

UNICEF IMMUNIZATION ROADMAP 2018–2030

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A health worker vaccinates 3-year-old Rahaf in Tareek Albab neighborhood in the eastern part of Aleppo city.

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2018–2030

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The right of every woman and every child to immunization is fully realized, with priority given to the most disadvantaged



Abbreviations

AIDS	acquired immune deficiency syndrome
DPT3	Diphtheria, pertussis and tetanus vaccine
FLW	front-line workers
Gavi	Gavi, the Vaccine Alliance
HIV	human immunodeficiency virus
RED/REC	Reaching Every District/Reaching Every Community
SDGs	Sustainable Development Goals
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Executive summary

Introduction

Countries and their partners have achieved major progress towards reducing vaccine-preventable deaths in recent years, which has contributed to the ongoing global decline in under-five mortality. However, important challenges remain. In 2017, more than 19 million children were not fully vaccinated and coverage rates varied widely, both among and within countries. Globally, vaccine coverage has stagnated, increasing by only 1 percentage point since 2010.¹

The UNICEF Immunization Roadmap (hereafter referred to as 'the Roadmap') sets out the organization's priorities on immunization through 2030, with detailed focus on the period of the UNICEF Strategic Plan, 2018–2021. The Roadmap complements UNICEF's Strategy for Health, 2016–2030, clearly articulating organizational priorities on immunization and explaining how these priorities contribute to overarching strategic goals on health and health systems strengthening.

Vision and principles

The Roadmap articulates UNICEF's vision of fully realizing the right of every woman and child to immunization, with priority given to the most disadvantaged. In addition to addressing the unfinished business of reaching the targets of the current Global Vaccine Action Plan and ongoing eradication and elimination initiatives, UNICEF will build on these priorities and address current and future challenges facing immunization programmes in a rapidly changing world. UNICEF will support the immunization-specific targets within the Sustainable Development Goals (SDGs) indicators and the post-2020 global immunization targets, both of which are under development and will emphasize subnational coverage.

This vision is underpinned by the following three key programming principles:

1. Advocate for the realization of the right of every woman and child to full immunization, holding stakeholders accountable;
2. Strengthen health and community systems to deliver immunization services, focusing on reaching and serving disadvantaged communities;² and
3. Position immunization as a driver of equitable delivery of integrated, multi-sectoral interventions to improve child health outcomes.

¹ Annual assessment reports by the Strategic Advisory Group of Experts on Immunization on the progress towards Global Vaccine Action Plan targets. See: <www.who.int/immunization/global_vaccine_action_plan/sage_assessment_reports/en/>, accessed 16 August 2018.

² United Nations Children's Fund Programme Division Health Section, *UNICEF Approach to Health Systems Strengthening: A resource paper for the UNICEF Strategy for Health 2016-2030*, UNICEF, New York, June 2016.

Objectives

The Roadmap seeks to contribute to the achievement of the following three major objectives:

1. Global and national policies based on evidence and adequately resourced to address the immunization needs of the most disadvantaged and underserved populations.
2. National systems, domestic resource allocation, and innovative products and approaches guarantee equitable access to immunization services and quality vaccines, contributing to the realization of global immunization goals, including eradication and elimination goals.
3. Communities that value and demand their right to immunization services.

Context

Several trends in immunization are apparent in the contexts in which UNICEF operates. As the world continues to urbanize, children increasingly live in urban settings where context-specific challenges are preventing the most marginalized from accessing immunization services. In addition, more unvaccinated children are living in insecure and conflict-affected settings while there continues to be challenges in reaching remote rural populations. Technological developments – such as new cold chain equipment and greater expertise in promoting demand for immunization – are transforming immunization programming.

At the same time, the emergence of new vaccines is leading to increasingly complex immunization programming. The shift from the vaccination of infants to vaccinations across the course of life, including infants, childhood and adolescence, is stretching the capacities of immunization programmes in many places. In addition, many countries are moving into the so-called ‘middle-income’ category, which has implications on eligibility for external aid, and, for many of these situations, increased income does not automatically translate into adequate capacity to manage immunization programmes.

Multi-stakeholder engagement, which includes engagement with sectors beyond health and with non-traditional partners, such as private sector partners, is becoming more important, and economic growth is leading to shifting patterns of wealth and deprivation. Furthermore, global efforts to eradicate polio will increasingly need to reinforce broader immunization and health systems strengthening efforts.

A ‘one-size-fits-all’ approach is no longer appropriate in this changing world. Diverse contexts are increasingly apparent, not only among countries but also within countries. At subnational levels, approaches to achieve immunization coverage must better address these varied dynamics. The strategies that led to the achievement of 85 per cent global immunization coverage will not necessarily be the same strategies that address the stagnation in coverage of the past decade. UNICEF and its partners must therefore continue to adapt their approaches to stay relevant to current needs.

Immunization strategies need to be tailored to reach unvaccinated children, including those located in remote, rural communities with inadequate services; those affected by conflict and insecurity with limited access to services, or who are affected by service delivery breakdowns; and those residing in urban slums, who may be disenfranchised and suffer from ‘social distance’ from services rather than geographical distance. To implement these strategies, we must address complacency within immunization programmes. Having reached coverage levels higher than most other health interventions, there is a tendency to take immunization programmes for granted and not push them to grow and adapt. Immunization programmes require continued nurturing and attention in order to remain as a strong service delivery platform for primary health care and to take advantage of and harness new technologies to reach unimmunized children.

This document describes the shifts that are needed. It argues that the term ‘routine immunization’ underplays the importance of working differently. There is nothing ‘routine’ in the tasks and challenges at hand. This document therefore deliberately avoids using the term ‘routine immunization’ to describe immunization programmes.

UNICEF's comparative advantage

Within this changing context, it is important to reflect on how UNICEF can add the most value. Prior to the development of the Roadmap, internal and external consultations highlighted the organization's strong comparative advantage in several areas. These include providing global leadership on immunization policies and strategic directions; promoting equity and coverage; driving global advocacy efforts; providing supply and supply chain management; building demand for immunization through Communication for Development and behaviour change communication efforts; supporting efforts to deliver immunization services in humanitarian contexts and support disaster preparedness; convening partners and promoting a multi-sectoral approach; and fostering innovation in response to existing and emerging challenges.

Key shifts and areas of focus

Based on this elaboration of current and future challenges and UNICEF's comparative advantage, the Roadmap sets out the following key areas of focus for UNICEF's immunization work for the period 2018–2030. These can be used to design and implement UNICEF programmes at the country level.

- Ensuring that **immunization programmes are financially sustainable** and can contribute to stronger health systems that deliver integrated primary health care services and prioritize marginalized and underserved communities;
- **Strengthening integrated service delivery**, supply chain systems and front-line health workforces;
- Building the capacity of UNICEF staff, governments and civil society partners to implement **data-driven social and behavioural change** interventions;
- Strengthening the **emphasis on reaching mothers and adolescents** with immunization services;
- Leading efforts to develop and scale up **immunization-related innovations and new approaches**;
- Committing to and redoubling efforts towards the **global eradication of polio**, the **elimination of maternal and neonatal tetanus, and the attainment of measles and rubella elimination targets**;
- Influencing **vaccines and immunization supply markets**; and
- **Strengthening preparedness for humanitarian responses and ensuring robust responses**, particularly in fragile states.

UNICEF's approach to programming will differ depending on the level of country capacity and will be adapted to diverse operating contexts. During the Roadmap period, UNICEF will position immunization coverage and related indicators as tracers for child equity based on the assumption that children not receiving vaccinations are also not receiving other child survival interventions and are therefore suffering multiple deprivations. UNICEF will also advocate for programme designs that target the most vulnerable children to achieve the greatest gains in child mortality and morbidity.

Operationalizing the roadmap

A range of complementary strategies will need to be explored to achieve the Roadmap objectives. These include the following:

Partnerships

UNICEF will work closely with partners at the country, regional and global levels to identify synergies and leverage comparative advantages. For example, working with the Global Polio Eradication Initiative will be key to achieving polio eradication and sustaining the gains, as well as informing and supporting the next Gavi, the Vaccine Alliance (hereafter referred to as 'Gavi') Strategy and the next Global Vaccine Action Plan, which will be key to addressing the unfinished agenda and tackling new challenges. UNICEF will also seek to broaden and enhance partnerships, including within the private sector, with other global health financing entities beyond Gavi, such as the Global Fund to Fight AIDS, Tuberculosis and Malaria and the Global Financing Facility.

Staffing and talent retention

Quality human resources are critical to the successful operationalization of the Roadmap. UNICEF will therefore prioritize staffing and talent retention in the coming years. The transition of polio assets represents an important opportunity to consolidate existing talent across the organization. As such, UNICEF has completed a mapping of existing immunization talent across the organization and will build on this exercise through active talent management so that staff reassignments and departures are proactively managed and capacity gaps minimized during staff transitions. These efforts will aim to maintain staff motivation, ensure a career path for immunization staff and minimize the loss of high performers from the UNICEF system.

Resource mobilization

The successful implementation of the Roadmap will require additional resource mobilization at all levels. UNICEF will continue to advocate for increased domestic funding for immunization, as well as external resources to cover gaps, while simultaneously leveraging international financing instruments and exploring innovative financing mechanisms. UNICEF will also continue to diversify its funding to ensure its capacity to support countries, including middle-income countries, where the organization is facing declining resources.

Data and evidence

UNICEF will continue to support the generation of disaggregated data and evidence to inform decision-making and strengthen immunization programming. This will involve supporting the generation of World Health Organization (WHO)/UNICEF estimates of national immunization coverage (including moving to more robust subnational estimates); compiling data from WHO/UNICEF joint reporting forms; and generating UNICEF data through periodic surveys, such as the UNICEF Multiple Indicator Cluster Survey. Small area estimation methods designed to produce coverage estimates at the district and other subnational levels are being actively explored as options for improving subnational coverage estimates. UNICEF will also explore innovative approaches and the use of new technologies, such as geospatial mapping, for estimates of denominators and the refinement and expansion of immunization registries linked to civil registration and vital statistics systems. Data will be better integrated into programming and user-friendly tools such as interactive dashboards. This data and evidence will support advocacy aimed at influencing policies, facilitating fundraising and building partnerships. It will also be used to improve the equity and coverage of country immunization programmes.

Innovation

UNICEF will continue to work with industry to incentivize the development of innovative new products and steer research and development investment toward vaccines and technologies that meet the needs of national immunization programmes. In addition to informing product profiles of new vaccines and delivery mechanisms (e.g., microneedle patches), innovations will include new technologies across the supply and demand sides of immunization programming (e.g., new cold chain technologies and the use of technologies to improve demand for immunization). UNICEF's approach will also go beyond technological innovations to include innovative approaches or ways of doing business to reach unimmunized children.

Monitoring and accountability

A monitoring dashboard is being developed to measure Roadmap implementation progress. This dashboard will measure a series of outcomes and outputs, complementing the immunization-specific strategic indicators in the UNICEF Strategic Plan, 2018–2021, and expanding on it by reflecting the larger set of priorities outlined in the Roadmap. The dashboard will be available on the UNICEF Intranet for use at the country, regional and global levels to both monitor progress and hold managers accountable. UNICEF has also designed a dashboard that can be accessed through the UNICEF immunization website,³ for greater visibility and transparency of immunization coverage estimates and relevant equity indicators.

