer the most severe consequences. HPV is the primary cause of cervical cancer, which currently kills 266,000 women every year. However, death rates are increasing, and if left unchecked, cervical cancer is in danger of claiming more lives than childbirth.

The great majority of sufferers (85%) live in low-income countries where access to screening and treatment is limited. Such high levels of female morbidity and mortality debilitate entire communities, depriving children of their mothers and families of their primary caregivers.

"These women die on their own – that is the reality," says Professor Mamadou Diop, oncologist and head of Dakar's Institut Curie in Senegal, which has the world's 15th highest incidence of cervical cancer. "These are really very active women, who have children to raise, homes to run and are pillars of their family and community."

Up to 90% of all cervical cancer cases can be prevented by the HPV vaccine which is given to girls between the ages of 8 and 14 years. However, reaching this target population with vaccines in developing countries is not easy. Adolescent girls are not usually served by existing health services and not all go to school. On top of which many women, and in some areas whole communities, are unaware of the importance of the HPV vaccine.

In the face of these obstacles to uptake, high levels of communication and collaboration from every sector and corner of the community are essential to fulfilling the vaccine's cancer-preventing promise.

When Gavi approved Senegal's HPV vaccine demonstration project in 2014, the health and education ministries joined forces to raise awareness of cervical cancer, the vaccine and its benefits among a range of audiences. In Dakar Ouest and rural Méckhé 100 km away – the two districts targeted by the demonstration project – school teachers were trained alongside health workers.

"We did a lot of communication even before the project started," says Mame Parie Diop, health education supervisor at Méckhé's health centre. "We gathered local religious leaders to explain the HPV vaccine demonstration project, but to also educate them about the illness and the importance of preventing it." The project launch itself was turned into an exercise in communication and trust-building, with the daughters of doctors, nurses, teachers, as well as religious and community leaders receiving their shots in front of the rest of the district.

There was no let up even after the project started. With health ministry support, messages were relayed via community leaders, two local radio channels and television, posters and T-shirts. In many communities, sexually transmitted disease can be a sensitive subject, which is why communicating first and foremost that the HPV vaccine prevents cancer was key. "Communication was a challenge, so we had to anticipate and stop rumours before they started," adds Mame.

> "These women die on their own – that is the reality."
>
> **Professor Mamadou Diop**, oncologist and head of Dakar's Institut Curie, Senegal

Critically for the programme, this information was also carried by individuals such as Oumi Thioune, headmistress of Elhadji Ndiayar Ndiaye Elementary School in Méckhé. Her reasons for getting involved were clear. "Every Senegalese woman knows how serious cervical cancer is. Everyone has heard about it," she says.

In each French-speaking or religious school *(Daara)*, a specially trained teacher explained the vaccine's benefits to other teachers, parents and students. Often this teacher counted the number of girls eligible for the HPV vaccine, and ensured that they received their shot on immunisation day. "Once we were informed by the doctor and his local team, we got

parents involved, we raised awareness, we counted up the girls of the right age," says Oumi. "And for each dose, I looked after the girls."

Senegal's information campaign also targeted the wider community, with local advocates and religious leaders enlisted to help identify all girls eligible for the HPV vaccine. This was especially important in rural Méckhé, where a large proportion of girls do not go to school.

Community networks helped health workers find girls at risk of missing their vital second dose of HPV vaccine. "We did our best to get everyone on board with the vaccine, and it worked," says Ibrahima Mbaye, manager of the Expanded Programme for Immunization (EPI) in Méckhé.

In the urban district of Dakar Ouest, Dioma Mbengue is a nurse and head of vaccinations at the Philippe Senghor Health Centre. She played a vital role in communicating with the girls' parents, helping them understand what was at stake. "We explained to parents that it's a vaccine that prevents cervical cancer, a very dangerous disease," she says. "Parents accepted it. If you talk about cervical cancer, people are afraid."

There are reasons to be afraid. Many women struggle to afford treatments for cervical cancer and turn to ineffective traditional medicines instead, explains Professor Diop from his Dakar clinic. "This cancer can be prevented through vaccination and screening. For me, it has to be a national priority," he says.

> "We're proud that it's our families, sisters and nieces who are benefiting. It's personal."
>
> **Ibrahima Mbaye**, EPI manager, Méckhé

Disappointingly, to date few countries have made the step up from running a demonstration project to a national HPV vaccine introduction. With the 2020 global target of vaccinating 30 million girls against HPV infection in jeopardy, in 2016 Gavi took steps to encourage more governments to add HPV immunisation to their routine programmes.

Following a recommendation by WHO's Strategic Advisory Group of Experts (SAGE) on immunisation, Gavi no longer requires countries to run demonstration projects before applying for support for national introductions. Gavi will also fund the vaccination of multiple age cohorts of girls, aged 8 to 14 years, allowing HPV vaccine programmes to reach greater numbers more quickly.

"Vaccination is so important, we wish the vaccine could be available for every woman in Senegal, every woman in the world," says headmistress Oumi Thioune.

With plans for a national introduction by the end of 2017, other countries would do well to learn from Senegal's experience and ensure the HPV vaccine gains the publicity it deserves. Thanks to the work of Dioma, Oumi, Mame and others like them, more and more Senegalese are now demanding the vaccine to protect their young girls from a cancer that could blight their futures. For Méckhé EPI manager Ibrahima Mbaye, it's not just about creating a healthier society. It's a matter of protecting loved ones. "We're proud that it's our families, sisters and nieces who are benefiting," he says, "It's deeply personal."

Dioma Mbengue, head of vaccinations at Phillippe Senghor Health Centre

Gavi/2017/Ricci Shryock

Senegal's HPV vaccine demonstration project targeted two districts

> We must take advantage of the HPV vaccine's introduction to deliver basic health information to children and adolescents.
>
> **Awa Marie Coll Seck,** Health Minister of Senegal

photo: UK Department for International Development (DFID)

Empowering women and girls

Interview with **Awa Marie Coll Seck**, Health Minister of Senegal

Why did your country choose to introduce the human papillomavirus (HPV) vaccine?

Senegal is very concerned about maternal and child health. It is important to work towards a generation of young women free from HPV and the threat of cervical cancer. We have worked on a feasibility study and run an HPV demonstration project. Now we want to launch a large-scale national HPV vaccination programme. We have public acceptance but also strong political support. We need to ensure, with Gavi's help, that we have access to adequate supplies of the vaccine.

What did you learn from the HPV demonstration project?

That we need a multisectoral vision and approach. Close cooperation with the Ministry of Education enabled us to raise awareness of the vaccine by training teachers and informing parents and schoolchildren. We made sure that we could reach as many girls as possible with the vaccine. For example vaccination happens in religious schools we call *Daaras*.

Can HPV vaccination sessions be used to provide other types of healthcare to teenagers?

We must take advantage of the HPV vaccine's introduction to deliver basic health information to children and adolescents. The better they understand, the more interested and involved they are. Young people will only adopt appropriate behaviour, if they know how to act.

How do you make sure that both girls and boys have equal access to the vaccines they need?

Senegal embraces the concept of "Badianou Gokh". These are women selected by their local neighbourhoods to be a kind of godmother to each family. Each ensures that husbands, wives and children know that all babies, whatever their sex, must be vaccinated.

What are your hopes and ambitions for the future of vaccination in Senegal?

I would like to ensure universal vaccine coverage across Senegal, as well as the financial means to ensure we can vaccinate every child. That will allow us to eliminate diseases, which have already become increasingly rare in Senegal. With vaccines, we're on the right track to further reduce infant mortality. This is giving couples confidence to space out new births, allowing their children to grow up healthier.

Pioneering integrated healthcare in Togo

Togo is using immunisation with the HPV vaccine to deliver integrated healthcare to young girls – care that may just improve their life chances.

Globally, immunisation programmes reach an estimated 100 million people each year – more than any other single intervention delivered through national health systems.

In many low-income countries, delivering the HPV vaccine to young adolescent girls represents a unique opportunity to deliver valuable lessons in healthcare – both to prevent the spread of HPV and to provide protection from other infectious diseases.

Over the past two years, Togo has conducted HPV vaccine demonstration projects, running pilot schemes in two districts with guidance from Gavi partners, notably the United Nations Population Fund (UNFPA), UNICEF and WHO. In partnership with the education ministry, vaccinators not only immunised girls against cervical cancer but also worked hand-in-hand with teachers to educate adolescents about their health. For an hour before receiving shots of the HPV vaccine, girls were taught about puberty, menstrual health and the importance of handwashing.

90% **of cervical cancer cases can be prevented by HPV vaccine**

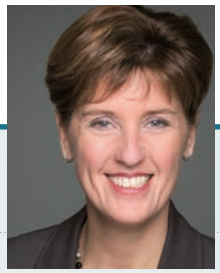
As the pilot health education efforts progressed, Togo and its Gavi partners learnt their own lessons about the best way to deliver HPV vaccine and other adolescent health services nationally. "It's an excellent case study," says Danielle Engel, adolescent health specialist at UNFPA. "It showcases how the support of partners can be instrumental in implementing projects like these. It also shows that if you take the right decisions at the right time, you really can help a country into integration mode."

Girl receives HPV vaccine.

