NATIONAL IMMUNIZATION STRATEGY

2025 - 2029

Royal Government of Bhutan
Ministry of Health
Department of Public Health
Vaccine Preventable Disease Program

February 2025

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Fore-note – A living Strategy

The National Immunization Strategy (NIS) 2025–2029 is a dynamic document and may require amendment or revision during the five-year period it covers. Revisions will be made if there are significant changes in the costs of different NIS components, outbreaks, or the emergence of new diseases that necessitate a change in the scope of the NIS 2025–2029.

Not all changes should trigger an amendment or revision, and care should be taken not to alter course too frequently. Finally, a mid-term review (in 2027) will be an important step to assess whether the NIS 2025–2029 is on track and requires adjustments.

Acronyms

AEFI	Adverse Event Following Immunization
AFP	Acute Flaccid Paralysis
AOP	Annual Operational Plan
BCG	Bacillus Calmette Guerin (tuberculosis vaccine)
BeSD	Behavior and Social Drivers
BHTF	Bhutan Health Trust Fund
BHU	Basic Health Unit
BHW	Basic Health Worker
CBAW	Childbearing Aged Women
CCE	Cold Chain Equipment
cEPI	central Expanded Program on Immunization
CES	Coverage and Evaluation Survey
cMYP	comprehensive Multi-Year Plan
COVID-19	SARS-CoV-2 Coronavirus Disease
CRS	Congenital Rubella Syndrome
CSO	Civil Society Organization
cVDPV	circulating Vaccine-Derived Poliovirus
DHO	District Health Officer
DHS	Demographic Health Survey
DQA	Data Quality Assessment
DT/Td	Diphtheria-Tetanus
eJRF	electronic Joint Reporting Form
EPI	Expanded Program on Immunization

EVM	Effective Vaccine Management
EVMIP	Effective Vaccine Management Improvement Plan
FSP	Financial Sustainability Plan
GAVI	GAVI, the Vaccine Alliance
GDP	Gross Domestic Product
GIVS	Global Immunization Vision and Strategy
GNM	General Nurse Midwifery
GPEI	Global Polio Eradication Initiative
HA	Health Assistant
HCF	Health Care Facility
HCW	Health Care Worker
HepB	Hepatitis B Vaccine
HMIS	Health Management Information System
HPV	Human Papillomavirus Vaccine
HSS	Health System Strengthening
IA	Immunization Agenda
ICC	Inter-Sectoral Coordination Committee
IEC	Information Education Communication
IIP	Immunization in Practice
IPV	Inactivated Polio Vaccine
KABP	Knowledge Attitude Behavior Practice
MCH	Maternal and Child Health
MICS	Multiple Indicator Coverage Survey

MLM	Mid-Level Management
MNT	Maternal and Neonatal Tetanus
MNTE	Maternal and Neonatal Tetanus Elimination
MoH	Ministry of Health
MR	Measles and Rubella Vaccine
NCC	National Certification Committee
NCCPE	National Certified Committee for Polio Eradication
NCIP	National Committee for Immunization Practices
NGO	Non-Governmental Organization
NIP	National Immunization Program
NIS	National Immunization Strategy
NITAG	National Immunization Technical Advisory Committee
NVC	National Verification Committee
NVI	New Vaccine Introduction
OPV	Oral Polio Vaccine
ORC	Outreach Clinics
PBF	Performance-Based Financing
PCM	Partner Coordination Mechanism
PCV	Pneumococcal Conjugate Vaccine
Penta	Pentavalent Vaccine (DTP-HepB-Hib)
PFM	Public Financial Management
PHC	Primary Health Care

PIE	Post Introduction Evaluation
RRL	Regional Reference Laboratory
RV	Rotavirus Vaccine
SBC	Social and Behavioural Change
SDG	Sustainable Development Goals
SEARO	Southeast Asia Regional Office
SIA	Supplementary Immunization Activities
SOP	Standard Operating Procedures
TCA	Technical Country Assistance
TOR	Terms of Reference
TT/Td	Tetanus Toxoid/Tetanus Diphtheria
TTCV	Tetanus Toxoid Containing Vaccine
UHC	Universal Health Coverage
UNICEF	United Nations International Children's Emergency Fund
VPDP	Vaccine Preventable Disease Program
VPD	Vaccine Preventable Disease
VVM	Vaccine Vial Monitor
WHO	World Health Organization

Foreword

I am pleased to present the National Immunization Strategy (NIS) of Bhutan, which provides a clear roadmap to strengthen and sustain the country's immunization program. Vaccination is one of the most effective public health interventions, and Bhutan has achieved high coverage and eliminated several vaccine-preventable diseases.