The Roadmap will be reviewed and adapted in response to lessons learned and contextual changes. It is envisioned that the review period will be aligned with UNICEF strategic plan periods.

³ United Nations Children's Fund, 'Immunization Programme', UNICEF, <www.unicef.org/immunization-programme>, accessed 24 May 2018.





1. Introduction

1.1 Background

The UNICEF Immunization Roadmap describes how the immunization work of UNICEF will support the achievement of the SDGs and the following strategic goals from UNICEF's Strategy for Health, 2016–2030:

1. End preventable maternal, newborn and child death; and
2. Promote the health and development of all children.

With the support of UNICEF and its partners, the world has made great strides in reducing vaccine-preventable deaths, disease and disabilities in recent years. This progress, due in large part to the introduction of new vaccines, as well as increasing rates of vaccination uptake, has contributed substantially to the steady decline in under-five mortality since 1990.⁴

During the period 2000–2015, measles deaths among under-five children declined by 79 per cent, and deaths from neonatal tetanus fell by 83 per cent.⁵ By the end of December 2017, polio eradication efforts had led to an unprecedented decline in the number of polio cases and the geographic scope of affected areas. This progress has put polio on the brink of global eradication, representing one of the greatest achievements in public health. At the same time, international support for immunization has never been stronger.⁶ Despite this progress, global vaccine coverage has stagnated, increasing by only 1 percentage point since 2010.⁷

In 2017, 85 per cent of children aged 1 year had been vaccinated with three doses of diphtheria, pertussis and tetanus (DPT3) vaccine. Major inequalities in vaccination coverage lie behind this figure however, both among and within countries. Every year, more than 19 million children miss out on the benefits of complete vaccination and many children receive no vaccines at all (*see Figure 1*).⁸ This results in more than 1 million deaths from vaccine-preventable diseases each year.⁹ Nearly 30 per cent of deaths among children under 5 years of age are the result of vaccine-preventable diseases.¹⁰

In line with the targets set in the Global Vaccine Action Plan, 2011–2020, the UNICEF Strategic Plan, 2018–2021, calls for at least 90 per cent immunization coverage at the national level, and at least 80 per cent immunization coverage at the district level. These strategic objectives are rooted in UNICEF's commitment to protect and promote the right to health of every woman and child everywhere. This commitment has made immunization a central component of UNICEF's mandate and programming throughout its history.

⁴ Gavi, the Vaccine Alliance, 'Millennium Development Goals', <www.gavi.org/about/ghd/mdg/>, accessed 16 October 2017.

⁵ United Nations Children's Fund, 'UNICEF reaches almost half of the world's children with life-saving vaccines', UNICEF, New York, 26 April 2017, <www.unicef.org/media/media_95895.html>, accessed 17 October 2017.

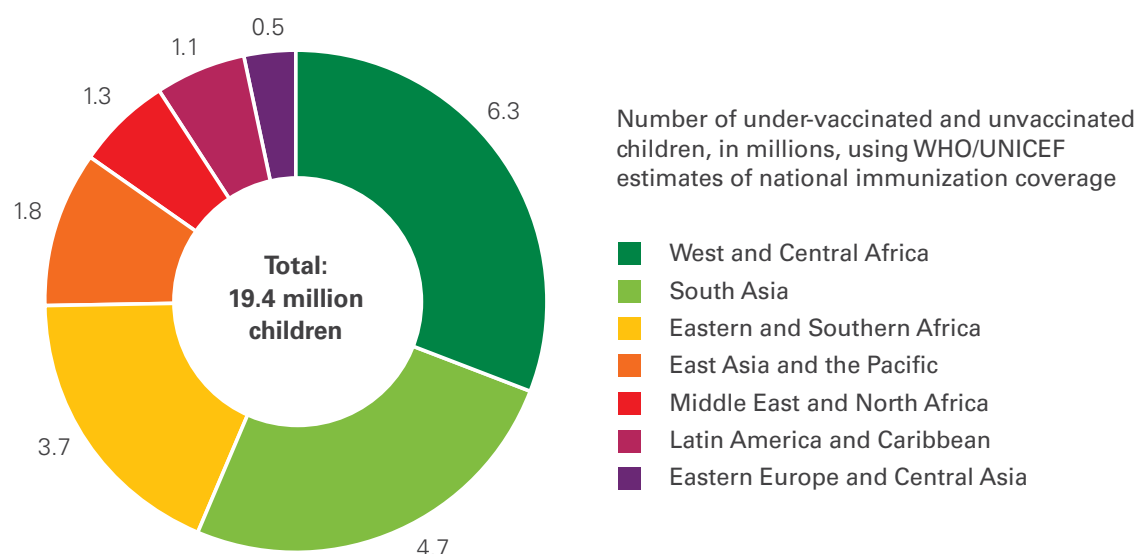
⁶ Immunization Financing, 'Development Assistance for Immunization', Brief 10, <www.immunizationfinancing.org/en/sources-of-financing/development-assistance-for-immunization#!>, accessed 17 October 2017.

⁷ Strategic Advisory Group of Experts on Immunization, *2016 Midterm Review of the Global Vaccine Action Plan*, 2016.

⁸ World Health Organization, 'Vaccination coverage', Global Health Observatory data, <www.who.int/gho/immunization/en/>, accessed 17 October 2017.

⁹ World Health Organization, 'Immunization coverage', WHO, 16 July 2018, <www.who.int/mediacentre/factsheets/fs378/en/>, accessed 16 August 2018.

¹⁰ United Nations Children's Fund, 'Child Survival: Under-five mortality', March 2018, <<https://data.unicef.org/topic/child-survival/under-five-mortality/>>, accessed 16 August 2018.

Figure 1 Number of under-vaccinated children measured by DPT3

UNICEF Immunization in numbers

- UNICEF works on immunization across **more than 130 country programmes**.
- In 2016, vaccines procured by UNICEF reached **almost half of the world's children**.
- In 2016, UNICEF procured **2.5 billion doses of vaccines** for children in **nearly 100 countries**.
- In 2015, UNICEF had **659 staff** working at least **50 per cent of their time on immunization**.

Looking forward, the Roadmap outlines UNICEF's priorities on immunization through 2030, with a more detailed focus on 2018–2021 – the period of UNICEF's current Strategic Plan. The Roadmap also complements UNICEF's Strategy for Health, 2016–2030, clearly articulating organizational priorities in immunization and explaining how these priorities contribute to overarching strategic goals for health and health systems strengthening. The Roadmap describes how UNICEF will continue to build on its institutional comparative advantages, leading and supporting global efforts to provide immunization services to the most disadvantaged children.¹¹ The Roadmap also emphasizes the centrality of immunization within the SDG and universal health care agendas.

UNICEF's mandate on immunization is derived from the Convention on the Rights of the Child

UNICEF has more than 70 years of experience working for children and is the only organization specifically named in the Convention on the Rights of the Child as a source of expert assistance and advice. UNICEF's immunization mandate derives from the interpretation of immunization as a right guaranteed by the Convention on the Rights of the Child and Article 24, which obliges states to make every effort "to ensure that no child is deprived of his or her right of access to such health care services" by providing them with "necessary medical assistance and health care" and "appropriate pre-natal and postnatal health care for mothers", among others. Article 2 of the Convention requires that "no child should be treated unfairly on any basis" and that "the most disadvantaged children and the countries in greatest need have priority" in everything UNICEF does.

¹¹ United Nations Children's Fund, 'About UNICEF: UNICEF's mission statement', UNICEF, 25 April 2003, <www.unicef.org/about/who/index_mission.html>, accessed 17 October 2017.

The Roadmap's primary audiences include:

1. UNICEF senior management at the global, regional and country levels;
2. UNICEF technical teams and staff working in health, immunization, Communication for Development, supply and logistics at all levels; and
3. UNICEF's immunization partners, including ministries of health, ministries of finance and planning, WHO, donors, global partnerships and alliances (e.g., Gavi, the Global Polio Eradication Initiative, etc.), civil society organizations, non-governmental organizations, international organizations, United Nations agencies and bodies, World Bank institutions, philanthropic foundations, and academic partners.

1.2 Developing the Roadmap

The Roadmap was developed through a consultative process involving more than 200 internal and external stakeholders. It was informed by evidence from surveys and semi-structured interviews, analysis of global immunization and health trends, and reviews of existing and emerging areas of work.

In November 2016, more than 70 internal and external experts from around the world participated in a series of workshops in New York, during which a collaborative process was used to review all aspects of the Roadmap (*see Figure 2*). Workshop discussions led to the first draft of the Roadmap, which was then refined through an iterative process involving several rounds of inputs from technical and management staff at all levels of the organization.

Figure 2 Partnership retreat poster





2. Key considerations informing the UNICEF Immunization Roadmap

2.1 Key drivers of immunization through 2030

Several key trends and factors are set to influence global immunization programming – both positively and negatively – in the years to come. Some of the most important factors are detailed below. At the end of this section, Figure 3 depicts the factors influencing immunization programming in the coming years.

2.1.1 The context of where children live will change

In 2030, children will be more likely to live in cities, middle-income countries and sub-Saharan Africa than they are today.¹² Not only will more children live in cities, but analysis of current trends also suggests that disparities both among and within urban areas will grow.¹³ By 2030, the majority of the world's under-vaccinated children will live in disadvantaged communities in middle-income countries (*see Table 1*). Unless current vaccine financing mechanisms change, these countries will be forced to rely on domestic resources to purchase vaccines, with minimal options for external sources of funding. Moreover, the ability to finance immunization programmes may not be linked to the ability to ensure effective and efficient programming. This will require adaptations in the roles of partners, such as UNICEF, to provide the necessary support to these countries.

Children will continue to suffer hardships due to humanitarian crises, including armed conflict and natural disasters, which are expected to increase in frequency in the coming years.¹⁴ Women and children are disproportionately affected by natural disasters and are 14 times more likely to die as a result of natural disasters than men.¹⁵ Today, approximately two thirds of unimmunized children live in conflict-affected countries and a substantial proportion of these children are located in a few large countries, a situation that is unlikely to improve in the near term (*see Table 1*). Climate change is likely to impact human health, both directly, due to changing disease patterns, and indirectly, through environmental and social changes resulting from migration and displacement.^{16, 17} Health systems will be challenged by new disease threats and health emergencies, as was the case in the context of the recent Zika outbreak and currently expanding dengue outbreaks.

2.1.2 Technological developments will transform immunization programming

New and improved vaccines will become available and new delivery, storage and transportation technologies will change the way vaccines move through the supply chain and are administered. The introduction of more heat-stable vaccines may make it easier to deploy vaccines outside of the confines of a cold chain.

¹² United Nations Children's Fund Programme Division, UNICEF's Strategy for Health (2016–2030), UNICEF, New York, 2015.