UNFPA, Togo

Togo is now working to create tailored educational programmes utilising materials developed and tested in neighbouring countries. "We would like to see girls, and boys, be the agents of their own health, not just recipients of key messages," says Danielle.

With this west African country of 7 million people planning to roll out the HPV vaccine nationally, the next challenge will be converting these early successes into a sustainable model for treating 300,000 adolescents each year. If successful, Togo will become an exemplar of how to use immunisation programmes to deliver integrated health services to traditionally under-served demographic groups.



Empowering women and girls

Interview with **Marie-Claude Bibeau**, Development Minister of Canada

How can immunisation contribute to Canada's vision of gender equality in healthcare services?

Gender equality to me is much more than ensuring women and men, and girls and boys receive access to the same healthcare services. Rather, it's about putting gender equality at the heart of efforts to improve healthcare, by carefully analysing the different needs and barriers that women and girls face, and the roles that they can play in becoming agents of change. The health and rights of women and children are key priorities in our Feminist International Assistance Policy.

> "When women and girls can make informed decisions about their health and bodies, they become agents of change in their communities."

We recognise that protecting children from diseases through immunisation is one of the most cost-effective public health interventions, providing a foundation for a future healthy life for girls and boys. In addition to ensuring that girls and boys have equal access to vaccines, there are also other important empowerment opportunities to consider, such as the role of caregivers (usually women) in health-related decisions, and promoting the recruitment of female community health workers.

Why is it so crucial to invest in women and girls' health, for example, through introducing HPV vaccines as Senegal and Togo are doing?

When women and girls can make informed decisions about their health and bodies, they become agents of change in their communities, breaking cycles of gender-related poverty and inequality. Unfortunately, adolescent girls are at risk of poor health around the world. Many have an inadequate understanding of their sexual and reproductive health rights. Many also continue to face sexual and gender-based violence. That's why increasing girls' access to vaccines for diseases which affect them the most, such as HPV, is a step towards improving the health of the poorest and most vulnerable.

Canada has been a longstanding supporter of Gavi. Why have you provided such significant investments?

Like Gavi, we believe vaccines are one of the most successful and cost-effective health investments you can make and we want to reach the poorest and most vulnerable. Canada is proud to partner with Gavi to help ensure new and underused vaccines are reaching children living in the world's poorest countries.

The Gavi model uses the strengths of UN agencies, governments, the vaccine industry, the private sector and civil society to increase and accelerate access to vaccines while strengthening health systems and the sustainability of national immunisation programmes. Gavi also works to make vaccines more affordable to countries. Together, these actions will create the conditions for countries to move away from Gavi funding and build their own nationally-financed immunisation programmes.

Global coverage & equity

The missing

Advances in data collection, technology and training are needed to ensure more children gain access to vaccines.

Gavi/2017/Asad Zaidi

Health worker uses a mobile app to register the vaccination of 15-day old Adeel in real time.

Finding a single missing child can be difficult. So imagine finding millions of missing children, especially when no formal record shows they even exist. This is the challenge Gavi now faces if it is to continue improving access to vaccinations for the world's poorest infants and young people.

Since 2000, when our Alliance was created, basic immunisation coverage has steadily increased. Nevertheless, large pockets of low coverage persist in hard-to-reach communities, often masked by high national averages. Until we address how to find these people and reach them with life-saving vaccines, there is a risk that not only will progress stagnate but inequities in immunisation will continue to widen.

That is why data is a major focus for Gavi in this strategic period. To improve both average coverage and equity in immunisation, we need accurate, real-time data on the number of vaccines shipped, stored and administered. We also need to keep better records of where people live, and at the most basic level, to ensure that formal records exist for every child born.

Globally, one in three births is not registered. Without a birth certificate, children risk being overlooked by authorities, missing out on their right to vital health and education services. Left vulnerable to infectious diseases and neglect, the impact on their lives can be lasting and lead to disenfranchisement.

Some of the least acknowledged and hardest-to-reach children live in remote, rural settings. However, just as many "missing" vulnerable children reside in the world's ever-swelling urban slums where they too go unnoticed and unvaccinated. More than ever before, we need reliable data on who they are, where they live, and what healthcare they need.

With 86% of all children now receiving a full course of basic vaccines, our Alliance is already finding ways to reach many of the "missing millions".

By making the best use of modern technology, our efforts to support immunisation are starting to fill the gaps. It's no coincidence that considerably more children now have a vaccination card than a legal form of identity.

In recent years, several countries have adopted a range of innovative approaches to better capture critical immunisation data. These have involved the use of mobile phones to log the movement and

management of vaccines through the cold chain, and the analysis of geospatial satellite data to map missing communities (see *When disrupting markets becomes a force for good* → p42). Pakistan's experience in particular demonstrates how efficient monitoring and surveillance systems can bridge gaps in equity, significantly increasing immunisation coverage (see *Immunisation in Pakistan's urban slums: a tale of two megacities* → p50).

However, information needs to flow both ways. We need to innovate to improve the collection of immunisation-related information and we need to find new ways to tell people about the benefits of vaccination. Often individuals, families or even whole communities are unaware of the positive impact of vaccines. It is this group that we need to target if we wish to increase demand for immunisation and related health services.

Throughout 2016, Gavi has been supporting efforts to do just that. U-Report is an automated text-based chatbot app developed by UNICEF for mobile phones which collects community feedback about vaccination campaigns. According to data collected by the U-Report app, use of this technology helped to increase turnout at vaccination clinics in Cameroon by 20%.

U-Report data also revealed that more than half of people surveyed in Cameroon heard about vaccination campaigns through community mobilisers, people who are tasked with promoting the benefits of vaccines within their local neighbourhood. This compares with just 5% who reported getting their information through the media, the traditional channel for raising awareness. The government in Cameroon has since switched the main focus of its investment in health education to mobilisers. The U-Report system is now used in 36 countries.

Gavi is also working closely with countries to eliminate bottlenecks or gaps in vaccine supply chains. This includes replacing any faulty or underperforming equipment for storing and transporting vaccines.

Haiti is among many Gavi-supported countries that have traditionally relied on fridges powered by kerosene to store vaccines at the right temperature. However, the combination of a devastating earthquake in 2010 and hurricane Matthew in 2016 severely damaged the country's already weak power network and left vaccine safety hostage to a turbulent fuel market controlled by criminal gangs. Working with our Alliance partners, the government is now replacing these fridges with new solar-powered models.

Similarly, scarce supplies of bottled gas have meant that cold chain managers in the Democratic Republic of the Congo (DRC) were frequently forced to travel great distances to purchase fuel for their fridges, often paying for it out of their own pockets. To address this and improve the security of the cold chain across the country, the government has provided more than 2,500 solar-powered fridges.

By the end of 2016, Gavi had also funded the construction of 26 new primary healthcare centres (PHC) in previously underserved areas of DRC, with 14 more planned for 2017. In places such as Bokuda, in Sud-Ubangi Province, these have helped to not only plug gaps in vaccine coverage but also move towards the long-term goal of universal health coverage. The PHCs create a platform for a range of other health interventions, such as antenatal care, maternal and newborn nutrition, child health services, as well as reproductive health, family planning and counselling services.

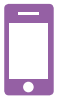
State-of-the-art equipment and primary healthcare centres alone would have little impact on coverage and equity without the right people to operate them. To this end, training is being improved across all Gavi-supported countries. The recent launch of the Regional Centre of Excellence for Vaccines, Immunisation and Health Supply Chain Management, based at the University of Rwanda in Kigali, represents one innovative example in the provision of training courses. Its Strategic Training Executive Programme (STEP) brings together universities from five African countries to mentor supply chain managers.

All these initiatives contribute to achieving Gavi's goals of eliminating gaps in both immunisation coverage and the supply chain. The two are mutually inclusive. It's not enough to just find the missing millions. Once found, we need the right systems in place to ensure that every single missing child receives a full complement of vaccines.

1 in 3

births are not registered

Cameroon



use of U-Report app

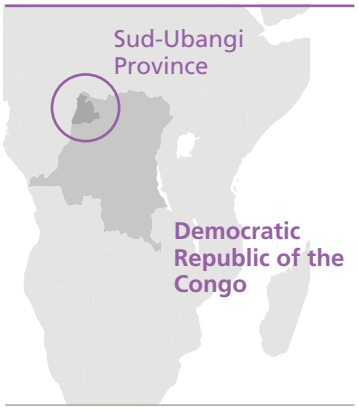
has contributed towards a

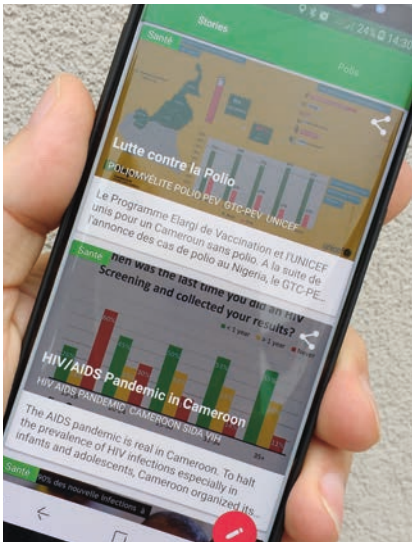
20%

increase

in attendance at vaccination clinics

Sud-Ubangi Province: **26 new primary healthcare centres funded by Gavi**





U-Report: a free app for community participation, developed by UNICEF

Mike Harrison/2017

Immunisation in Pakistan's urban slums: a tale of two megacities

Gavi/2017/Asad Zaidi

Korangi town, Karachi

Lahore and Karachi are two of Pakistan's biggest and fastest-growing cities, together home to tens of millions of people. Yet in Lahore, significantly more children have been vaccinated against infectious diseases. **The reasons why are salutary.**

Lahore

Since 1998, Lahore's population has almost doubled. Despite this, coverage with three doses of diphtheria-tetanus-pertussis-containing vaccine (DTP3) has soared from 24% in 2014 to 76% in 2016. Uniquely in Pakistan, tetanus has been eliminated in the surrounding province of Punjab. The last measles outbreak occurred in 2013.