Despite these accomplishments, challenges remain in reaching remote communities, maintaining cold chain systems, and responding to emerging health threats. This strategy outlines the government's vision, objectives, and key interventions to address these challenges and ensure that all children and high-risk populations have equitable access to vaccines.

Successful implementation of this strategy requires collaboration and coordinated action from all levels of government, health professionals, development partners, and communities. I urge all stakeholders to contribute actively to this effort so that Bhutan can continue protecting its population from vaccine-preventable diseases and achieve national and global immunization goals.

This strategy reflects our commitment to safeguarding public health, promoting health equity, and ensuring that every child in Bhutan benefits from a resilient and effective immunization program.

Tashi Delek!

Karma Jamtsho
Director
Department of` Public Health

Executive Summary

The National Immunization Strategy (NIS) of Bhutan provides a strategic framework to strengthen the country's immunization program and ensure equitable access to vaccines for all children and high-risk populations. Bhutan has made significant progress in vaccine coverage and the elimination of several vaccine-preventable diseases; however, challenges remain, including reaching remote communities, maintaining cold chain systems, and responding to emerging health threats.

This strategy reflects the government's commitment to achieving and sustaining high immunization coverage and improving vaccine safety and quality. Its key objectives are:

- **Enhancing Vaccine Coverage:** Achieve and maintain at least 95% coverage for all routine vaccines nationwide, with a focus on underserved and hard-to-reach populations.
- **Strengthening Immunization Systems:** Improve cold chain infrastructure, supply chain management, and logistics to ensure uninterrupted vaccine availability.
- **Surveillance and Safety:** Strengthen disease surveillance, monitor immunization coverage, and enhance the reporting and management of Adverse Events Following Immunization (AEFI).
- **Capacity Building:** Enhance the knowledge and skills of healthcare workers to deliver quality immunization services, and engage communities in vaccine awareness and acceptance.
- **Introduction of New Vaccines and Research:** Introduce vaccines based on disease burden and conduct operational research on cost-effectiveness, vaccine impact, and program sustainability.

- **Partnership and Advocacy:** Foster collaboration with development partners, civil society, and community leaders to support sustainable immunization programs.

The NIS provides a structured implementation framework, outlining strategies, timelines, responsible stakeholders, and expected outcomes. Timely and coordinated implementation of this strategy is critical to safeguard public health, prevent outbreaks of vaccine-preventable diseases, and achieve national and global immunization targets. Its success depends on sustained commitment and active engagement from all levels of government, health professionals, and communities, ensuring that every child has access to lifesaving vaccines.

NIS 2025-2029 strategies and main interventions

Strategic priority # 1 – Immunization coverage

- Strengthening emergency preparedness:
  - Develop, validate and institutionalize contingency plans to sustain immunization during emergencies, such as natural disasters and/or pandemics and validate contingency plans, including:
    - » Rapid introduction and timely access to vaccines during pandemics or emerging health threats to protect public health and contain outbreaks.
    - » Ensure an effective and equitable response by strengthening cold chain infrastructure, maintaining resilient vaccine supply and distribution systems, ensuring the availability of a skilled immunization workforce, and fostering strong multi-sectoral coordination.
  - Regularly review, test, and update vaccine deployment plans to reflect evolving risks, incorporate lessons learned from past emergencies, minimize disruptions to essential health services, and protect vulnerable population groups.
- Identify and vaccinate zero-dose and under-vaccinated children in all districts of the country:
  - Develop, validate and institutionalize protocol for mapping and immunization of zero-dose and under-vaccinated children.
- Strengthening management capacity of all immunization system components:
  - Development of SOPs for vaccine shipment from the entry point to the district and cold chain temperature monitoring during transportation; immunization waste management; vaccine vial monitoring; customs clearance of vaccines; and preventive maintenance of cold chain equipment.