¹³ Save the Children, *The Urban Disadvantage: State of the world's mothers 2015*, Save the Children, Fairfield, Conn., 2015.

¹⁴ United Nations Children's Fund, *2011 Humanitarian Action for Children: Building resilience*, UNICEF, New York, March 2011.

¹⁵ Every Woman Every Child, *The Global Strategy for Women's, Children's and Adolescents' Health (2016–2030): Survive, thrive, transform*, Every Woman Every Child, New York, 2015.

¹⁶ World Health Organization, 'Ministerial Declaration on "Health, Environment and Climate Change"', WHO, Geneva, 2016.

¹⁷ Edwards, Adrian, 'Global Forced Displacement Hits Record High', UNHCR, Geneva, 20 June 2016.

Table 1 Countries with more than 100,000 unvaccinated or incompletely vaccinated children in 2017¹⁸

Rank	Country	Estimated number of unvaccinated children
1	Nigeria	3,980,310
2	India	2,913,641
3	Pakistan	1,275,695
4	Indonesia	1,009,353
5	Ethiopia	853,384
6	Democratic Republic of the Congo	603,662
7	Angola	557,074
8	Iraq	450,231
9	South Africa	385,651
10	Afghanistan	381,796
11	Chad	346,031
12	Somalia	343,332
13	Brazil	316,019
14	South Sudan	308,874
15	Philippines	283,629
16	Yemen	268,507
17	Kenya	266,973
18	Uganda	253,633
19	Mali	248,220
20	Guinea	235,682
21	Ukraine	231,406
22	Mozambique	214,586
23	Madagascar	212,624
24	Syrian Arab Republic	203,207
25	United States of America	203,141
26	Niger	184,595
27	China	163,560
28	Egypt	147,396
29	Côte d'Ivoire	133,897
30	Cameroon	113,457
31	Argentina	103,897
32	Peru	101,849
33	Haiti	100,190

Over time, improved health information systems, population mapping and interoperable electronic birth and immunization registers will facilitate the monitoring of vaccination coverage, the estimation of accurate denominators and the identification of under-vaccinated children. The widespread penetration of information and communication technologies will change how information about vaccines and immunization is produced, disseminated and accessed by vaccine providers, caregivers and vaccine recipients.¹⁹ Electronic immunization registers will help to track adverse events following immunization and determine statistically significant associations between vaccines and side effects.

¹⁸ 2017 WHO and UNICEF estimates of national immunization coverage.

¹⁹ The Bill & Melinda Gates Foundation, *Landscape Analysis on Key Drivers for Immunization until 2030*, The Bill & Melinda Gates Foundation, Seattle, Wash., 2016.

2.1.3 The scope of immunization programmes will evolve

In the 1980s, a typical immunization programme vaccinated infants with six antigens at a vaccine procurement cost of less than US\$1 per child. By 2017, a comparable programme vaccinated children under 1 year of age against 12 diseases at a vaccine procurement cost of approximately US\$22 per child. With the continuous introduction of vaccines targeting older age groups (e.g., human papilloma virus (HPV), seasonal and pandemic influenza, dengue, etc.), more of which are currently in the pipeline (e.g., group B streptococcus), as well as future vaccines against diseases such as Zika or chikungunya, the complexity of implementing immunization programmes will likely increase, necessitating the development of new delivery platforms.²⁰ This also has financial and capacity implications at the global and national levels.

2.1.4 Multi-stakeholder engagement will become increasingly important

While governments remain the primary providers of immunization programmes, non-governmental actors such as non-governmental organizations, rights-based organizations and private-sector entities are increasingly contributing to immunization service delivery in low- and middle-income countries.²¹

At the global level, close collaboration between manufacturers, health agencies, governments and development partners is essential for the creation of effective incentive structures within vaccine markets to promote sustainability and to support approaches to research and development that can adapt to changing contexts.

Within countries, proactive outreach and engagement with a variety of civil society actors is required to ensure the quality of immunization programmes and to mobilize broad-based support for immunization among stakeholders such as private service providers, educators, administrators and media, and religious and traditional leaders.

Engagement with ministries of education, finance and labour will also be critical to sustaining immunization programming and expanding immunization platforms to guarantee coverage for population subgroups beyond early childhood, including adults, pregnant women, mothers and adolescents.

2.1.5 The 2030 Agenda for Sustainable Development

The 2030 Agenda for Sustainable Development and the vision of universal health coverage under SDG Target 3.8 will continue to shape the global health agenda and funding priorities. This goal focuses on ensuring access to quality essential health care services for all, regardless of location, ethnicity, language or other characteristics, and without financial hardship. At the same time, focus will be on achieving equitable access to vaccination services and reducing disparities in health outcomes. Immunization programmes, which provide concrete contact points within health systems, will continue to be recognized as critical entry points to achieving health-related SDG targets. As an intervention that has achieved higher coverage relative to other interventions, immunization is a useful marker of inequities, with unvaccinated children likely suffering multiple deprivations. By rolling out immunization services to every woman and child, immunization programmes are building the foundation for universal health care.

Immunization has impacts beyond SDG 3. Immunization directly contributes to 14 of the 17 SDGs, as it helps to alleviate poverty (SDG 1), improve education outcomes (SDG 4), foster industry and innovation (SDG 9) and reduce inequalities (SDG 10), and can only be achieved by working in partnership (SDG 17).

2.1.6 Economic growth

Economic growth will affect the resourcing of immunization programmes in certain countries. In the coming years, several Gavi-eligible countries will graduate and transition towards becoming fully self-financed. Given that these countries will no longer be eligible to receive financial support from Gavi, they will

²⁰ World Health Organization, *WHO/UNICEF Zika virus (ZIKV) Vaccine Target Product Profile (TPP): Vaccine to protect against congenital Zika syndrome for use during an emergency*, WHO and UNICEF, February 2017.

²¹ Levin, Ann and Miloud Kaddar, 'Role of the Private Sector in the Provision of Immunization Services in Low- and Middle-income Countries', *Health Policy and Planning*, vol. 26, issue suppl. 1, 4 July 2011, pp. i4-i12.

increasingly need to rely on domestic resources. This can cause problems given that other donors and funding mechanisms (e.g., the Global Fund to Fight AIDS, Tuberculosis and Malaria, the European Union and bilateral donors) may simultaneously reduce funding for health priorities, leading to substantial gaps in domestic health budgets.

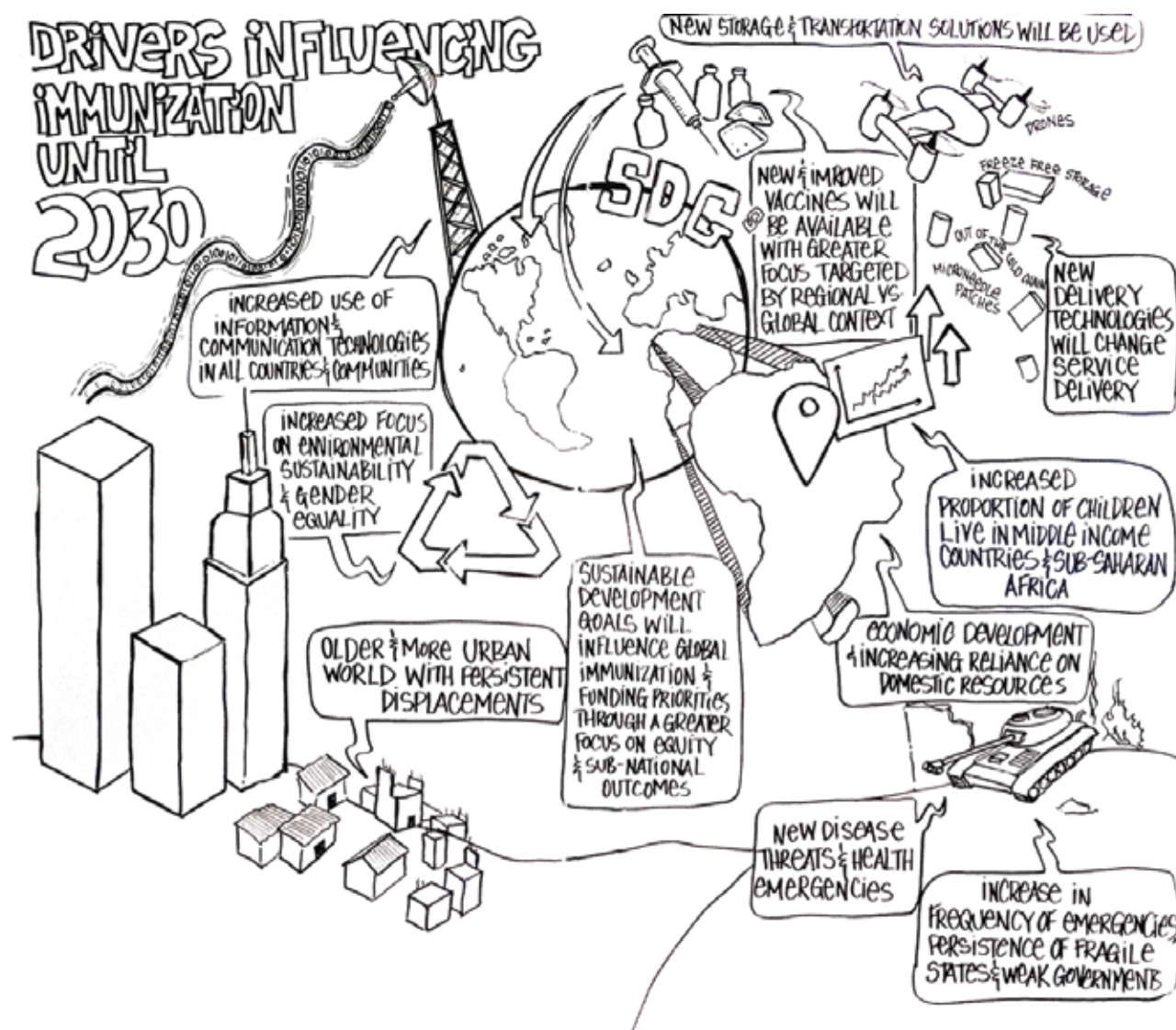
2.1.7 Polio eradication efforts have and will continue to reinforce broader immunization efforts

The extraordinary results achieved by global polio eradication efforts have demonstrated that it is in fact possible to reach the most disadvantaged children with immunization services. The knowledge, experience, human resource capacities and infrastructure that have been accumulated through global polio eradication efforts will continue to support, enrich and reinforce immunization programming and health systems going forward, providing insight and expertise to reach the most marginalized groups with immunization and other public health services.

High levels of population immunity, achieved through immunization programming, will be critical to achieving and sustaining polio eradication through the certification and post-certification period. It is also well recognized that so-called 'polio assets' have made substantial contributions to immunization programmes worldwide, including surveillance of vaccine-preventable diseases; laboratory confirmation and outbreak response; social mobilization; and microplanning. The loss of these assets may lead to a reversal in immunization programme performance. Countries and agencies involved in the Global Polio Eradication Initiative are now preparing transition plans for integrating useful polio assets into national health systems. UNICEF is also developing its transition and post-certification management plan to protect a polio-free world and strengthen immunization and other health systems by transitioning or mainstreaming the capacities, processes, systems and information technology applications developed by UNICEF during nearly 30 years of work in polio eradication.