These successes are due to a combination of strong leadership, collaboration and a concerted effort to locate unvaccinated children. "We've done nothing revolutionary, just improved monitoring and surveillance," says Dr Munir Ahmed, the Expanded Programme on Immunization (EPI)'s Project Director for Punjab Province and the man held responsible by many for the impressive improvement in vaccine coverage.

"We had full support from the highest level. The chief minister gave his full ownership. We brought in IT solutions and built a surveillance dashboard which is available to all the districts and all the partners."

In another ground-breaking step, the EPI's efforts to reach unregistered families living in Lahore's urban slums are now supported by community-based vaccinators and communications staff hired by the Global Polio Eradication Initiative (GPEI). Importantly, the EPI and the GPEI have been brought together under one management team. "That is our strength. No other province has been able to do this," says Dr Ahmed.

Together, the EPI and GPEI are plotting maps of Lahore's urban slums, helping to reveal where unvaccinated children may be living. They are also staffing community vaccination centres, and convincing hesitant parents of the benefits of routine immunisation.

> "If you don't know the population, how can you plan services like vaccination?"
>
> **Dr Muhammad Amjad Ansari**, UNICEF's provincial immunisation officer

Karachi

The population of Karachi, 1,000 km south-west of Lahore, has also grown rapidly, swelled by migrants attracted to the city's bustling port and vibrant economy. The majority have ended up in the city's slum areas, which have doubled in size since 2000. Plagued by violence and criminality, many have become no-go areas for health workers and international non-governmental organisations (NGOs).

In Karachi, the precarious security situation and a lack of accurate population figures have conspired to limit the DTP3 coverage rate to less than 50%. Local vaccinators work in only 125 of Karachi's 986 slums.

"Anyone can survive in Karachi, this city feeds everyone," said Dr Muhammad Amjad Ansari, UNICEF's provincial immunisation officer. "But there is no check on how many people are coming to Karachi. Nobody knows the exact population or the situation these people are in. If you don't know the population, how can you plan services like vaccination?"

However, things are beginning to change and the Karachi EPI team is starting to feel more optimistic. Difficulties local authorities face in tracking unvaccinated children may be overcome by a slum mapping project jointly run by CHIP, a local civil society organisation, and UNICEF, with support from Gavi and the EPI. The approval of a new, long-term funding stream from Gavi has also enabled the Sindh provincial government to double their investment in routine immunisation. Nearly 200 extra staff have already been hired and another 1,000 vaccinators have been requested.

Above all, the appointment of a new, committed EPI project director, Dr Agha Muhammad Ashfaq, is building momentum for improvements to the province's routine immunisation programme.

"We have done a lot over the past two years," said Dr Ashfaq. "I believe the next survey will show that DTP3 coverage has risen to between 60% and 65%." That's up from 45% in 2015.

"There is much improvement. There were big gaps for so many years, with training, with surveillance activities. Now, thanks to Gavi and the great UNICEF team out here, we cannot only stand. We can start to run."

Global health security

The rising risk of epidemics

Events of 2016 underline the need for international action to combat new and emerging infectious disease risks.

UN Photo/Martine Perret

In February 2016, the world faced a new global health crisis. The Zika virus, already established in Brazil, was showing signs of spreading to new continents. More worryingly, the virus, which had previously been thought to cause only mild or no symptoms, was implicated in thousands of cases of congenital defects or nerve damage in babies.

This unexpected public health emergency followed the devastating outbreak of the Ebola virus in west Africa, the largest in recorded history. Between 2014 and 2016, this latest epidemic killed more than 11,000 people and infected more than 28,000.

With each disease demonstrating novel behaviours, either in the way the virus spread or in how it affected people, the global health community was caught off-guard.

Traditionally, Zika was viewed as a cause of relatively benign asymptomatic or mild flu-like disease. The outbreak in Brazil changed this perception as evidence mounted of a link between more widespread infection and a sudden spike in the number of babies born with abnormally small heads, a condition known as microcephaly. Spread by *Aedes aeygpti* mosquitoes, scientists feared the virus may be also sexually transmitted.

Likewise, for decades Ebola has been a relatively low-impact disease, confined to small outbreaks in remote and relatively sparsely populated rural regions in Africa. Previous outbreaks were so aggressive that they usually immobilised and killed their victims before the virus had the opportunity to infect others. But in late 2014, Ebola reached densely-populated urban areas, where it was able to spread extremely rapidly.

As both the Ebola and Zika outbreaks posed a threat to other nations, WHO declared each to be a public health emergency of international concern and called for international responses.

Even by themselves, such outbreaks are a major concern. But when one considers that these recent events may become more common – and

2014–2016

Ebola outbreak:

>28,000
people infected

>11,000
people died

Deadly recipe for disease outbreaks:

Climate change

Mass migration

Population increase

Urbanisation

Gavi/Jiro Ose / © European Union 2016 – European Parliament / UN Photo/Kibae Park / UN Photo/Kibae Park

potentially have even greater catastrophic consequences – then those concerns become much more acute.

There is a very real danger that climate change and the increasing mass movement of people and animals will spread diseases and their hosts to new parts of the world. The combination of population increases, land degradation, conflict and poverty, all of which fuel urban migration (see *A new kind of fragility* → p53), means that viruses will have many more opportunities to proliferate in the world's megacities. This could lead to a resurgence of large-scale urban epidemics of deadly infectious diseases.

The potential for sudden shifts in viral behaviour or transmission makes future public health threats very difficult to predict. This coupled with the predicted increase in the number and scale of urban outbreaks will challenge our ability to respond, placing unprecedented stresses on our lines of defence and stocks of critical vaccine supplies.

Millions at risk

The summer of 2016 provided another serious wake-up call for the global health community, when the worst yellow fever epidemic in 30 years unfolded in Angola. For years, relatively small outbreaks of this mosquito-borne disease had been confined to rural areas of Africa and South America. However, in 2016 an outbreak spread to the Angolan capital, Luanda, where yellow fever vaccine coverage rates were low.

Despite the distribution of more than 13 million doses of yellow fever vaccine, the virus also spread to Kinshasa in the neighbouring Democratic Republic of the Congo (DRC). It took a further 15 million doses to contain the epidemic.

Approximately 90 million doses of yellow fever vaccine are produced globally each year. Emergency stockpiles stand at 6 million doses. To contain the epidemic in Angola and DRC, doses had to be diverted from preventive campaigns, risking outbreaks elsewhere and leaving emergency stocks severely depleted. To make existing supplies go further, in some regions WHO and UNICEF resorted to fractional dosing, administering just one fifth of the normal dose to each person.

Yellow fever already kills up to 60,000 people a year. To date, it has not spread to Asia where more than 1.8 billion unvaccinated people live and any significant outbreak could spell disaster. No one knows why yellow fever has failed to establish in Asia, as the *Aedes aegypti* mosquito – which transmits yellow fever as well as Zika – is highly endemic in the region. In 2016, 11 cases did reach China, but they were contained.

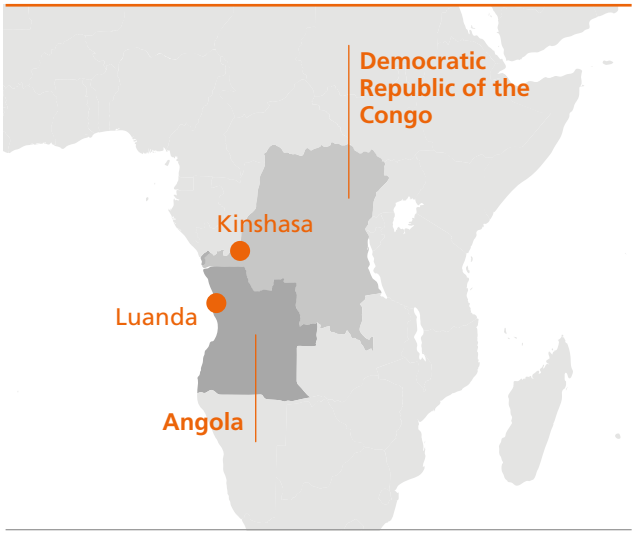
Prevention is everything

The current levels of yellow fever vaccine stocks are not designed to cope with large-scale urban epidemics. But the world is changing. In 1950, two thirds of the world's population lived in rural areas, and one third in urban settings. By 2050, this rural–urban split will likely have reversed. And as the number of megacities increases, each home to 10 million or more people, our emergency stockpiles of vaccines may no longer be adequate.