- Institutionalization of annual household surveys to obtain immunization data, including data on denominator.
- Improvement of supportive supervision practices through advocacy for additional funding allocations.

o Strengthen HR capacity for immunization:

- Training of HR in microplanning and service delivery; VPD and AEFI surveillance; data management, analysis, and interpretation; implementation of SBC and IPC activities; cold chain maintenance and repairs; vaccine handling and immunization waste management, including the open vial policy and in-country transportation of vaccines; and training in financial management and budget development.

Strategic priority # 2 – Vaccine security, cold-chain and logistics

o Vaccine procurement:

- Procurement of all vaccines and injection supplies included in the national immunization schedule.

o Improving performance of the cold-chain system, vaccine supply and distribution:

- Conducting EVM assessment and temperature mapping; procurement of temperature monitoring devices; conducting CCE inventory and assessment; improving eLMIS system performance; procurement of additional CCE for the extension of the service provider network and cold chain system; ensuring maintenance and repairs of the CCE; improving vaccine distribution practices from districts to health facilities; and improving vaccine storage capacity through the installation of heating systems in selected stores.

- Data quality:
    - Conduct regular (e.g., biannual) immunization data quality assessments, including self-assessments; improve data quality and validation to enhance data analysis and promote data use for action; ensure that facilities conduct systematic and structured analyses to identify and resolve problems.

- Strengthen capacity for implementation of Household surveys:
    - Institutionalize data triangulation practices for defining immunization eligible children and adults; establish feedback mechanisms on data management and analysis.

Strategic priority # 3 – Accelerated disease control initiatives

- Sustain polio free status:
    - Conduct AFP surveillance; ensure high coverage of the target population with bOPV and IPV vaccines; assess the need for environmental surveillance; improve practices for sample transportation within and outside the country; conduct independent reviews to sustain polio-free status; develop and submit reports to the regional level; and conduct integrated simulation exercises for outbreak preparedness.

- Sustain Measles and Rubella elimination status:
    - Ensure high performance in measles and rubella surveillance; ensure high coverage of target population groups with the MMR vaccine; conduct case investigations of positive cases; improve transportation of samples; conduct independent reviews of measles and rubella elimination status (NVS); submit reports to the regional level; and conduct integrated simulation exercises to improve outbreak response capacity.

- Sustain MNT elimination status:
  - Ensure high routine immunization coverage of Td in pregnant women.
  - Conduct desk review assessment for maternal and neonatal tetanus.

- Hepatitis elimination and cervical cancer by 2029:
  - Ensure high routine immunization coverage of HepB and HPV vaccines for the target groups; strengthen coordination and collaboration with relevant programs, including conducting a sero-survey of Hepatitis B.

Strategic priority # 4 – integrated VPDs and AEFI surveillance systems

- VPD surveillance:
  - Provide basic training in VPD surveillance for the newly recruited medical officers and health professionals.

- AEFI surveillance:
  - Revise and institutionalize AEFI surveillance guidelines.
  - Enhance capacity of AEFI committee members in causality assessment.

- Improve sample shipment and transportation practices:
  - Conduct refresher trainings of all surveillance officers in revised integrated VPD surveillance; training of lab technicians in sample collection and shipment.
  - Implement specific interventions to establish the integrated surveillance system at surveillance sites.

Strategic priority # 5 – Introduction of new vaccines and rescheduling

Introduction of Hexavalent vaccine:

- Discussion of new vaccine introduction and conducting a cost-effectiveness study on introducing Hexavalent vaccines into the national immunization schedule.
- Conduct operational research on cost effectiveness, and vaccine wastage.
- Switch from Pentavalent to Hexavalent in 2026 (based on the study results).
- Life course vaccination

HPV switch:

- Switch from a 2-dose to a single-dose HPV vaccine schedule.

Strategic Priority # 6 - Community engagement and Demand generation

Community engagement and demand generation:

- Community engagement
- Demand generation
- Vaccine hesitancy
  - » Leverage Trusted figures
  - » Enhanced public awareness through proper communication

Implementation of awareness-raising campaigns to promote immunization services and increase their uptake; strengthening collaboration among key stakeholders, including local governments, community leaders, religious leaders, CSOs, municipalities, and other implementing partners.