The polio transition is also an opportunity, as it may eventually create fiscal space for international donors and governments to finance other public health programmes, including immunization. This may result in a declaration of additional eradication efforts, with measles-rubella being the most likely candidate given current knowledge.



Figure 3 Factors influencing immunization programming in the coming years

2.2 Evolving immunization partnerships

The immunization partnership landscape has expanded and will continue to evolve in the coming years. Over the past 15 years, immunization has benefited from increased global attention and expanded funding.²² A major milestone was the establishment of Gavi in 2000, which, by 2015, had channelled US\$11.8 billion to low-income countries, helping to accelerate the introduction of new vaccines.²³ At the same time, the immunization stakeholder landscape has become more complex. New global partnerships, alliances and funding mechanisms have attracted a growing number of international and national providers of technical assistance and vaccination services, increasing the need for effective collaboration and coordination. Expansion of the network of partners has also had an important impact, accelerating vaccine and device research and development efforts, giving rise to improved products to achieve results in immunization while at the same time reducing vaccine programme costs.

²² Results for Development, *Immunization Financing: A resource guide for advocates, policymakers and programme managers*, Results for Development, Washington, D.C., 2017.

²³ Institute for Health Metrics and Evaluation, *Financing Global Health 2015: Development assistance steady on the path to new Global Goals*, IHME, Seattle, Wash., 2016, <www.healthdata.org/sites/default/files/files/policy_report/FGH/2016/IHME_PolicyReport_FGH_2015.pdf>, accessed 17 October 2016, p. 28.

2.3 UNICEF's comparative advantage in immunization

UNICEF has a clear and long-standing role and mandate to work on immunization, and interviews with external stakeholders and internal self-assessments show broad consensus on UNICEF's comparative advantages in this area. Some of these advantages are described below.

2.3.1 Global immunization leadership

UNICEF is a founding member of all key global immunization partnerships, including Gavi, the Measles and Rubella Initiative, the Maternal and Neonatal Tetanus Elimination Initiative, the Global Polio Eradication Initiative and the Global Vaccine Action Plan. As such, UNICEF shapes and influences the vision, strategies and policies that make up the global immunization agenda.

2.3.2 Equity

UNICEF's mandate and global recognition as a leading advocate for equity in child survival and health position the organization to continue to play a leading role in promoting equitable access to vaccines and vaccination services. Immunization is both a driver of equity and a key indicator of health equity given that children missing out on immunization are likely suffering multiple deprivations.

2.3.3 Advocacy

UNICEF's mandate as a child rights agency and its central focus on equity position the organization to advocate for the right of every woman and child to immunization services. UNICEF has access to evidence and engages actively in the various forums where global immunization priorities are determined. At the national and subnational levels, UNICEF's relationships with national and local governments allow the organization to advocate for equity-enhancing immunization policies, programming and financing. UNICEF also has strong partnerships within the private sector, including through its National Committees in 36 industrialized countries.

2.3.4 Technical immunization expertise

UNICEF has supported the vaccination of children since 1949.²⁴ In 2016, more than 600 UNICEF staff members from 138 country offices were spending more than 50 per cent of their time on immunization activities. UNICEF has unparalleled institutional knowledge on immunization across a range of country contexts. Together with WHO, UNICEF annually collects and reviews key programmatic data on immunization and uses this evidence to guide priorities at the national and global levels. UNICEF's Multiple Indicator Cluster Survey programme is one of the main sources of immunization coverage data collected through household surveys at the global level. In addition to programmatic data, UNICEF has extensive experience working with data from immunization surveys, which will be leveraged to improve the implementation of the new Expanded Programme on Immunization survey guidelines. Through operational and implementation research, UNICEF continues to document lessons learned and share best practices to improve the effectiveness of immunization programmes in countries.

2.3.5 Supply and supply chain management

UNICEF is the global leader in procuring, distributing and influencing markets for vaccines, vaccination products and cold chain equipment, and has a well-documented track record of achievements related to promoting healthy markets and reducing costs.²⁵ UNICEF is uniquely positioned to understand the needs of immunization programmes in different contexts and to ensure that these needs are understood within global markets. UNICEF plays a leading role in strengthening the capacity of vaccine programmes to effectively manage vaccine supply and cold chain systems, as well as ensuring the continued viability of vaccines as they move down the supply chain from the place of manufacture to the point of service delivery.

²⁴ Jolly, Richard, UNICEF (United Nations Children's Fund): Global governance that works, Routledge, New York, 2014.

²⁵ United Nations Children's Fund, UNICEF Supply Annual Report 2015, UNICEF, Copenhagen, 2016.

2.3.6 Generating demand for immunization

UNICEF has extensive experience leading and supporting partnerships to reduce social barriers to immunization access and acceptance. Global immunization partners look to UNICEF to provide leadership and guidance on this area of work. In 2016, UNICEF supported Communication for Development efforts focused on immunization in 41 countries.²⁶ Using lessons from the polio eradication effort, UNICEF continues to expand its use of local sociological data and evidence from applied research related to the determinants of vaccination uptake to promote and sustain demand.²⁷ In addition, UNICEF recognizes the central role played by front-line health workers in addressing local drivers of inequity and promoting and sustaining community demand for immunization and health in general. UNICEF programme interventions seek to strengthen local accountability and encourage communities to advocate for immunization as a right.

2.3.7 Immunization in emergencies

UNICEF has a long-standing comparative advantage regarding delivering immunization services in humanitarian contexts, during and after emergencies, and a mandate to work along the continuum of humanitarian and outbreak response, as well as development programming.

UNICEF is active in multiple humanitarian contexts, including in response to both natural and human-caused disasters. The Core Commitments for Children in Humanitarian Action guide UNICEF's work with partners, both during the response phase, as well as during preparedness, early recovery and resilience-building efforts. UNICEF's work on immunization in these settings is guided by the recommendations of the Strategic Advisory Group of Experts on Immunization Working Group on Vaccinations in Humanitarian Emergencies. UNICEF is also a member of various emergency forums at the global, regional and country levels, and its Supply Division plays a crucial role in emergencies by mobilizing and shipping essential life-saving supplies and providing technical support for in-country logistics.

2.3.8 Presence at the country and field levels

Many countries, particularly large countries, increasingly devolve decision-making and resource allocation from the federal level to the subnational level. As such, UNICEF's strong country presence at the national and subnational levels uniquely positions the organization to engage in immunization programming and advocacy activities at central and decentralized levels.

2.3.9 Multi-sectoral approach

Among the major immunization partners, UNICEF is uniquely positioned to act as a bridge between sectors and vertical interventions, thereby facilitating integrated programming and service delivery. UNICEF's capacity to conduct programming and multi-sectoral deprivation analysis in areas such as education, child protection, nutrition, water, sanitation and hygiene enables it to position and package immunization with other key interventions along the lifecycle, with the goal of improving maternal and child survival and health. UNICEF's work within the education sector provides an opportunity to promote the health needs of older children and adolescents.

2.3.10 Innovation

UNICEF has a long history as a pioneer of innovation. The UNICEF Global Innovation Centre works with programme teams to identify and implement innovative solutions in response to evolving programme challenges. The Centre also works with industry, seeking to steer investments towards new vaccines, diagnostics and health technologies. UNICEF's innovation principles highlight the importance of designing with the end-user in mind, understanding local ecosystems, designing for scale and using open source technology and open data sources.²⁸

²⁶ United Nations Children's Fund, Annual Results Report 2016: Health, UNICEF, New York, 2017, p. 22.

²⁷ For the definition of "vaccination demand," see Hickler, B. et al., 'Efforts to Monitor Global Progress on Individual and Community Demand for Immunization: Development of definitions and indicators for the Global Vaccine Action Plan Strategic Objective 2', *Vaccine*, vol. 35, issue 28, 16 June 2017, pp. 3515–3519.

²⁸ United Nations Children's Fund, 'Principles', UNICEF Stories of Innovation, <<http://unicefstories.org/principles/>>, accessed 17 October 2017.



3. What is new in this Roadmap?

Immunization is one of the most powerful and cost-effective public health tools available, and ensuring its benefits are extended to all is fundamental to achieving the goals set out in UNICEF's Strategy for Health, 2016–2030 – which aims to end preventable maternal, newborn and child mortality – and promoting the health and development of all children. A 2016 study showed that for every US\$1 spent on childhood vaccinations, the return on investment is US\$44 when the full range of economic benefits is considered.²⁹ Furthermore, global efforts to eradicate polio have saved an estimated US\$27 billion in health costs since 1988. If the polio virus is eradicated by 2020, an additional US\$20–US\$25 billion will be saved by 2035.³⁰

3.1 Immunization coverage as a tracer indicator of child equity

Globally, immunization is the most widely accessed and successful child health intervention in use today. However, high national immunization coverage rates often mask inequities at the subnational level. For example, while 131 countries achieved at least 90 per cent coverage with DPT3 immunization in 2016, only 52 of these countries could reach at least 80 per cent coverage in all districts.³¹ In addition, several countries are yet to introduce life-saving vaccines that are currently available, such as pneumococcal conjugate vaccine and rotavirus vaccine.

The world has embarked on the 2030 Agenda for Sustainable Development, which places unprecedented emphasis on leaving no one behind. As UNICEF seeks to prevent disease outbreaks and reach unvaccinated children in the most marginalized communities with immunization services, it will be important to further sharpen the organization's focus on identifying and addressing health system gaps to ensure that all children are reached. In this context, **UNICEF will use immunization coverage as a tracer indicator for progress towards achieving child equity** to identify who can be reached through wider health interventions and highlight those children and communities that continue to miss out.

The importance of focusing on the most marginalized populations was reinforced by a recent UNICEF study, which showed that investments in the health of children living in the poorest communities save almost twice as many lives per dollar spent as equivalent investments in non-poor communities.³² We see existing inequities in light of current societal trends, such as where people are increasingly living, how mobile communities are, how health systems are financed and how they are increasingly governed through devolved systems. In addition, current guidance and strategies to reach unvaccinated children require further refinement, focus and context specificity. An in-depth analysis conducted by UNICEF of 2016 immunization coverage estimates suggested that an increasing proportion of under-immunized children are clustered in the following three types of communities:

- Remote rural communities, which face challenges related to access and infrastructure;
- Urban slums, where challenges are more often related to trust, social distance and legality; and
- Conflict-affected and insecure settings where there may be an interruption or breakdown in services, as well as constrained access.

²⁹ Ozawa, S., et al., 'Return on Investment from Childhood Immunization in Low- and Middle-income Countries, 2011–20', *Health Affairs (Millwood)*, vol. 35, no. 2, 2016, pp. 199–207.

³⁰ Duintjer, Tebbens R.J., et al., 'Economic Analysis of the Global Polio Eradication Initiative', *Vaccine*, vol. 29, no. 2, 2010, pp. 334–343.