Yellow fever outbreak response, Angola
Marine Ronz/Monaco Red Cross

Yellow fever outbreak

spread from **Angola** to the **Democratic Republic of the Congo**



These new realities have forced a reassessment both of the risks posed by infectious, transmissible diseases and the existing approach to preventing outbreaks. In December 2015, WHO brought together scientific experts to draw up a list of 11 diseases for which no drugs or vaccines currently exist. The list includes Ebola and other haemorrhagic fevers such as Marburg and Lassa fever, and Zika.

In order to assist the accelerated development of vaccines which protect against the 11 diseases on WHO's list, Gavi has been engaged in the establishment of the Coalition for Epidemic Preparedness and Innovation (CEPI). Founding partners include the Governments of India and Norway, the Bill & Melinda Gates Foundation, Wellcome Trust and the World Economic Forum.

In addition, at the end of 2015, Gavi's Executive Committee approved an Advanced Purchase Commitment, providing US$ 5 million towards the costs of the development of a candidate Ebola vaccine. In return, the Committee asked that 300,000 doses be made available and for the vaccine to be submitted for licensure by the end of 2017. Once approved, a stockpile will be created.

However, increasing emergency stockpiles, including for new vaccines once they have been developed, is only part of the solution. The best way to prevent major disease outbreaks is to stop them happening in the first place by investing in public health infrastructure.

Strong health systems help prevent future outbreaks via pre-emptive vaccination campaigns and supporting high levels of childhood immunisation.

They also improve surveillance and the ability of fragile countries to identify and respond to outbreaks quickly.

The experiences of 2016 have provided some salutary lessons. In Brazil, efficient surveillance by public health workers rapidly established the link between rising numbers of babies born with microcephaly and the spread of the Zika virus. In contrast, in west Africa, where health systems are less well equipped and disease surveillance is more limited, at least three months passed between the first person being infected with Ebola and a laboratory confirming the spread of the virus.

The case is clear. Strengthening routine immunisation systems in the poorest countries not only helps save vulnerable lives, it also makes the world safer by mitigating the growing threats to global health security.

A new kind of fragility

From a global health perspective, Syria's humanitarian crisis has revealed a new kind of fragility that has required a new kind of response.

Since the start of the current conflict in 2011, Syria's immunisation coverage has plummeted to just 42%; it is now the third lowest among Gavi-supported countries, ahead only of Somalia and South Sudan. As coverage falls, the risk of infectious disease outbreaks rises. Cases of polio, measles and meningitis are also likely to become more common.

In December 2016, the Gavi Board responded to the humanitarian crisis in Syria by pledging up to US$ 25 million a year for two years to support emergency vaccination campaigns and to provide cold chain equipment. The aim is to help UNICEF and partners immunise 3 million Syrian children under the age of five.

The challenge will be reaching those 3 million children when more than a third of Syria's remaining population has been uprooted from their homes. Seven years of conflict have displaced more than 11.1 million[a] people. Many have reached humanitarian camps, but an additional 4.9 million are trapped in besieged cities and hard-to-reach areas.

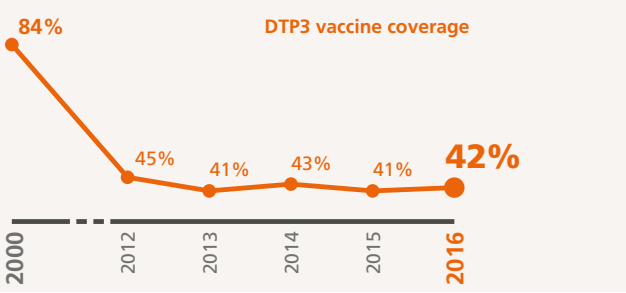
People caught up in conflict are often invisible to humanitarian agencies yet highly vulnerable to infectious disease. Large numbers of unvaccinated people living in close proximity, with limited access to water and sanitation, represent a fertile breeding ground for outbreaks.

This situation is not unique to Syria. In 2008, roughly 60% of all internally displaced persons (IDPs) were located in rural areas with the majority residing in humanitarian camps. Now, nearly 10 years on, roughly the same percentage of IDPs seek refuge in urban areas while just 1% shelter in camps. Far from fleeing cities, most of the world's 65 million displaced appear to be hiding in them.

For global health organisations, this new type of fragility has serious implications. New solutions are needed to reach displaced persons, be they fleeing conflict, persecution, climate change or poverty. To begin to address such issues, Gavi has introduced a new fragile state policy, which provides the Alliance with the flexibility to tailor support to a country's individual needs.

a – Source: United Nations Office for the Coordination of Humanitarian Affairs report, December 2016

Childhood vaccination rates in Syria



Source: WHO/UNICEF Estimates of National Immunization Coverage, 2017

7yrs

of conflict

>11.1m

people displaced

Many have reached humanitarian camps, but an additional **4.9 million** are **trapped in besieged cities and hard-to-reach areas.**

Syria's conflict has displaced an estimated 11.1 million people since 2011.

UNHCR/S. Rich

Africa is in danger of being left behind

By **Jakaya Kikwete**, former President of the United Republic of Tanzania

In the coming years, the risk of urban outbreaks is likely to become the single biggest challenge African leaders will face.

A major shift in the demographic landscape could see a resurgence in outbreaks of preventable infectious disease across Africa. This would not only place all our sustainable development goals (SDGs) in jeopardy, but unless we respond, we could find ourselves watching the rest of the world continue to enjoy growth while our great continent is left behind.

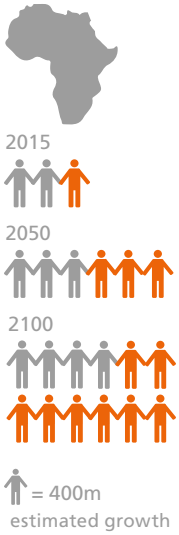
The heart of the problem lies with rapid urbanisation, which brings great opportunities but also profound challenges. This is particularly an issue in Africa, where half the people in urban areas live in slums. As population growth levels off elsewhere, it continues to rise across our continent. The total number of people living in Africa is expected to double by 2050 and quadruple by 2100. Land degradation, rising sea levels, poverty, famine and conflict will drive, draw or displace more of these people out of their homes and into our overcrowded cities.

Squalid slums and poor access to basic health services, especially immunisation, represent a lethal combination, creating conditions ripe for outbreaks. Only 41% of people in urban areas of sub-Saharan Africa have access to sanitation. Vaccination rates within these communities are frequently low. At a time when infectious disease should be at an all-time low, urban epidemics, like Ebola in west Africa and yellow fever in Angola last year, could become so common they will cripple our nations.

The most efficient solution is to achieve and maintain high levels of vaccination, which is both effective and affordable. This not only protects vaccinated individuals, but also prevents the spread of diseases to those not vaccinated. And for diseases for which no vaccine yet exists, health systems put in place to make vaccination programmes possible create surveillance networks that function as early warning systems.

Shifting geography of Africa's population

rural:urban



Yet too often governments do not even know that slum dwellers are missing out on life-saving vaccines. Relatively high vaccination coverage across entire urban areas can mask pockets of extremely low coverage in slums.

The good news is the political will appears to be there. In January 2017, African Heads of State and Government made an historic commitment to advance the goal of universal access to immunisation by endorsing the Addis Declaration on Immunization. But we need to go further.

Health authorities must recognise that the hardest-to-reach communities do not just live in remote villages, but in cities, often right under our noses. Governments urgently need to check their blind spots and develop new ways to identify and reach these people – or face being left behind with dire consequences.

Annexes

1 Contributions to Gavi

as of 31 December 2016 (US$ millions)

Cash received by Gavi

Donors	2016	Total 2000–2016
Australia	37.6	308.4
Canada	77.1	348.4
China	2.0	2.0
Denmark		45.7
European Commission (EC)	14.4	107.1
France	134.5	255.4
Germany	115.2	339.5
India	1.0	4.0
Ireland	3.2	48.5
Italy	4.3	4.3
Japan	18.8	72.3
Kingdom of Saudi Arabia	2.5	2.5
Luxembourg	0.9	12.7
Netherlands	38.3	402.9
Norway	139.7	1,277.4
Republic of Korea	4.0	11.0
Spain		43.2
State of Qatar	2.0	2.0
Sultanate of Oman		0.6
Sweden	36.4	413.8
Switzerland	1.6	1.6
United Kingdom	304.8	1,927.2
United States of America	235.0	1,614.5
Governments and the European Commission total:	**1,173.3**	**7,245.0**
Alwaleed Philanthropies	0.2	0.2
Bill & Melinda Gates Foundation	280.0	2,779.4
His Highness Sheikh Mohammed bin Zayed Al Nahyan		33.0
OPEC Fund for International Development (OFID)		1.1
Subtotal:	280.2	2,813.7
The Children's Investment Fund Foundation (UK)		31.8
Comic Relief[a]	4.7	25.5
ELMA Vaccines and Immunization Foundation		2.0
International Federation of Pharmaceutical Wholesalers (IFPW)	0.1	0.1
"la Caixa" Foundation	2.3	29.1
LDS Charities	1.2	8.2
Lions Clubs International Foundation (LCIF)	5.5	20.5
Unilever[b]	1.0	1.0
Other private donors[c]	0.6	29.5
Subtotal:	15.5	147.8
Foundations, organisations and corporations total:	**295.7**	**2,961.5**
Subtotal:	**1,469.0**	**10,206.5**
AMC proceeds[d]	107.1	1,076.8
IFFIm proceeds[e]	100.0	2,575.7
Total:	**1,676.1**	**13,859.0**

notes:

a – Of the amounts shown contributed from Comic Relief, the following were received from Red Nose Day-USA, a Comic Relief programme incorporated in the USA: direct contributions of US$ 1.05m in 2015 and US$ 100,000 in 2016 and a Matching Fund contribution of US$ 2.0m in 2016.