Strategic priority # 7 – Financing

Advocate for additional fund allocation for ensuring financial sustainability of the NIS:

- Development of evidence to empower key decision- and policy-makers in allocating and/or raising additional funds for NIS implementation.
- Ensure inclusion of immunization in the ACT (highlighting childhood immunization in the revised 1988 ACT).

Resource requirements and financing

Resource requirements

Strategies and main interventions enumerated in the NIS document were subsequently broken down into detailed activities and costs using the new software, "NIS.Cost App." The total resource requirements for implementing the NIS during the period 2025–2029 (basic scenario over 5 years) were estimated at approximately 23 million US$.

The main cost driver of the NIS resource requirements for 2025–2029 is the "Vaccine supply, quality, and logistics" component, which accounts for approximately 94% of the total NIS cost (or about 21.6 million US$). The resource requirements for the implementation of all remaining components of the NIS account for 6% of total NIS resource requirements (or nearly 1.4 million US$), as shown in Figure 2 on page.

The resource requirements for NIS implementation per projection year vary between approximately 4.5 million US$ in 2025 and 4.8 million US$ in 2028. Overall, the analysis of resource requirement fluctuation shows that in almost all cases and in all years, it is driven by the vaccine supply, quality and logistics and program management components of the NIS.

Projections of vaccines and injection supplies are based on target population groups, target coverage rates, and target wastage rates for each vaccine included in the analysis. The vaccine cost estimates are based on vaccine prices available in the UNICEF catalogue of vaccines.

The NIS costing was conducted for two different implementation scenarios: Basic Scenario and Scenario A. The Basic Scenario envisions implementation of the existing routine immunization program without the introduction of any new vaccine in the routine immunization schedule. Scenario A considers switching from Pentavalent to Hexavalent vaccine in 2026 and extending PCV vaccination to the adult target group (65+) in addition to the Basic Scenario.

Implementation of Scenario A will increase the financial resource requirement for procurement of vaccines and injection supplies by approximately 29%, or 6.2 million US$, over the course of the NIS implementation period—2025–2029.

Financing

The Government of Bhutan, through the Bhutan Health Trust Fund, will be the major source of funding for NIS implementation, contributing approximately 15 million US$ over the five years of implementation. This will constitute 65.6% of the total secured funding for the implementation of the NIS Basic Scenario (or 65% of the total resource requirement for Basic Scenario implementation).

Gavi will contribute 583,116 US$, which constitutes approximately 2.5% of the total secured funding for NIS implementation (or 3% of the total resource requirement for the implementation of the Basic Scenario).

UNICEF will contribute approximately 946,471 US$, constituting 4.1% of the total probable and secured funding (or 4% of the total resource requirement for the implementation of the Basic Scenario).

WHO will contribute approximately 633,120 US$, which accounts for 2.8% of secured and probable funding (or 3% of the total resource requirement for the implementation of the Basic Scenario).

MSD contribution will amount to 356,982 US$, which accounts for 1.6% of secured and probable funding (or 2% of the total resource requirement for implementation of the Basic Scenario of the NIS).

JJCV contribution will be 4.4 million US$, accounting for 19.4% of total secured and probable funding (or 19% of the total resource requirement for the implementation of the Basic Scenario).
PIVI contribution will amount to 921,045 US$, which constitutes approximately 4% of the total secured and probable funding (or 4% of the resource requirement for the implementation of the NIS Basic Scenario).

Monitoring and evaluation framework

An immunization monitoring and evaluation (M&E) framework was developed using impact, outcome, and output indicators, and was aligned with the Monitoring and Evaluation framework of the Strategic Framework for the South Asia Regional Vaccine Action Plan 2022–2030.

Implementation and operationalization

The NIS is now to be translated into an annual operational plan (AOP), enabling a clear description and financing of all activities necessary to implement the NIS strategies and main interventions by the different stakeholders on a yearly basis up to 2029. The AOPs use the roadmap of activities that was developed for costing the NIS.

National Immunization Strategy 2025-2029

1. Positioning the NIS in a changing environment

Immunization is one of modern medicine's greatest success stories. The international community repeatedly supports vaccines and immunization to prevent infectious diseases, cancers, and chronic diseases. Expanding access to immunization is crucial to achieving the Sustainable Development Goals (SDG). Not only does immunization prevent sickness and death associated with infectious diseases such as, measles, pneumonia, polio and whooping cough, they also hold up broader gains in education and economic development.