³¹ United Nations Children's Fund, 'Millions of children are still not reached by potentially life saving vaccines', UNICEF, <<https://data.unicef.org/topic/child-health/immunization/>>, accessed 24 May 2018.

³² United Nations Children's Fund, *Narrowing the Gaps: The power of investing in the poorest children*, UNICEF, New York, July 2017.

Addressing immunization coverage gaps

In remote settings

- Plan predictable outreach services;
- Leverage new innovations in supply chain and mapping technology;
- Conduct multi-sectoral engagement to address transport challenges (e.g., coast guards in remote island settings); and
- Design appropriate service delivery (e.g., vaccinations at transit points).

In urban settings

- Map where the urban unimmunized live and their numbers;
- Overcome legal obstacles;
- Design appropriate service delivery schedules (e.g., evening or weekend services);
- Align and coordinate between overlapping governance systems;
- Use innovative data/technology methods to better account for urban mobility;
- Engage strategically with private health care providers; and
- Develop and expand mechanisms for registration and reminders, including harnessing the potential of new technology and mobile systems.

In conflict-affected/insecure settings

- Engage non-traditional partners;
- Employ the humanitarian service apparatus (e.g., link with food aid delivery); and
- Negotiate ceasefires/days of tranquillity.

Describing these distinct communities and their unique characteristics, all three of which may exist in a single country, will help to expand the strategic options for reaching the children in these contexts through programming. This will therefore serve to ensure that planned corrective actions are tailored and appropriate to these specific contexts (see examples provided above). We see this approach as a way of improving the operationalization of existing guidance – such as the Reaching Every District/Reaching Every Community (RED/REC) guidance – to decrease immunization inequities. Applying RED/REC guidance to the urban poor, remote rural communities and conflict-affected communities will provide specificity and substance to the strategies employed and ensure that they are fit for purpose.

Reaching the most marginalized communities with life-saving vaccination services will require a bold, collective vision and an unprecedented degree of coordination.³³ This Roadmap proposes the following key areas of work, many of which are already underway and will be prioritized going forward.

³³ Chan, Margaret, et al., 'Reaching Everyone, Everywhere with Life-saving Vaccines', *The Lancet*, vol. 389, no. 10071, 25 February 2017, pp. 777–779.

Immunization as a tracer indicator of child equity

- Vaccination is an intervention intended for all children across all countries.
- Vaccination has high coverage (85 per cent) compared with other public health or development interventions.
- Although immunization coverage data are imperfect, they are better than those related to other health interventions.

What is needed?

- **Evidence-based policies** (at national and subnational levels) to reach the most disadvantaged;
- **Quality health and immunization services**, including sufficient quantity and quality of vaccines, with support from a wide range of stakeholders, as needed; and
- **Empowered communities who demand their right to immunization**, including the most disadvantaged.

3.2 Key areas of work

UNICEF will work to ensure that immunization programmes contribute to stronger health systems that deliver integrated primary health care services and prioritize marginalized and underserved communities.

Immunization programmes can strengthen community, health facility and outreach service platforms, and in so doing, enable these platforms to achieve greater impact beyond immunization. Service delivery packages that are more comprehensive in scope can effectively serve the objectives of immunization programmes while bringing additional benefits to children and their families, thereby achieving both greater impact and greater efficiency. Ensuring this requires a two-track approach. On the one hand, immunization programmes need to be more open to co-delivery with other interventions, and on the other hand, the broader health agenda, including primary health care and universal health care, needs to incorporate immunization as a major component. Within the UNICEF Health Section, attempts are being made to operate more horizontally. The UNICEF immunization unit has placed staff in both the implementation research delivery science team and the health systems strengthening team to make the necessary linkages.

Whenever possible, expanding the skill sets and mindsets of immunization staff and those working on the broader health agenda is a concrete way to foster greater programme integration. As a multi-sectoral organization, UNICEF will leverage its immunization investments and experience to spearhead integrated approaches that deliver a range of health, education, nutrition, and water, sanitation and hygiene interventions to underserved groups. As UNICEF increases its emphasis on adolescent immunization, the establishment of strong linkages with school health services under the leadership of the education sector will be critical.

UNICEF will strengthen integrated delivery and supply chain systems.

UNICEF will leverage its procurement and supply chain management expertise to further strengthen national health supply chain systems. Immunization supply chain and logistics expertise will be utilized to apply best practices and lessons learned to a wider portfolio of child survival commodities – a priority area of work under the joint leadership of UNICEF's programme and supply divisions.³⁴ At the country level, UNICEF will work with national programmes and partners to promote the efficient and integrated delivery of health commodities to all.

³⁴ Lee, Bruce Y., Benjamin Schreiber and Raja Rao, 'Building Next Generation Immunization Supply Chains', *Vaccines*, vol. 35, issue 17, 19 April 2017, pp. 2102-2278.

UNICEF will strengthen the front-line immunization health workforce.

UNICEF recognizes that front-line health workers, whether community health workers or facility-based vaccinators, are crucial to the success of immunization programmes and the interface between supply and demand. UNICEF will develop workforce capacity strengthening and performance support initiatives to equip front-line health workers with essential skills and motivate them through performance recognition systems. While this will serve to enhance the quality of health services, it will also lead to greater acceptance, trust and uptake of these services. This work is aligned with and supports UNICEF's wider efforts to strengthen community health systems, which seek to institutionalize community health workers.

UNICEF will work to build the capacity of UNICEF staff, and government and civil society partners, to implement data-driven social and behavioural change interventions.

This is an area of substantial emphasis and growth during the Roadmap period, as UNICEF prepares to get ahead of the curve by addressing changing perceptions on immunization, leveraging social media to promote the value of immunization, and dispelling misinformation and unfounded fears about vaccines. UNICEF's three decades of experience in polio eradication have demonstrated the enormous value of social and behavioural change approaches in improving immunization coverage. Understanding the social and behavioural determinants underlying vaccination-related behaviours is essential to improving coverage and addressing inequities. The experience gained and lessons learned from social and behavioural change communication efforts can also inform overall health communication efforts, including by proactively addressing misperceptions related to risk communication efforts during disease outbreaks. UNICEF has convened an inter-agency group of key stakeholders that includes WHO, the United States Centers for Disease Control and Prevention, the Bill & Melinda Gates Foundation and others, to take this area of work forward using the comparative advantage of each stakeholder.

UNICEF will strengthen its emphasis on reaching mothers and adolescents with immunization services.

UNICEF has extensive experience immunizing mothers with tetanus-toxoid-containing vaccines during pregnancy, which benefits both mothers and newborns and improves neonatal survival. Vaccinating adolescent girls with the HPV vaccine substantially reduces the incidence of cervical cancer and achieves even greater impact in resource-poor settings. Strengthening UNICEF's engagement in these areas will avert preventable mortality and morbidity among women, and contribute to UNICEF's effort to prevent non-communicable diseases.³⁵ Experience gained through the delivery of the HPV vaccine will support the future delivery of other soon to be available vaccines, such as respiratory syncytial virus vaccine and group B streptococcus vaccine.

UNICEF will engage during the early and scale-up stages of immunization-related developments and innovations.

UNICEF's approach to using innovations will go beyond applying technological innovations to employing innovative approaches or ways of doing business to reach children who are missing out on immunization. Examples include new vaccines and vaccine introductions, new modes of vaccine administration (e.g., microneedle patches), new product presentations, enhanced cold chain equipment and innovative solutions for collecting, managing and using data. Examples of innovations related to demand generation and streamlining interaction at the point of service include short message service reminders, human-centred design approaches and innovations in home-based records.

³⁵ HPV is the primary cause of cervical cancer, a disease that results in 266,000 deaths annually (GLOBOCAN, 2012). There is a disproportionate burden in low- and middle-income countries, where 85 per cent of these deaths occur (Gavi, the Vaccine Alliance, 'Review of GAVI Support for HPV Vaccine', December 2016).

UNICEF's immunization work will reflect the organization's commitments to addressing climate change and the impacts of climate change.

Immunization programmes inevitably produce waste and create a carbon footprint. In seeking to mitigate the environmental impacts of immunization programming, UNICEF will support initiatives that optimize waste management at all levels and make use of products that are more environmentally friendly. UNICEF is seeking to strengthen energy sustainability along the cold chain by supporting the replacement of absorption fridges with solar technology.

Key immunization challenges and bottlenecks requiring new approaches

- Ensuring effective service delivery in conflict-affected, fragile settings with weak systems;
- Reaching deprived populations in urban slums;
- Continuing efforts to reach remote, inaccessible populations; and
- Securing sustainable financing for immunization programmes, including in middle-income countries.

In addition, UNICEF will continue to:

- **Commit to and redouble efforts towards the global eradication of polio, the elimination of maternal and neonatal tetanus and regional measles and rubella elimination targets.** UNICEF will also remain prepared to support additional elimination and eradication targets established by the global immunization community, with measles and rubella being the most likely candidates.
- **Strengthen linkages between polio and immunization work**, drawing on strategies and lessons learned from the Global Polio Eradication Initiative to reinforce immunization efforts while recognizing that a strong immunization programme is critical to achieving and sustaining the gains of polio eradication efforts.
- **Continue its role as a market influencer**, which, along with the Gavi's market-shaping activities, generated cost savings of US\$1.49 billion between 2012 and 2016, and supported a healthy supplier base that has helped countries access vaccines at affordable prices.³⁶
- **Strengthen immunization supply chains** and ensure that effective vaccine management standards are met.³⁷
- **Support planning, budgeting and advocacy for sustainable immunization financing** (see box on page 24).
- **Work with WHO on improving immunization data**, including through joint annual coverage estimates.
- Pursue a **more comprehensive, better integrated approach to policy advocacy** to more effectively **demonstrate results and return on investments** in vaccines.
- **Document programme models and highlight lessons learned** from different programme contexts, including upper- and middle-income contexts, crisis settings and low-capacity countries.
- **Strengthen preparedness for humanitarian response and responses in fragile states**, in line with the health commitment in UNICEF's Core Commitments for Children in Humanitarian Action, in which immunization is an important component. Identify new strategies for improving immunization coverage in emergency and conflict settings.

³⁶ United Nations Children's Fund, *UNICEF Supply Annual Report 2015*, UNICEF, Copenhagen, 2016.

³⁷ To date, only 15 countries worldwide have met the benchmark of scoring above 80 per cent in effective vaccine management assessments. Source: World Health Organization and United Nations Children's Fund, 'Effective Vaccine Management (EVM): Global data analysis 2009-2015', WHO and UNICEF, 2016, <www.who.int/immunization/programmes_systems/supply_chain/EVM-Global-Data-Analysis-2009-2015.pdf>, accessed 24 May 2018.

Sustainable financing for immunization

This is a relatively new area of UNICEF's engagement in immunization. It was born out of the recognition that the days of globally generated financing for immunization (e.g., for polio and measles) are likely to be over and the future success of immunization programmes will depend on adequate allocations of domestic financing and the continued exploration of new resource mobilization avenues through traditional and non-traditional donors. Towards this end, UNICEF will support:

- Planning and budgeting;
- Public financial management;
- Cost analysis;
- Economic evaluation and investment cases;
- Financial sustainability in Gavi-eligible and Gavi transition countries;
- The integration of immunization into universal health coverage packages; and
- Innovative financing for immunization services.