b – Unilever provides resources to Gavi through a leveraged partnership project.

c – Includes contributions from: A&A Foundation (US$ 1.5m), Absolute Return for Kids (US$ 1.6m), Anglo American plc (US$ 3.0m), Dutch Postcode Lottery (US$ 3.2m) and JP Morgan (US$ 2.4m), in addition to other private sector donors (some contributions were initially paid to the Gavi Campaign).

d – Cash transfers from the World Bank to Gavi.

e – Cash disbursements from the World Bank to the GFA (2006–2012) and to Gavi (2013–2016).

Cash received by Gavi

in support of Gavi for its role in supporting the Polio Eradication and Endgame Strategic Plan (2013–2018)

	2016	Total
Norway	23.0	78.0
United Kingdom	18.6	23.3
Governments total:	**41.6**	**101.3**
Bill & Melinda Gates Foundation	51.6	156.6
Private contributions total:	**51.6**	**156.6**
Total:	**93.2**	**257.9**

Innovative finance mechanisms: AMC and IFFIm

AMC commitments		Total 2009–2020
Italy		635.0
United Kingdom		485.0
Canada		200.0
Russian Federation		80.0
Bill & Melinda Gates Foundation		50.0
Norway		50.0
Total:		**1,500.0**

IFFIm commitments[a]	Amount (in millions)[b]	Amount (equivalent in US$ millions)[c]
United Kingdom	£1,616.3	2,789.7
France	€1,376.0	1,806.8
Italy	€491.6	601.2
Norway[d]	US$ 26.0 NOK 1,476.0	249.7
Australia	A$ 286.1	275.0
Spain	€186.5	225.9
Netherlands	€138.0	169.7
Sweden	SEK 270.6	35.0
South Africa	US$ 19.7	18.5
Total:		**6,171.6**

notes:

a – Brazil made a new pledge to IFFIm in 2011. Negotiations are currently under way to formally sign this grant agreement.

b – Amount (to be) paid, in the currency of payment.

c – Estimated net amount of funding in US$ equivalent based on market conditions as at 31 December 2016. These figures are expected to change based on prevailing market conditions.

d – The Kingdom of Norway granted an initial commitment in US$ and a further commitment in Norwegian kroner.

Country co-financing commitments

	2016	2000–2015
Co-financing[a]	133.0	513.0
Total:	**133.0**	**513.0**

notes:

a – Includes voluntary payments prior to the co-financing policy (2000–2007) and co-financed payments since the implementation of the co-financing policy (2008–2016).

Source: Gavi, the Vaccine Alliance, 2017

2 Governance structure

as of 31 December 2016

The Gavi Board

There are 28 seats on the Board:

- 4 permanent members representing UNICEF, WHO, the World Bank, and the Bill & Melinda Gates Foundation
- 5 representing developing country governments
- 5 representing donor country governments
- 1 member each representing civil society organisations, the vaccine industry in developing countries, the vaccine industry in industrialised countries, and research and technical health institutes (4 in total)
- 9 independent individuals with a range of expertise
- The CEO of Gavi (non-voting)

Independent members
Ngozi Okonjo-Iweala, *Board Chair*
Helen Rees
David Sidwell
William Roedy
Margaret (Peggy) Hamburg
Yifei Li
Richard Sezibera
Gunilla Carlsson
Stephen Zinser

Institutions

WHO
Flavia Bustreo, *Vice Chair of the Board*

UNICEF
Shanelle Hall

The World Bank
Tim Evans

The Bill & Melinda Gates Foundation
Orin Levine

Constituencies
Developing country government representatives

Constituency 1
Bahar Idriss Abu Garda (Sudan)

Constituency 2
Myint Htwe (Myanmar)

Constituency 3
Edna Yolani Batres (Honduras)

Constituency 4
Raymonde Goudou Coffie (Côte d'Ivoire)

Constituency 5
Ummy Ally Mwalimu (United Republic of Tanzania)

Donor government representatives

USA/Australia/Japan/Republic of Korea
Irene Koek (United States of America)

United Kingdom/Qatar
Daniel Graymore (United Kingdom)

Canada/Italy/Spain
Angela Santoni (Italy)

Germany/France/Luxembourg/European Commission/Ireland
Ingrid-Gabriela Hoven (Germany)

Norway/Netherlands/Sweden
Eivind Homme (Norway)

Industrialised country vaccine industry
David Loew (Sanofi Pasteur)

Developing country vaccine industry
Adar Poonawalla (Serum Institute of India Limited)

Civil society organisations
Naveen Thacker (Indian Academy of Pediatrics)

Research and technical health institutes
Samba O. Sow (Center for Vaccine Development, Mali)

Non-voting member
Seth Berkley, *CEO Gavi, the Vaccine Alliance*

Other Gavi-related governance structures

The International Finance Facility for Immunisation (IFFIm) Company

René Karsenti, *Chair*
President, the International Capital Market Association (ICMA)

Didier Cherpitel
Former Secretary General, International Federation of Red Cross and Red Crescent Societies

Cyrus Ardalan
Chairman, Oak North Bank

Marcus Fedder
Former Vice Chair, TD Securities

Christopher Egerton-Warburton
Partner, Lion's Head Capital Partners

Fatimatou Zahra Diop
Former Secretary General, Central Bank of West African States (BCEAO)

Doris Herrera-Pol
Former Global Head of Capital Markets, the World Bank

Gavi Campaign[a]

Daniel Schwartz, *Chair*
CEO, Porticus

Paul O'Connell
President and Founding Member, FDO Partners, LLC

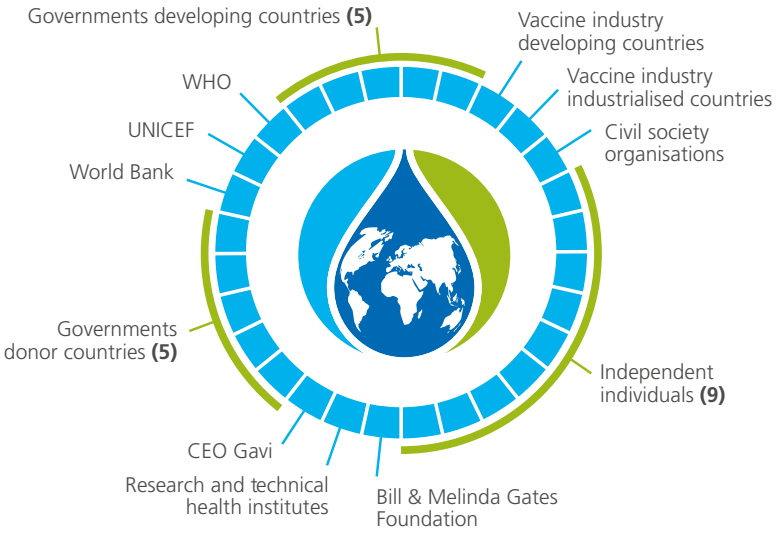
Steven Altschuler
President and CEO, the Children's Hospital of Philadelphia

Seth Berkley (Honorary)
CEO, Gavi, the Vaccine Alliance

notes:

a – The Gavi Campaign was dissolved, effective 30 December, 2016.