Immunization prevents deaths every year in all age groups from diseases like diphtheria, tetanus, pertussis and measles. It is one of the most successful and cost-effective public health interventions saving the Government's money on curative treatments. Immunization currently prevents 4-5 million deaths every year[1]. An additional 1.5 million deaths could be avoided, if global vaccination coverage further improves., The estimated economic impact of vaccinations between 2001 and 2020 in 73 low- and middle-income countries were about US$ 350 billion USD saved in cost of illness[2].

1.1. NIS alignment with national, regional and global strategies

With the world stepping into the new decade, there are important changes in the global landscape that have the potential to impact the way countries develop their National Immunization Strategy (NIS). They are mainly referring to:

1 https://www.who.int/news-room/facts-in-pictures/detail/immunization

2 World Health Organization Bulletin 2017; 95: 629–638

In May 2020, the World Health Assembly (WHA) endorsed the new global strategy on immunization, the "Immunization Agenda 2030 - A Global Strategy to Leave No One Behind" (IA2030) aiming to address key challenges in immunization over the next decade.

In July 2020, WHO Regional Technical Advisory Group (ITAG) endorsed the Strategic Framework for the South-East Asia Regional Vaccine Action Plan 2022-2030 to reaffirm their commitment to regional immunization goals and targets.

In June 2024, the Gavi Board approved a new five-year strategy "Gavi 6.0" with a vision to "leaving no-one behind with immunization" and a mission "to save lives and protect people's health by increasing equitable and sustainable use of vaccines".

Recently, there was a renewed call for a more integrated primary health care (PHC) as the best and most affordable way to achieve Sustainable Development Goal (SDG) and Universal Health Coverage (UHC) by 2030.

Finally, there are concerns that in the next decade, international support for immunization might not increase as quickly as needed to achieve the goals outlined in IA2030, and that the focus for resource mobilization will need to shift from external funding to domestic investments.

In Bhutan, the last strategic plan for immunization ended in 2023 (cMYP 2019-2023). The Ministry of Health with support of the international development partners initiated the development of its new immunization strategic plan, the NIS 2025-2029. This Strategy fits within the broader and integrated approach of the PHC, but also within other public health programs specific strategic plans.

2. Situation analysis: the “diagnosis”

2.1. Process

The situation analysis of the immunization program was structured as follows: a) the EPI review in March 2024 b) a desk review of all available immunization and health system documents, c) individual consultations with all stakeholders involved in immunization, and d) a national-level working meeting and workshop, where representatives from all departments of the Ministry of Health participated in consolidating the situation analysis and proposing suggestions for NIS strategic priorities, objectives, main interventions, and activities.

2.2. Summary overview

Important note: The consolidated situation analysis is available as a complete and comprehensive report. It includes detailed achievements, successful interventions, the challenges currently faced by the VPDP, and lessons learned from the past strategy period. To keep the NIS document concise, the following “summary overview” of the situation analysis will intentionally focus only on the current challenges, underlying factors, and root causes. All achievements and successful interventions of the VPDP in recent years can be found in the complete and comprehensive report.

HUMAN RESOURCES MANAGEMENT

Main challenges:

HR Planning

- Supportive supervision was minimal due to limited budgets and human resources.

Capacity building

- Shortage of cold-chain staff at the national and regional cold stores, with only one EPI technician at the national cold store.

- Shortage of service providers at all levels of health centers.
- Limited training opportunities for health workers on immunization and surveillance data analysis.
- Inadequate supportive supervision practices due to limited budget allocations, especially at the district level.
- High attrition rates among health workers.
- Decline in VHW support for community engagement, mobilization, and health promotion/prevention due to lack of incentives and/or adequate remuneration.

VACCINE SUPPLY, VACCINE MANAGEMENT, COLD CHAIN AND LOGISTICS

Main challenges:

Vaccine procurement

- The financial sustainability of vaccine procurement is crucial, as approximately 35% of the current vaccines are supported by development partners.