Figure 4 Visual depiction of priority focus areas identified during discussions at the 2016 Global Immunization Retreat





4. Roadmap programming framework

4.1 Vision and impact statements

4.1.1 UNICEF's Strategy for Health vision statement

UNICEF's Strategy for Health, 2016–2030, sets out the following vision for 2030 based on the SDGs and Every Woman Every Child framework: "A world where no child dies from a preventable cause and all children reach their full potential in health and well-being." The UNICEF Immunization Roadmap complements the Strategy for Health by detailing how immunization will contribute to this vision.

4.1.2 Roadmap impact statement

The Roadmap impact statement reflects UNICEF's immunization priorities and the following vision statement: "The right of every woman and every child to immunization is fully realized, with priority given to the most disadvantaged." This statement considers the UNICEF mandate, promotes the rights of children, in line with the Convention on the Rights of the Child, and emphasizes UNICEF's focus on equity.

4.2 Programming principles

The following three key principles underlie the programmatic priorities set out in the Roadmap and are consistent with UNICEF's Strategy for Health:

- **Advocate for the realization of the right of every woman and child to full immunization**, holding stakeholders accountable.
- **Strengthen health and community systems** to deliver immunization services, focusing on reaching and serving disadvantaged communities.³⁶
- **Position immunization as a driver of the equitable delivery of integrated, multi-sectoral interventions** to improve child health outcomes.

The Roadmap provides clear priorities based on UNICEF's comparative advantages for supporting the global immunization agenda and its implementation in Member States.

4.3 Context-driven responses

To tailor the Roadmap's programmatic priorities to meet the specific, contextual needs of countries, UNICEF will build on the programming approach set out in its Strategy for Health based on country contexts and programme and governance capacities (*see Figure 5*).

³⁶ United Nations Children's Fund Programme Division Health Section, *UNICEF Approach to Health Systems Strengthening: A resource paper for the UNICEF Strategy for Health 2016-2030*, UNICEF New York, June 2016, <www.unicef.org/health/files/UNICEF_HSS_Approach_-_8Aug16.pdf>, accessed 18 October 2017.

Figure 5 UNICEF Strategy for Health: Definition of country contexts, by capacity

Emergency	Fragile	Low capacity	Medium capacity	High capacity	Global
A situation that threatens the lives and well-being of a large portion of a population and requires extraordinary action to ensure their survival, care and protection.	Areas with post-conflict or prolonged crisis. Inability to meet the population's expectations or manage changes in expectations and capacity through the political process.	Insufficient fiscal resources; low functioning government and infrastructure.	Limited fiscal resources; medium functioning government and infrastructure. May struggle with persistent equity challenges among sub-populations.	Adequate fiscal resources; high functioning government and infrastructure. May struggle with persistent equity challenges among sub-populations.	Provide guidance; influence agendas and leverage resources on a global scale.

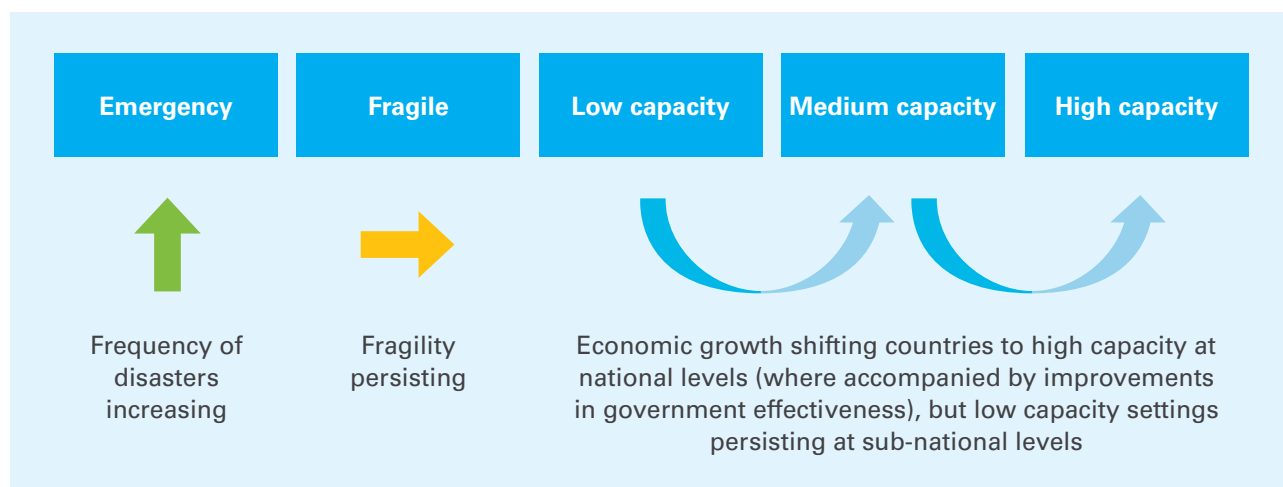
In line with the country context-specific approach elaborated in UNICEF's Strategy for Health, UNICEF's approach to health programming will differ depending on the level of country capacity. In emergency and fragile settings, focus will be on supporting and financing service delivery and re-establishing essential health services. In low-income and low-capacity settings, UNICEF will continue to support implementation, appropriate to country context, but will gradually shift to technical assistance, evidence generation and leveraging domestic resources in order to reach the unreached. In middle-income countries with low-capacity systems, UNICEF will assume a similar role as in low-income countries, but will place greater emphasis on leveraging domestic resources and advocating for strong government ownership and accountability mechanisms.

UNICEF's immunization staff numbers will be limited in middle-income countries. In middle-income countries with strong health systems, UNICEF's role will focus on targeted technical assistance and evidence generation to promote the rights of children and alert governments when equity gaps are identified and when children's rights are not being realized. Current experience suggests that UNICEF's comparative advantage in such settings may be in areas such as ensuring demand for immunization, supporting enhancements in the quality of services, improving vaccine procurement and management practices, and advocating for greater domestic financing for immunization. The specifics will differ widely from one country to another.

In each country, staffing profiles will be based on context and needs. Areas of staff expertise will range from programme implementation to capacity building, evidence generation, advocacy and, in some cases, specialized areas of expertise such as immunization financing or procurement systems. In some of these countries, instead of dedicated immunization specialists, UNICEF country offices may have more general health or nutrition experts who cover several programme areas, with specific areas of expertise provided through consultants or in partnership with appropriate institutions.

In all contexts, UNICEF's immunization work will focus on capacity building. In cases where there is a need for UNICEF to fill in for missing capacity, this will be done in a way that promotes a deliberate shift to capacity building in a time-bound manner. Where appropriate, UNICEF will explore partnerships to deliver the requisite technical assistance. This may include engaging local institutions to build the capacity of national governments or civil society organizations and technical partners.

Over the next decade, UNICEF anticipates that economic growth will cause countries to progress through capacity typologies (see Figure 6). It is nevertheless important to note that economic growth does not necessarily translate into improved capacity unless deliberate investments are made to strengthen systems and institutions. It is also important to note that while many countries will undergo economic development, which will strengthen country capacity, some of these countries will remain fragile. This is particularly the case for countries facing natural and human-caused disasters, which are expected to increase in frequency.

Figure 6 Anticipated shifts through the year 2030

It must be acknowledged that during the Roadmap period, UNICEF will need to operate in very diverse contexts, both in terms of country capacity and UNICEF's in-country capacity. A uniform global approach, such as the 'GOBI' initiative,³⁹ which UNICEF effectively advocated for in the past, is today neither appropriate nor relevant. The Roadmap will therefore be used as a blueprint for designing and implementing UNICEF immunization programmes at the country level, with each country designing an approach to the specific country context based on UNICEF's in-country comparative advantage (*see Annex 1*).

4.4 Objectives and priorities

4.4.1 High-level objectives

Working with partners, UNICEF will contribute to the achievement of three high-level objectives:

1. Global and national policies that are based on evidence and address the immunization needs of the most disadvantaged and underserved populations.
2. National systems and domestic resource allocations to guarantee equitable access to immunization services and quality vaccines, contributing to the realization of global immunization goals, including eradication and elimination goals.
3. Communities that value and demand their right to immunization services.

4.4.2 Intermediate-level objectives

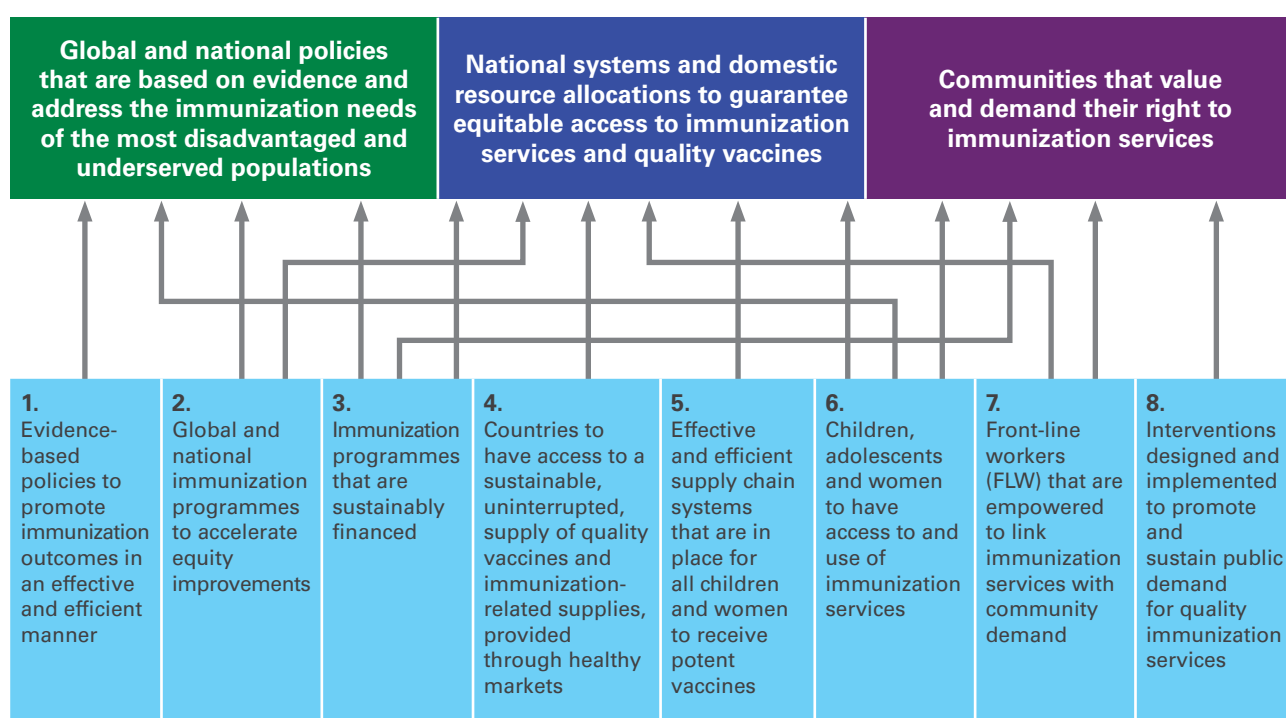
To achieve the three high-level objectives above, UNICEF will contribute to the achievement of eight intermediate-level objectives:

1. Evidence-based policies to promote immunization outcomes in an effective and efficient manner.
2. Global and national immunization programmes to accelerate equity improvements.
3. Immunization programmes that are sustainably financed.