Governance structure



Source: Gavi, the Vaccine Alliance, 2017

3 Contributions pledged to Gavi[a]

includes pledges as of 31 December 2016 (US$ millions)

Donors	2000–2010						2011–2015						2016–2020					
	Direct contribution	Matching Fund	AMC	IFFIm[b]	Total	As % of grand total[c]	Direct contribution	Matching Fund	AMC	IFFIm[b]	Total	As % of grand total[c]	Direct contribution	Matching Fund	AMC	IFFIm[d]	Total	As % of grand total[c]
Australia	29				29	<1%	242			28	270	4%	158			98	256	3%
Brazil																4	4	<1%
Canada	152		125		277	7%	120		75		194	3%	409				409	4%
China													5				5	<1%
Denmark	32				32	<1%	13				13	<1%						
European Commission (EC)	58				58	1%	35				35	<1%	236				236	3%
France[e]	19			192	211	5%	127			306	433	6%	109			478	587	6%
Germany	22				22	<1%	186				186	3%	673				673	7%
India							3				3	<1%	1				1	<1%
Ireland	30				30	<1%	15				15	<1%	17				17	<1%
Italy			158	107	265	6%			266	152	418	6%	113		211	167	491	5%
Japan							54				54	<1%	95				95	1%
Kingdom of Saudi Arabia													23				23	<1%
Luxembourg	6				6	<1%	5				5	<1%	5				5	<1%
Netherlands[f]	216			14	230	5%	149			72	220	3%	200	11		84	296	3%
Norway	526		2	41	569	14%	612		48	94	754	10%	805			115	920	10%
Principality of Monaco													0.6				0.6	<1%
Republic of Korea	0.4				0.4	<1%	7				7	<1%	8				8	<1%
Russian Federation			8		8	<1%			40		40	<1%			32		32	<1%
South Africa				4	4	<1%				4	4	<1%				5	5	<1%
Spain	43			58	101	2%				51	51	<1%				57	57	<1%
State of Qatar													10				10	<1%
Sultanate of Oman													3				3	<1%
Sweden	123			10	132	3%	255			11	266	4%	185			12	197	2%
Switzerland													2				2	<1%
United Kingdom[g]	137		22	153	313	7%	1,424	61	317	475	2,277	31%	1,379		146	979	2,504	27%
United States of America[h]	647				647	15%	733				733	10%	800				800	9%
Governments and the European Commission total:	**2,039**		**316**	**578**	**2,933**	**70%**	**3,980**	**61**	**746**	**1,192**	**5,979**	**80%**	**5,235**	**11**	**388**	**2,000**	**7,634**	**83%**
Alwaleed Philanthropies													1				1	<1%
Bill & Melinda Gates Foundation[i]	1,213		20		1,233	29%	1,237	50	30		1,317	18%	1,475	75			1,550	17%
His Highness Sheikh Mohammed bin Zayed Al Nahyan							33				33	<1%						
OPEC Fund for International Development (OFID)							1				1	<1%						
Subtotal:	**1,213**		**20**		**1,233**	**29%**	**1,271**	**50**	**30**		**1,351**	**18%**	**1,476**	**75**			**1,551**	**17%**
The Children's Investment Fund Foundation (UK)								32			32	<1%		0.03			0.03	<1%
Comic Relief[j]							1	20			21	<1%	0.1	6			6.1	<1%
ELMA Vaccines and Immunization Foundation								2			2	<1%						
Girl Effect[k]														4			4	<1%
International Federation of Pharmaceutical Wholesalers (IFPW)														1			1	<1%
"la Caixa" Foundation	16				16	<1%		11			11	<1%		2			2	<1%
LDS Charities								7			7	<1%	1				1	<1%
Lions Clubs International Foundation (LCIF)								15			15	<1%		15			15	<1%
Unilever[l]														3			3	<1%
Other private donors[m]	12				12	<1%	5	12			17	<1%	4				4	<1%
Subtotal:	**28**				**28**	**<1%**	**6**	**98**			**105**	**1%**	**6**	**32**			**37**	**<1%**
Foundations, organisations and corporations total[n]:	**1,241**		**20**		**1,261**	**30%**	**1,277**	**148**	**30**		**1,455**	**20%**	**1,482**	**107**			**1,588**	**17%**
Grand total:	**3,280**		**336**	**578**	**4,194**	**100%**	**5,257**	**209**	**776**	**1,192**	**7,434**	**100%**	**6,717**	**118**	**388**	**2,000**	**9,223**	**100%**

2021–2036						Donors
Direct contribution	Matching Fund	AMC	IFFIm[d]	Total	As % of grand total[c]	
			149	149	6%	Australia
			16	16	<1%	Brazil
						Canada
						China
						Denmark
						European Commission (EC)
			831	831	34%	France[e]
						Germany
						India
						Ireland
			175	175	7%	Italy
						Japan
3				3	<1%	Kingdom of Saudi Arabia
						Luxembourg
						Netherlands[f]
						Norway
						Principality of Monaco
						Republic of Korea
						Russian Federation
			6	6	<1%	South Africa
			60	60	2%	Spain
						State of Qatar
						Sultanate of Oman
			3	3	<1%	Sweden
						Switzerland
			1,183	1,183	49%	United Kingdom[g]
						United States of America[h]
3			**2,422**	**2,425**	**100%**	**Governments and the European Commission total**
						Alwaleed Philanthropies
						Bill & Melinda Gates Foundation[i]
						His Highness Sheikh Mohammed bin Zayed Al Nahyan
						OPEC Fund for International Development (OFID)
						Subtotal
						The Children's Investment Fund Foundation (UK)
						Comic Relief[j]
						ELMA Vaccines and Immunization Foundation
						Girl Effect[k]
						International Federation of Pharmaceutical Wholesalers (IFPW)
						"la Caixa" Foundation
						LDS Charities
						Lions Clubs International Foundation (LCIF)
						Unilever[l]
						Other private donors[m]
						Subtotal
						Foundations, organisations and corporations total[n]
3			**2,422**	**2,425**	**100%**	**Grand total**

notes:

a – Some contributions may be received by Gavi in years different to those for which the pledges were made.

b – A number of the "US$ equivalent values" of actual IFFIm donor contributions received between 2006 and 2015 have been updated to reflect information received from the IBRD at the end of 2016. The total value of changes made is +US$ 4.5 million representing 0.25% of the total contributions received of US$ 1.77 billion during this period; changes at country level are also relatively minor.

c – The percentages in this column pertain to each donor's share of the total amount pledged for the period, rather than each donor's share of the expected need for the period.

d – Future IFFIm proceeds from new pledges made at the Berlin pledging conference are indicative and are based on certain assumptions including future interest rates and foreign exchange rates generated from financial market data, and donor payment schedules. These assumptions may differ from conditions prevailing at the time of grant and legal agreement signing, which may result in different projected and realised IFFIm proceeds.

e – The Agence Française de Développement (AFD, French Development Agency), Gavi, the Vaccine Alliance and the Bill & Melinda Gates Foundation signed an innovative partnership agreement worth €100 million which will contribute to funding in 2016–2020 period. The partnership aims to increase vaccine coverage in six French-speaking countries of the Sahel region: Burkina Faso, Chad, Mali, Mauritania, the Niger, and Senegal.

f – Matching Fund (the Netherlands): of the €10m received or to be received, a total of €2.6m (equiv. US$ 3m) is yet to be matched by other/private sector donor contributions, as at 31 December 2016.

g – Matching Fund (UK): of the £38.1m (equiv. US$ 61m) received, all funding has been matched by other/private sector donor contributions, as at 31 December 2016.

h – The US pledge of US$ 1.0 billion announced at the Berlin pledging conference is for the period 2015–2018 and includes US$ 800m for 2016–2018.

i – Matching Fund (Bill & Melinda Gates Foundation): of the US$ 125m received or to be received, a total of US$ 59.3m is yet to be matched by other/private sector donor contributions, as at 31 December 2016.

j – Of the amounts shown contributed from Comic Relief, the following were received from Red Nose Day-USA, a Comic Relief programme incorporated in the USA: direct contributions of US$ 1.05m in 2015 and US$ 100,000 in 2016 and a Matching Fund contribution of US$ 2.0m in 2016 (an additional US$ 0.5m is expected to be contributed by 2018).

k – Girl Effect is an investor and implementer in Gavi's mission to drive increased uptake of the HPV vaccine.

l – Unilever provides resources to Gavi through a leveraged partnership project.

m – Includes contributions from: A&A Foundation (US$ 1.5m), Absolute Return for Kids (US$ 1.6m), Anglo American plc (US$ 3.0m), Dutch Postcode Lottery (US$ 3.2m) and JP Morgan (US$ 2.4m), in addition to other private sector donors.

n – In-kind contributions are not included in the foundations, organisations and corporations total. As of 31 December 2016, the following organisations have contributed (or pledged) in-kind contributions: Girl Effect, IFPW, Lions Clubs International Foundation, Unilever, UPS and Vodafone.

General notes regarding reporting of US$ equivalents (for contributions made to Gavi in currencies other than US$):

Direct contributions (including Matching Fund)

Received contributions: non-US$ contributions for 2000–2016 are expressed in US$ equivalents using the exchange rates on the dates of receipt. For 2014, 2015 and 2016, where contributions were hedged to mitigate currency risk exposure, these have been expressed using the rates applicable to the hedge agreement.

Future contributions: non-US$ direct contribution and Matching Fund pledges for years 2017 and beyond are expressed in US$ equivalents using the applicable "forecast rates" from Bloomberg as at 31 December 2016 or using the rates applicable to any hedge agreement in place.

IFFIm contributions

Received contributions: non-US$ contributions for 2000–2016 are expressed in US$ equivalents as confirmed by the IBRD (World Bank).

Future contributions: non-US$ contributions are expressed in US$ equivalents as follows:
> Where the contribution agreement has been signed: contributions are expressed in US$ equivalents using the exchange rates at the time of signing the respective donor grant agreements.
> Where the contribution agreement has not yet been signed: non-US$ pledges for years 2017 and beyond are expressed in US$ equivalents using the applicable "forecast rates" from Bloomberg as at 31 December 2016.
> These contributions have not been reduced by a notional 3% provision to allow for any potential reduction arising from the High Level Financing Condition of the IFFIm Finance Framework Agreement.