Effective Vaccine Management

- The use of the 30 DTR temperature monitoring chart is not uniform across all health facilities.
- Cold chain monitoring, and vaccine distribution and collection at ORCs need strengthening.
- Some HAs face challenges in maintaining the seven logbooks for vaccines, diluents, and syringes on a daily basis.

Cold-chain equipment and logistics

- The EVM 2022 improvement plan is partially implemented.
- There is a need to strengthen supportive supervision and monitoring of cold chain and logistics system performance.

Immunization Waste Management

- Immunization waste management practices are not consistent in some health facilities, particularly with regard to burning, burial, and disposal as municipal waste following incineration or decontamination.

SERVICE DELIVERY AND NEW VACCINE INTRODUCTION

Main challenges:

- As vaccination is provided to all, irrespective of catchment area, it is difficult to track children who have received vaccinations at other health facilities.
- Defaulter tracking is a challenge in larger, busier districts due to limited human resources.
- The number of active VHWs has declined due to insufficient funding and a lack of motivating factors.

Service implementation and session quality

- Implementation of an expanding list of comprehensive curative and preventive services (integrated system) at PHC and satellite clinic level is leading to increased workload while staffing levels remained the same.
- While open vial policy is being implemented, sessions are often less frequent for reconstituted vaccines to reduce wastage. Vaccine wastage by antigen is not systematically computed or displayed.
    - » Open vial policy is NOT to be followed at the ORCs as per the EPI guideline.
- No detailed microplanning was conducted in some health facilities but appears acceptable when populations are small.

- » Targets are (supposed to be) determined by annual household surveys, which are very time-consuming and usually completed in April; however, it has become difficult to continue due to budget constraints.
- » Most targets are set with data from previous years, experience, and knowledge of the community.

- Limited supervision and feedback.
- With the enhanced connectivity of roads, assess the need for the ORC in some PHCs.

IMMUNIZATION COVERAGE AND PERFORMANCES MONITORING

Main challenges:

Coverage recording, reporting and data quality

- Managing multiple recording systems, both in hard- and softcopy which is time-consuming and prone to data entry errors.
- Coverage monitoring charts done retrospectively; as such not necessarily assisting to track immunization status for timely intervention.
- In urban areas no annual health survey to define denominators and the previous year's Penta1 and BCG numbers are taken.

VPD SURVEILLANCE, ERADICATION / ELIMINATION / CONTROL INITIATIVES AND OUTBREAK RESPONSE

Main challenges:

Accelerated disease control initiatives

Measles and Rubella surveillance

- There are difficulties with the transportation of samples. Although the turnaround time for reporting sample results at the national level is within four days, samples are submitted

through the Bhutan Postal Service, which does not provide a special courier service. As a result, it takes more than a week for hospitals to receive their results after sending the samples by mail.

- Measles testing at RCDC is batched to occur twice per week.
- Difficulty in establishing cross border collaboration.
- At the PHC level, Health Assistants do not have the capacity to centrifuge and process the samples before sending them to the district level.

MNT surveillance

- For the Td vaccination schedule in pregnancy, coverage is above 90%; however, a desk review has not been conducted.

Hepatitis B surveillance

- National HepB birth dose coverage <90% target 2019-2021.
- Large coverage variance at the district level in the 2022 subnational vaccinations, as reported in the annual EPI reporting form, exceeds the national figure (9,971 vs. 9,670), suggesting that birth dose vaccinations are recorded at the place of delivery rather than the place of residence.

AFP surveillance

- Not all performance quality indicators are being met.
- Case investigation is fast, but stool sample collection is sometimes delayed.
- Due to shipment delays, laboratory results (from the reference laboratory in Thailand) became available after 35 days of onset.

AEFI surveillance

- All health centers have AEFI kits; however, in a few centers, they are inappropriately stocked or not properly organized.
- Issues of AEFI reporting include a drastic reduction in reporting of AEFIs, and minor AEFIs not being reported.
- There is hardly any community and village health workers' involvement in the surveillance.
- Health workers in areas with high staff turnover require additional training in VPD, case investigation, and AEFI surveillance.