³⁹ United Nations Children's Fund, 'The 1980s: Campaign for child survival', UNICEF, <www.unicef.org/sowc96/1980s.htm>, accessed 24 May 2018.

4. Countries to have access to a sustainable, uninterrupted supply of quality vaccines and immunization-related supplies, provided through healthy markets.
5. Effective and efficient supply chain systems that are in place for all children and women to receive potent vaccines.
6. Children, adolescents and women to have access to and use of immunization services.
7. Front-line health workers that are empowered to link immunization services with community demand.
8. Interventions designed and implemented to promote and sustain public demand for quality immunization services.

Figure 7 Link between high-level and intermediate-level objectives



4.4.3 Priorities

UNICEF has defined a series of priorities for each of the intermediate-level objectives (*see Figure 8*).

Figure 8 Overview of priorities

1. Evidence-based policies to promote immunization outcomes in an effective and efficient manner	2. Global and national immunization programmes to accelerate equity improvements	3. Immunization programmes that are sustainably financed	4. Countries to have access to a sustainable, uninterrupted supply of quality vaccines and immunization-related supplies, provided through healthy markets
Priorities			
1.1 Field evidence to inform immunization policy 1.2 National and subnational actors to develop multi-year strategies for equitable delivery of services	2.1 Global programmes and reporting systems to adopt indicators that track equity in immunization 2.2 National programmes to adopt equity indicators and regularly monitor equity in immunization outcomes 2.3 Equity performance indicators to be used by countries in programming	3.1 Knowledge, skills and motivation for planning and budgeting for immunization programmes to be enhanced at all levels of government 3.2 Government decision-makers and civil society to have sufficient evidence to advocate for sustainable immunization programme financing 3.3 Immunization stakeholders to support effective financing flows to service delivery levels 3.4 Pre-financing mechanisms to be used to avoid temporary cash flow issues	4.1 Improved forecasting and accuracy 4.2 Research and development for new and existing vaccines and technologies to be accelerated to meet emerging needs 4.3 Countries' capacities for strategic procurement to be strengthened 4.4 Quality assurance with WHO and suppliers to be strengthened in order to overcome regulatory constraints 4.5 Global and local markets to be influenced in order to access vaccines and related supplies
5. Effective and efficient supply chain systems that are in place for all children and women to receive potent vaccines	6. Children, adolescents and women to have access to and use of immunization services	7. Front-line workers (FLW) that are empowered to link immunization services with community demand	8. Interventions designed and implemented to promote and sustain public demand for quality immunization services
Priorities			
5.1 Immunization supply chain management to meet the minimum Effective Vaccine Management requirements 5.2 Infrastructure and cold chain to meet programme requirements 5.3 Vaccine management capacities strengthened and professionalized 5.4 Countries to use supply chain data for efficient management	6.1 Immunization programmes to identify and prioritize disadvantaged children and women for coverage improvements 6.2 Immunization programmes to implement strategies to improve coverage for the disadvantaged according to their social context 6.3 Countries to develop strategies and plans to expand immunization services to adolescent and maternal populations 6.4 Women of reproductive age to be protected from tetanus 6.5 Polio eradication to be certified 6.6 Measles and rubella to be eliminated in at least five WHO regions 6.7 Disrupted essential care services to be re-established for women and children in emergencies	7.1 FLW to be equipped with interpersonal and community engagement skills and tools to reach all 7.2 FLW motivation to be increased through improved training, monitoring and supportive supervision	8.1 Evidence on social determinants to be used to promote and sustain public demand for quality immunization services 8.2 National capacity to be built in order to respond to adverse events following immunization

4.5 Populations and platforms

While UNICEF has traditionally focused on child immunization,⁴⁰ growing recognition of the importance of maternal and adolescent immunization has prompted increasing focus on adolescent immunization in recent years.

4.5.1 Child immunization

The Expanded Programme on Immunization was established in 1974 and targets six diseases with antigens. Since its creation, the package of vaccines delivered by the Programme has gradually expanded, incorporating vaccines such as hepatitis B and *haemophilus influenzae* type b. Current immunization recommendations include a schedule of 10 antigens for all countries, with additional antigens for specific regions and for some high-risk populations.⁴¹ UNICEF continues to support this programme. Since the creation of Gavi in 2000, UNICEF has also supported the introduction of new vaccines in low-income countries, such as hepatitis B, *haemophilus influenzae* type b, pneumococcal and rotavirus.⁴²

4.5.2 Adolescent immunization

In the 2016 workshops, participants who created the impetus for the development of the Roadmap concluded that adolescent immunization programming represents an important entry point for UNICEF to strengthen other aspects of adolescent services. Key areas for intervention included the provision of the HPV vaccine and tetanus-toxoid-containing vaccine boosters to adolescents.

HPV vaccination is also an entry point for improving coordination with external partners and across sectors – such as the education sector – within UNICEF to address adolescent health issues. UNICEF will strengthen national programmes to provide immunization services to adolescents who are both in and out of school through fixed delivery point and outreach approaches. UNICEF will continue to advocate for HPV vaccination with governments and partners across all low- and middle-income countries.

4.5.3 Maternal immunization

UNICEF's maternal immunization platform prioritizes the acceleration of maternal and neonatal tetanus elimination in countries where the disease remains endemic. Key approaches to achieving elimination include the integration of tetanus immunization with antenatal care services, supplementary immunization activities and the use of innovative approaches to reach the unreached.

Future initiatives beyond tetanus vaccination include the possible introduction of influenza, pertussis, respiratory syncytial virus and group B streptococcus vaccines. Maternal immunization is an entry point for UNICEF to strengthen linkages between immunization and maternal and neonatal health platforms and other maternal services, such as the prevention of mother-to-child transmission of HIV, the delivery of HIV testing and treatment for newborns, and deworming and multivitamin supplementation.

4.6 Country-level immunization strategies

To achieve the Roadmap goals, a range of complementary vaccination strategies will need to be explored. These include vaccination through fixed posts in health centres, vaccination in schools and antenatal care facilities, outreach services, supplementary immunization activities and outbreak response activities, as appropriate. For this reason, the Roadmap does not differentiate between 'routine' and 'non-routine' immunization and deliberately avoids use of the term 'routine immunization' to describe essential, ongoing immunization services. UNICEF believes that the term 'routine' undermines the sense of importance and urgency that should be attached to efforts to improve the coverage and equity of immunization programmes, thereby preventing avoidable illness and death among mothers and children.

⁴⁰ Jolly, Richard, UNICEF (United Nations Children's Fund): Global governance that works, Routledge, New York, 2014.

⁴¹ World Health Organization, 'Table 1: Summary of WHO position papers – recommendations for routine immunization', WHO, March 2017, <www.who.int/immunization/policy/Immunization_routine_table1.pdf?ua=1>, accessed 18 October 2017.

⁴² Gavi, the Vaccine Alliance, 'About Gavi, the Vaccine Alliance', <www.gavi.org/support/nvs/>, accessed 18 October 2017, pp. 3515–3519.





5. Operationalizing the Roadmap

5.1 Partnerships

To undertake the previously outlined activities, UNICEF will work closely with partners to identify synergies and leverage comparative advantages. The Roadmap aims to promote stronger partnerships by communicating UNICEF's priorities, mandate and comparative advantages.

At the country level, UNICEF coordinates its immunization work through inter-agency coordination committees or similar national coordination mechanisms. These mechanisms seek to prevent duplication and promote aid effectiveness and efficiency. That said, the complementary roles of UNICEF and WHO at the country level show that close coordination and joint programming, with some overlap, introduce resilience into the organizations' collective technical support to governments, particularly during staff transitions or recruitment delays when one agency can temporarily cover for the other. Regional groups play a similar role in promoting coordination among a wider group of stakeholders. At all levels, WHO is and will remain a key partner for UNICEF.

At the global level, UNICEF is a member of Gavi, and is active in its governance through representation on the Gavi board and different management and coordination committees. Other important global partnerships include the Global Vaccine Action Plan, the Global Polio Eradication Initiative, the Measles and Rubella Initiative, and the Maternal and Neonatal Tetanus Elimination Initiative.

Given the ambitious targets and high donor expectations associated with these partnerships, and in the context of an increasingly complex global environment, it is critical that investments in these initiatives are well coordinated and that strategic opportunities for collaboration are identified and leveraged for maximum impact.

5.2 Talent management

UNICEF's ability to continue to deliver high-quality immunization interventions depends on its ability to attract and retain high-quality human resources at all levels. In early 2017, UNICEF conducted a global mapping of its immunization staff and found that globally, 659 UNICEF staff spent more than 50 per cent of their time on immunization-related activities, including on immunization programme management and supply chain logistics. Active talent management will be a priority in the coming years and the transition of polio assets represents an important opportunity to consolidate existing talent across the organization.

The 2017 survey was an important step towards the establishment of a more strategic talent management process within the UNICEF Division of Human Resources. These efforts will be fully aligned with the UNICEF health sector capacity development initiative and corporate talent management initiatives, and the Division of Human Resources will establish new flexibilities to improve the timeliness and quality of recruitment. The aims of this exercise include: 1) improving staff transition planning by mapping and closely tracking staff who are rotating to other locations or areas of work; 2) identifying skilled national staff with the potential for deployment to international positions globally and providing them with the necessary support and training; 3) developing nimble recruitment processes to avoid delays and minimize capacity gaps by maintaining and updating our talent pool and seeking external talent to bring into the organization; 4) establishing links with institutions and/or academia as a source of technical support to countries; 5) exploring possibilities for sharing technical expertise across multiple countries, particularly in regions with funding constraints (sub-regional technical support); and 6) improving talent retention and building the capacity of existing staff, including through remote and online e-learning modules, as well as providing guidance on career management and opportunities for growth.⁴³

⁴³ See: United Nations Children's Fund, 'Agora', <<http://agora.unicef.org>>, accessed 19 October 2017.

Enhanced efforts towards talent management

- Mapping and establishing a database of in-house talent;
- Increasing the pool of applicants through active outreach for qualified professionals;
- Planning proactively for the promotion of high performers (including identifying strong national staff for international deployments);
- Tapping into the pool of talent that is being affected (i.e., potentially terminated) by the Global Polio Eradication Initiative funding ramp-down to ensure the retention of institutional experience/memory; and
- Providing training/capacity building to support the transfer of polio knowledge/experience to the broader immunization arena.