Source: Gavi, the Vaccine Alliance, 2017

4 Commitments for country programmes 2000–2021[a]

as of 31 December 2016 (US$ millions)

Country	New and underused vaccine support	Health system strengthening support	Immunisation services support	Operational support	Injection safety support	Vaccine introduction grant	Civil society organisation support[b]	Human papillomavirus vaccine demonstration cash support	Product switch grant	Transition grant	Ebola EPI Recovery grant	Cold chain equipment optimisation platform	Total
Afghanistan	219.0	92.0	14.0	3.6	1.7	2.5	3.6		0.4				336.8
Albania	2.1				0.1	0.3							2.5
Angola	94.9	4.0	3.0		1.3	2.6				1.5			107.2
Armenia	4.2	0.3	0.1		0.1	0.5			0.01	0.6			5.7
Azerbaijan	11.8	0.6	0.7		0.2	0.3							13.6
Bangladesh	478.1	47.6	23.3	33.6	6.1	8.3		0.4					597.4
Benin	95.2	9.3	0.2	1.7	0.4	0.5		0.2					107.4
Bhutan	1.1	0.2			0.03	0.3				0.2			1.9
Bolivia (Plurinational State of)	25.7	5.4	0.3		0.9	0.5				1.2			34.0
Bosnia and Herzegovina	2.1				0.1	0.1							2.3
Burkina Faso	221.4	9.5	9.8	7.8	0.9	3.6		0.2					253.1
Burundi	88.5	24.6	3.7	2.6	0.4	1.6	0.5	0.2	0.1				122.2
Cambodia	55.8	28.4	2.0	5.9	0.6	1.5		0.2					94.4
Cameroon	188.8	30.4	8.0	8.3	1.0	2.9		0.2	0.3				239.9
Central African Republic	24.9	3.2	1.9	2.3	0.1	0.7							33.1
Chad	48.6	5.0	2.6	8.9	0.4	1.2							66.8
China	22.0				15.9	0.8							38.7
Comoros	1.5	1.8	0.1		0.04	0.3							3.7
Congo	19.5	4.4	1.7		0.2	0.6				0.4			26.9
Côte d'Ivoire	165.5	8.2	8.9	5.5	1.6	2.3		0.2	0.2				192.5
Cuba	0.9	2.4			0.4	0.1				0.2			3.9
Democratic People's Republic of Korea	23.0	33.0	2.2		0.7	0.6							59.6
Democratic Republic of the Congo	585.1	201.8	25.8	31.9	2.7	5.1	9.8		0.4				862.6
Djibouti	6.0	3.4	0.2		0.03	0.4							10.0
Eritrea	15.7	9.0	0.4		0.1	0.6			0.03				25.9
Ethiopia	739.4	218.5	23.4	53.2	2.7	6.0	3.3	0.2					1,046.7
Gambia	23.2	4.6	0.7	1.2	0.1	1.1		0.2	0.03				31.2
Georgia	4.2	0.4	0.1		0.1	0.4				0.6			5.8
Ghana	232.8	27.7	5.3	10.0	0.9	3.4	0.8	0.2					281.1
Guinea	34.8	2.1	2.9	2.3	0.3	0.6					6.1		49.2
Guinea-Bissau	8.1	1.4	0.5	0.8	0.1	0.5							11.4
Guyana	3.5		0.1			0.4				0.4			4.3
Haiti	37.3	3.3	1.3		0.4	1.0						5.9	49.1
Honduras	30.7	8.0	0.1		0.5	0.6				0.4			40.3
India	615.4	107.0			18.4	0.4							741.2
Indonesia	113.3	24.8	12.6		9.9	11.6	3.9	0.2					176.3
Kenya	397.8	28.7	6.4	12.3	1.1	4.3		0.3					451.0
Kiribati	0.3					0.3							0.6
Kyrgyzstan	15.3	5.8	0.8		0.2	0.4							22.6
Lao People's Democratic Republic	22.4	9.7	1.4	1.0	0.3	0.8		0.2					35.9
Lesotho	5.5	2.7	0.1	0.6	0.1	0.6							9.6
Liberia	33.1	6.9	2.2		0.4	0.6		0.2			2.8		46.2
Madagascar	150.7	27.6	4.1		0.6	2.3		0.2					185.3
Malawi	223.2	11.0	2.0	5.0	0.7	2.6		0.2					244.7
Mali	157.7	24.7	5.0	2.2	0.7	1.8		0.2					192.3
Mauritania	30.9	2.4	0.7	1.0	0.2	0.6							35.8
Mongolia	5.7	0.5	0.5		0.1	0.2							7.0
Mozambique	160.5	25.0	1.7		0.8	3.8		0.2	0.3				192.2
Myanmar	158.8	84.8	7.7	20.5	2.1	6.5							280.4

Country	New and underused vaccine support	Health system strengthening support	Immunisation services support	Operational support	Injection safety support	Vaccine introduction grant	Civil society organisation support[b]	Human papillomavirus vaccine demonstration cash support	Product switch grant	Transition grant	Ebola EPI Recovery grant	Cold chain equipment optimisation platform	Total
Nepal	79.7	59.7	3.3	2.4	1.2	2.6		0.2					149.1
Nicaragua	33.2	3.6	0.3		0.5	0.3				0.8			38.6
Niger	168.2	43.6	7.4	3.8	0.9	2.8		0.3	0.2				227.3
Nigeria	760.4	42.5	47.3	101.5	12.6	15.9							980.2
Pakistan	916.3	107.5	48.8	21.7	7.4	15.6	7.7						1,124.9
Papua New Guinea	25.1	3.1	0.4	2.0		0.9							31.5
Republic of Moldova	4.5				0.1	0.5				0.8			5.9
Rwanda	116.9	17.9	3.0	3.3	0.4	1.4							142.8
São Tomé and Príncipe	1.3	3.0	0.1	0.04	0.02	0.7		0.2					5.3
Senegal	94.3	17.0	2.6	6.7	0.6	2.2		0.2					123.6
Sierra Leone	48.6	1.2	2.7		0.3	0.8		0.2			4.3		58.0
Solomon Islands	2.7	2.0		0.1		0.3		0.2					5.4
Somalia	16.9	13.5	1.2		0.2	0.7							32.5
South Sudan	13.1	34.4	5.9	3.5	0.2	0.7							57.8
Sri Lanka	21.6	4.5			0.7	0.5				0.1			27.4
Sudan	288.6	52.6	11.2	37.8	1.3	3.9							395.4
Tajikistan	22.4	11.0	2.4		0.3	0.6							36.7
Timor-Leste	1.1	3.1				0.2				0.3			4.7
Togo	55.4	4.9	3.0	1.7	0.3	0.8		0.2					66.4
Turkmenistan	1.0				0.2	0.1							1.2
Uganda	414.3	19.2	9.2	4.6	1.2	5.6							454.1
Ukraine	2.7				0.7	0.1							3.5
United Republic of Tanzania	434.0	15.9	11.4	12.8	1.0	8.5		0.2					483.9
Uzbekistan	67.6	17.2	0.0		0.7	2.4				0.2			88.2
Vietnam	132.0	40.7	1.9	23.1	3.2	3.2				0.2			204.4
Yemen	195.8	24.0	5.0	7.5	1.2	2.1							235.6
Zambia	123.8	11.6	3.9	4.5	0.7	2.9							147.4
Zimbabwe	94.1	6.5	1.6	3.4	0.9	1.7		0.2					108.6
Grand total:	**9,741.5**	**1,712.6**	**361.2**	**462.9**	**113.5**	**167.2**	**29.4**	**5.7**	**2.0**	**7.9**	**13.2**	**5.9**	**12,622.9**

notes:

a – Commitments represent endorsements of multi-year programme budgets made by the Gavi Board (or Executive Committee) or the Gavi CEO. These endorsements do not constitute a liability to pay but instead send a positive signal that Gavi intends to fund a programme over its entire life span subject to performance and availability of funds.

b – Civil society organisation support Type A not included as these approvals are not country specific.

Values have been adjusted to reflect the final actual amount disbursed.

Source: Gavi, the Vaccine Alliance, 2017

5 Board approvals for country programme expenditure 2000–2017[a]

as of 31 December 2016 (US$ millions)

Country	New and underused vaccine support	Health system strengthening support	Immunisation services support	Operational support	Injection safety support	Vaccine introduction grant	Civil society organisation support[b]	Human papillomavirus vaccine demonstration cash support	Product switch grant	Transition grant	Ebola EPI Recovery grant	Cold chain equipment optimisation platform	Total
Afghanistan	172.4	72.4	14.0	3.6	1.7	2.5	3.6		0.4				270.6
Albania	2.1				0.1	0.3							2.5
Angola	94.9	4.0	3.0		1.3	2.6				1.2			106.9
Armenia	4.2	0.3	0.1		0.1	0.5			0.01	0.6			5.7
Azerbaijan	11.8	0.6	0.7		0.2	0.3							13.6
Bangladesh	444.2	36.6	23.3	33.6	6.1	8.3		0.3					552.5
Benin	89.1	6.1	0.2	1.7	0.4	0.5		0.2					98.1
Bhutan	1.1	0.2			0.03	0.3				0.2			1.9
Bolivia (Plurinational State of)	25.7	5.4	0.3		0.9	0.5				1.2			34.0
Bosnia and Herzegovina	2.1				0.1	0.1							2.3
Burkina Faso	158.1	9.5	9.8	7.8	0.9	3.6		0.1					189.8
Burundi	88.5	24.6	3.7	2.6	0.4	1.6	0.5	0.2	0.1				122.2
Cambodia	50.0	18.1	1.8	5.9	0.6	1.5		0.2					78.0
Cameroon	158.2	12.5	8.0	8.3	1.0	2.9		0.2	0.3				191.4
Central African Republic	24.9	3.2	1.6	2.3	0.1	0.7							32.8
Chad	47.6	5.0	2.6	8.9	0.4	1.2							65.8
China	22.0				15.9	0.8							38.7
Comoros	1.4	1.8	0.1		0.04	0.3							3.6
Congo	19.5	4.4	1.7		0.2	0.6				0.4			26.8
Côte d'Ivoire	96.2	8.2	8.9	5.5	1.6	2.3		0.2	0.2				123.2
Cuba	0.9	2.4			0.4	0.1				0.2			3.9
Democratic People's Republic of Korea	23.0	23.1	2.2		0.7	0.6							49.7
Democratic Republic of the Congo	480.1	168.1	25.8	31.9	2.7	5.1	9.8		0.4				723.8
Djibouti	4.3	1.4	0.2		0.03	0.4							6.3
Eritrea	15.7	5.2	0.4		0.1	0.6			0.03				22.1
Ethiopia	648.9	172.4	23.4	53.2	2.7	6.0	3.3	0.2					910.2
Gambia	23.2	1.1	0.7	1.2	0.1	1.1		0.2	0.03				27.6
Georgia	4.2	0.4	0.1		0.1	0.4				0.6			5.8
Ghana	224.3	20.8	5.3	10.0	0.9	3.4	0.8	0.2					265.7
Guinea	29.4	2.1	2.9	2.3	0.3	0.6					6.1		43.8
Guinea-Bissau	8.1	1.4	0.5	0.8	0.1	0.5							11.4
Guyana	3.5		0.1			0.4				0.4			4.3
Haiti	16.4	3.3	1.3		0.4	1.0						1.6	23.9
Honduras	30.7	8.0	0.1		0.5	0.6				0.4			40.3
India	463.3	107.0			18.4	0.4							589.2
Indonesia	105.1	24.8	12.6		9.9	11.6	3.9	0.2					168.1
Kenya	397.8	17.6	6.4	12.3	1.1	4.3		0.3					439.9
Kiribati	0.3					0.3							0.6
Kyrgyzstan	15.3	3.1	0.8		0.2	0.4							19.9
Lao People's Democratic Republic	22.4	8.4	1.4	1.0	0.3	0.8		0.2					34.6
Lesotho	5.5	1.4	0.1	0.6	0.1	0.6							8.4
Liberia	21.9	6.9	2.2		0.4	0.6		0.2			2.8		35.0
Madagascar	145.1	17.2	4.1		0.6	2.3		0.2					169.4
Malawi	180.9	11.0	2.0	5.0	0.7	2.6		0.2					202.5
Mali	157.7	13.2	5.0	2.2	0.7	1.8		0.2					180.7
Mauritania	21.1	2.4	0.7	1.0	0.2	0.6							26.0
Mongolia	5.1	0.5	0.5		0.1	0.2							6.4
Mozambique	155.3	15.5	1.7		0.8	3.8		0.2	0.3				177.5
Myanmar	103.5	52.8	7.7	20.5	2.1	6.5							193.0

Country	New and underused vaccine support	Health system strengthening support	Immunisation services support	Operational support	Injection safety support	Vaccine introduction grant	Civil society organisation support[b]	Human papillomavirus vaccine demonstration cash support	Product switch grant	Transition grant	Ebola EPI Recovery grant	Cold chain equipment optimisation platform	Total
Nepal	79.7	38.8	3.3	2.4	1.2	2.6		0.2					128.2
Nicaragua	30.6	3.6	0.3		0.5	0.3				0.5			35.7
Niger	112.3	28.4	7.4	3.8	0.9	2.8		0.2	0.2				156.1
Nigeria	528.2	42.5	47.3	101.5	12.6	15.9							748.0
Pakistan	822.6	82.5	48.8	21.7	7.4	15.6	7.7						1,006.3
Papua New Guinea	25.1	1.1	0.4	2.0		0.9							29.6
Republic of Moldova	4.5				0.1	0.5				0.8			5.9
Rwanda	116.9	15.9	3.0	3.3	0.4	1.4							140.8
São Tomé and Príncipe	1.2	1.4	0.1	0.04	0.02	0.7		0.1					3.6
Senegal	84.5	11.9	2.6	6.7	0.6	2.2		0.1					108.7
Sierra Leone	48.6	1.2	2.7		0.3	0.8		0.2			4.3		58.0
Solomon Islands	2.2	1.0		0.1		0.3		0.1					3.8
Somalia	11.5	13.5	1.2		0.2	0.7							27.2
South Sudan	13.1	18.5	5.9	3.5	0.2	0.7							41.8
Sri Lanka	21.6	4.5			0.7	0.5				0.1			27.4
Sudan	264.5	39.9	11.2	26.7	1.3	3.9							347.6
Tajikistan	21.2	5.5	2.4		0.3	0.6							30.0
Timor-Leste	1.1	1.5				0.2				0.3			3.1
Togo	38.0	3.6	3.0	1.7	0.3	0.8		0.2					47.8
Turkmenistan	1.0				0.2	0.1							1.2
Uganda	293.9	19.2	9.2	4.6	1.2	5.6							333.7
Ukraine	2.7				0.7	0.1							3.5
United Republic of Tanzania	317.6	13.3	11.4	12.8	1.0	8.5		0.2					364.9
Uzbekistan	59.8	7.4			0.7	2.4				0.2			70.5
Vietnam	128.3	40.7	1.9	23.1	3.2	3.2				0.2			200.6
Yemen	193.6	20.6	5.0	7.5	1.2	2.1							230.1
Zambia	123.8	8.3	3.9	4.5	0.7	2.9							144.1
Zimbabwe	77.2	6.5	1.6	3.4	0.9	1.7		0.2					91.6
Grand total:	**8,252.5**	**1,335.8**	**360.7**	**451.8**	**113.5**	**167.2**	**29.4**	**5.2**	**2.0**	**7.3**	**13.2**	**1.6**	**10,740.3**

notes:

a – Approvals are a subset of commitments that have been approved by the Gavi Board or the Gavi CEO. Only such approved amounts can be disbursed subject to all other conditions for disbursement being met by the countries. Approvals are typically granted for the current year and one further year.

b – Civil society organisation support Type A not included as these approvals are not country specific.

Approvals for Gavi Phase I (2000–2006) have been adjusted to reflect the final actual amount disbursed.

Approvals totalled US$ 8,165 million to the end of 2015, US$ 1,290 million in 2016 and US$ 1,285 million in 2017.

Source: Gavi, the Vaccine Alliance, 2017

6 Commitments and Board approvals for investment cases

as of 31 December 2016 (US$ millions)

Commitments for investment cases 2003–2018[a]

Programme	Vaccines	Operational costs	Total
Measles	60.4	115.6	176.0
Measles-Rubella Initiative	22.0	33.0	55.0
Meningitis	74.2	28.9	103.1
Maternal and Neonatal Tetanus	16.3	45.3	61.6
Polio	143.3	48.0	191.3
Yellow fever	137.3	45.1	182.5
Cholera	94.5	20.0	114.5
Ebola	5.0	0.0	5.0
Other	5.0	0.5	5.5
Total:	**558.0**	**336.4**	**894.5**

Board approvals for investment case expenditure 2003–2016[b]

Programme	Vaccines	Operational costs	Total
Measles	60.4	115.6	176.0
Measles-Rubella Initiative	18.0	27.0	45.0
Meningitis	60.5	25.6	86.1
Maternal and Neonatal Tetanus	16.3	45.3	61.6
Polio	143.3	48.0	191.3
Yellow fever	137.3	45.1	182.5
Cholera	38.9		38.9
Ebola	5.0		5.0
Other	5.0	0.5	5.5
Total:	**484.7**	**307.2**	**791.9**

notes:

a – Commitments represent endorsements of multi-year programme budgets made by the Gavi Board (or Executive Committee) or the Gavi CEO. These endorsements do not constitute a liability to pay but instead send a positive signal that Gavi intends to fund a programme over its entire life span subject to performance and availability of funds.

b – Approvals are a subset of commitments that have been approved by the Board or the Gavi CEO. Only such approved amounts can be disbursed subject to all other conditions for disbursement being met by the countries. Approvals are typically granted for the current year and one further year.

Source: Gavi, the Vaccine Alliance, 2017

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Gavi prepares an Annual Financial Report for each calendar year, which includes the audited consolidated financial statements of the Gavi Alliance and of the International Finance Facility for Immunisation. The 2016 Annual Financial Report was approved by the Board and published on the Gavi website in September 2017: www.gavi.org/funding/financial-reports

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Annual Progress Report

2020
2019
2018
2017
2016

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This puts us on track to reach our 2020 target of 5–6 million averted deaths.

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