5.3 Resourcing

Implementation of the Roadmap will require additional resource mobilization at all levels. UNICEF currently receives funding from internal budgets and external donors such as Gavi, the United States Centers for Disease Control and Prevention, foundations like the Bill & Melinda Gates Foundation, and private sector partners. Resources are predominantly dedicated to programming in low-income, Gavi-eligible countries as well as selected high-burden middle-income countries. However, even in countries receiving resources, funding is often inadequate to cover all programme requirements.

Funding gaps are more substantial in middle-income countries, where improvements in economic indices are often not matched by enhancements in immunization programme capacity or increases in domestic financial allocations for health and immunization programmes. These countries continue to depend on UNICEF and WHO for technical support, despite inadequate resources to meet demand.

After 2020, funding for immunization will be even more uncertain and complicated by the fact that more countries will transition into the middle-income category, and will therefore have reduced access to overseas development assistance. Fewer countries will be eligible for funding via Gavi and funding support for polio eradication will diminish. This may create new challenges related to mobilizing and directing financial resources to the places most in need. UNICEF must therefore continue to diversify its immunization funding, explore new funding sources and strengthen advocacy for fundraising at all levels.

To diversify its funding base for immunization, UNICEF needs to explore more non-traditional donors, such as the private sector, emerging middle-income countries, newer foundations and trusts. Internally, the UNICEF immunization unit intends to work with management to increase the allocation of UNICEF resources for immunization as a traditional core area. This would reduce dependence on highly earmarked funds and provide flexibility in the rapidly changing world, thus enabling UNICEF to pursue its own agenda rather than be driven by the agendas of other stakeholders.

5.4 Sharing accountability between Headquarters, regional and country offices

In the current environment, which is characterized by ensuring efficiency in a transparent manner, UNICEF's role in immunization is highly visible and an indicator of how the agency contributes to the global health agenda.

Consequently, the close attention of senior management and effective internal communication will be essential to aligning different parts of the organization around key priorities and monitoring progress. The Roadmap serves to outline this common vision, identifying cross-cutting priorities that apply across different contexts. As such, the Roadmap serves to guide internal and external discussions at the country, regional and global levels as strategies and plans are being developed.

Representatives are accountable for the performance of the country office and for achieving and tracking immunization programme results. They also represent UNICEF in the inter-agency coordination committees or equivalent coordination forums where immunization priorities, funding and progress are discussed and reviewed with other immunization stakeholders.

Regional directors are accountable for oversight of country office performance and providing guidance and support. It is expected that the needs of UNICEF country office immunization programmes are addressed through the fulfilment of the regional office oversight and technical assistance roles.⁴⁴

The UNICEF Headquarters division directors are accountable for monitoring the status of performance in their areas of responsibility and addressing any systemic support required to enhance country office performance along with the regional directors. Headquarters is also responsible for maintaining effective guidance to support immunization, setting performance standards and establishing technical definitions and strategic priorities for the organization overall. Headquarters also manages global immunization partnerships and provides specialized technical assistance.

5.5 Knowledge management and evidence

UNICEF will continue to generate disaggregated data and evidence to inform decision-making and strengthen immunization programming. This data and evidence will support advocacy to influence policies, facilitate fundraising and build partnerships.⁴⁵

Evidence generation efforts will focus on serving the priorities set out in the Roadmap. These include providing quality immunization services, conducting immunization supply chain management, reaching marginalized and underserved communities, enhancing communication and community engagement, facilitating immunization financing and sustainability, and leveraging private sector participation and funding. Operational research priorities will be defined based on input from countries and regions, as well as the broader UNICEF health team.

Insights and knowledge generated by UNICEF and other partners will be made available through UNICEF's knowledge management platforms. UNICEF will also gather and disseminate lessons learned, conduct implementation research, and promote the direct exchange of information and experience between countries.

5.6 Innovation

UNICEF works with industry to incentivize the development of new, innovative products and steer research and development investment toward vaccines and technologies that meet the needs of national immunization programmes.

UNICEF will continue to provide catalytic support to scale-up relevant innovations, including by supporting the field testing of new products and providing financial support to partners to mitigate the risk of research and development investments. UNICEF will also work to address challenges with products where there is no viable market by supporting work on stockpiles for emergency response or for very low demand.

There are many examples of innovations and technologies with applications in immunization programming. These include innovations in supply chain technologies, electronic immunization registries, recall and tracking of people missing vaccinations, data visualization and analysis, health worker incentivizing, and community engagement.

UNICEF will seek to encourage innovation for essential commodities for children and will work to influence markets to make sure that such commodities are accessible, affordable and appropriate. At the same time, UNICEF will conduct advocacy to shape and influence policies and mindsets to promote greater adoption of innovations.

⁴⁴ UNICEF Field Results Group, 'Annual Management Plans and Office Performance Monitoring' (internal memo), 2016.

⁴⁵ For example, Rhizome is a platform for knowledge management and evidence. See <<https://poliok.it/>>, accessed 19 October 2017.



6. Follow up: Monitoring and review

6.1 Monitoring

A monitoring dashboard is in place to measure Roadmap implementation progress. This dashboard is aligned with the immunization-specific strategic indicators in the UNICEF Strategic Plan, 2018–2021, but expands on this by reflecting the larger set of priorities outlined in the Roadmap. While the Strategic Plan indicators primarily measure progress at the outcome level, the Roadmap indicators will measure progress at the output and process levels to provide more detail on progress across the different priorities. For example, while the Strategic Plan does not measure progress on sustainable immunization financing, the Roadmap dashboard will measure progress on “the % of Gavi eligible countries that have fully paid their co-financing requirements in December of the current year” to ascertain progress on sustainable immunization financing.

Immunization-related indicators in the UNICEF Strategic Plan 2018–2021

- Polio eradication is achieved;
- 64 priority countries achieve coverage rates of DPT3-containing vaccine of at least 80 per cent in every district; and
- Measles elimination advances as 90 per cent of children are vaccinated with a first dose of measles-containing vaccine.

This monitoring dashboard will seek to improve UNICEF’s accountability on:

1. Delivering on the Roadmap priorities; and
2. Communicating with internal and external stakeholders on progress.

To the extent possible, the monitoring framework will make use of data already being collected to minimize additional reporting burdens. The monitoring dashboard will only be available internally.

To complement the internal dashboard, the UNICEF data and analytics team have developed a new resource that is publicly available and can be accessed through the UNICEF immunization website that allows users to analyse, compare and visualize coverage and equity data. This resource is available at: www.unicef.org/immunization-programme.

6.2 Review

The Roadmap will be reviewed and adapted in response to lessons learned and contextual changes. It is envisioned that the review period will be aligned with UNICEF strategic plan periods. As such, this version of the Roadmap focuses on the period 2018–2021.



Annex 1

The Roadmap as a blueprint for designing and implementing UNICEF immunization programmes at the country level

The priorities of this Roadmap are based on UNICEF's mission and comparative advantage. This implies that country offices can use the Roadmap priorities to design and implement UNICEF immunization programmes at the country level. This will be especially important during the preparation of country programme documents.

Figures 9 and 10 provide examples of how the Roadmap can be applied for country programming. The examples derive from country offices from two different regions that supported the review of the Roadmap. The boxes in green indicate those priorities that the country office is already working on and the boxes in yellow indicate those priorities that the country office has identified as a new priority going forward.

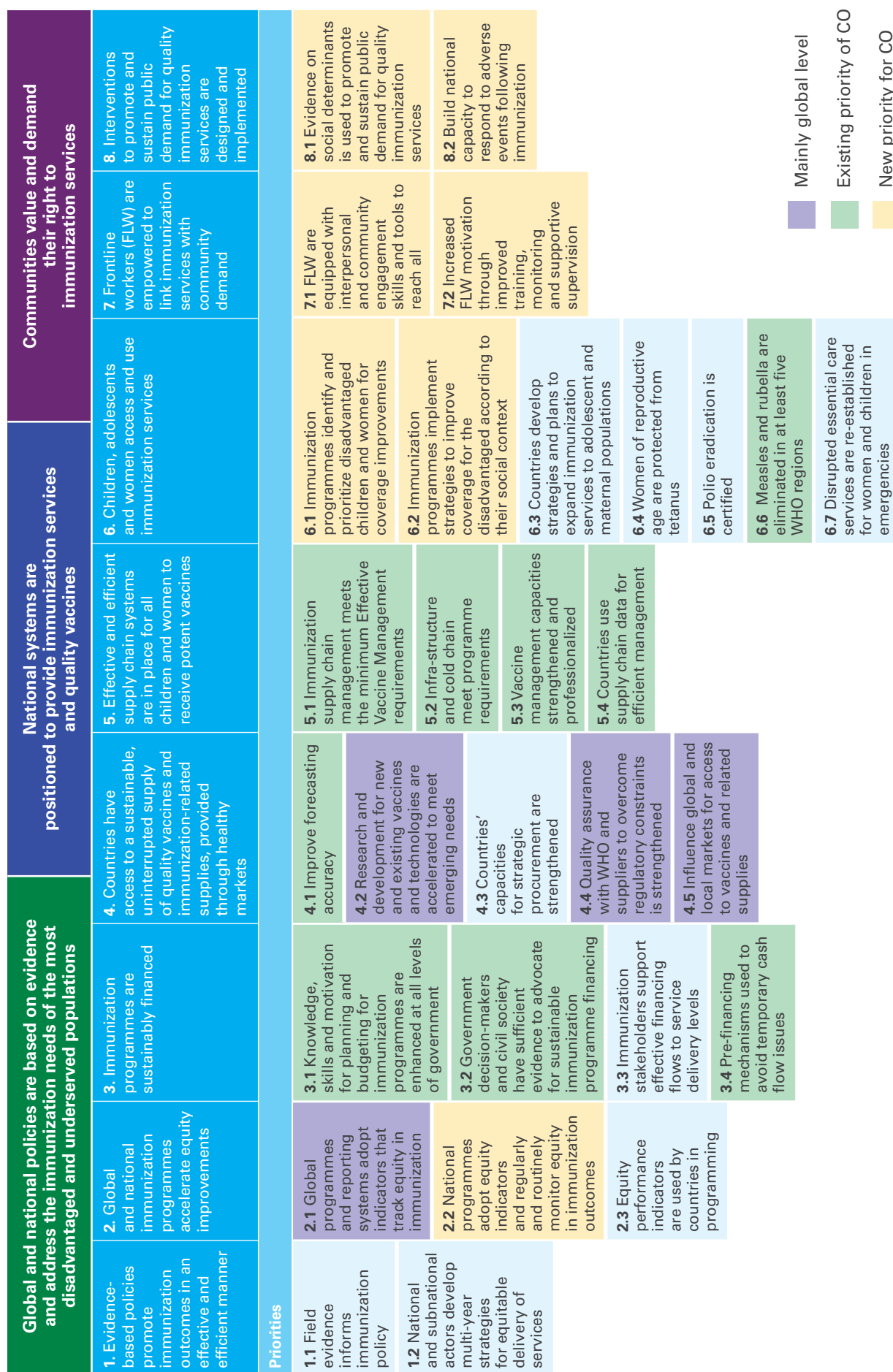
Figure 9 Example roadmap from the Europe and Central Asia region

Figure 10 Example roadmap from the Middle East and North Africa region