DEMAND GENERATION AND COMMUNICATION

Main challenges:

Advocacy and health promotion system

- The absence of a contingency plan to address events that could undermine public confidence (e.g., AEFI, rumors, or misinformation) places the immunization program at risk, potentially affecting future vaccine uptake.
- There has been no recent systematic collection of behavioral and social drivers of vaccine demand, nor social listening analysis to understand motivations, perceptions, myths, and equity issues in areas with lower coverage, or to prepare for events that could undermine public confidence (e.g., AEFI). This gap is significant, as evidenced by social media's emergence during COVID-19 as an increasingly influential source of public information.
- There is a need to reinforce the strategic intervention approach to ensure high demand for vaccination among the immunization target groups.

Social behavioural changes (SBC)

- There is inadequate investment in comprehensive social and behavior change strategic documents to guide demand generation, although reviewers assessed the community's trust in the immunization program as sufficient.
- There has been limited investment in evidence generation to understand the dynamics of social behavioral change. Findings indicate that individuals strongly rely on their community relationships with health workers, family, religious leaders, and friends to shape their attitudes towards vaccination; a few cases of vaccine hesitancy in Bhutan could create pockets of resistance and influence future decisions. Factors such as cultural beliefs, access to information, trust in healthcare systems, and perceived risks versus benefits all play a role in shaping individual attitudes towards vaccination. Investing in the SBC sector and repositioning SBC as a pivotal component for decision-making will ensure policymakers, healthcare professionals and community leaders co-design targeted culturally-sensitive effective interventions. This is particularly important to enhance/sustain high vaccine demand and effectively address misinformation, and in preparation for new vaccine introduction.

Community engagement

- Consider development of a comprehensive SBC strategy to sustain gains and increase uptake for any new vaccines as part of an integrated service approach to health promotion. This strategy should be multi-faceted and include targeted messaging, community engagement initiatives, and continuous monitoring and evaluation to adapt interventions for emerging context/needs.

STATE AND NON-STATE HEALTH SECTOR FINANCING

- Out-of-pocket health expenditures in Bhutan have been rising in line with increases in the cost of living and inflation, particularly in larger towns where referral hospitals are located. Reports of catastrophic health expenditure have also emerged, with some families seeking public support and donations to cover treatment costs.

IMMUNIZATION PROGRAM FINANCING

- The government is the major funding source of the immunization programme, contributing more than 75% of its total cost.
- Most of its contribution is to maintain health care personnel and facilities, as well as covering current EPI costs. Increasingly, a considerable role in the VPDP financing is being played by the BHTF that finances pentavalent, HPV, PCV and Influenza vaccines, accounting for over 64% of the total vaccine procurement. The BHTF is expected to fully assume responsibility for financing the procurement of vaccines and injection devices once the program is fully transitioned to the government.
- In 2016, Bhutan graduated from Gavi (the Vaccine Alliance) support; thus, introducing new vaccines into its routine vaccination program poses long-term financial commitments for the government.

3. NIS roadmap 2025-2029

3.1. SDG, UHC and IA 2030

SUSTAINABLE DEVELOPMENT GOALS AND UNIVERSAL HEALTH COVERAGE

Immunization plays a pivotal role in achieving the Sustainable Development Goals (SDGs), particularly SDG 3: ‘Ensure healthy lives

and promote well-being for all at all ages,' and contributes directly or indirectly to 13 other SDGs. As one of the most far-reaching health interventions, immunization serves as the foundation of primary healthcare systems and a key driver of progress toward Universal Health Coverage (UHC).

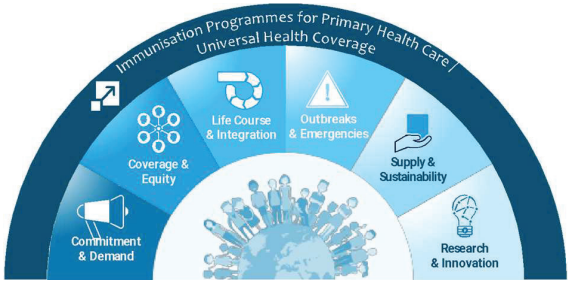
IMMUNIZATION AGENDA 2030 AND STRATEGIC FRAMEWORK FOR VACCINATION SEARO 2030

The Immunization Agenda 2030 envisions a world where everyone, everywhere, at every age fully benefits from vaccines to improve health and well-being. It seeks to sustain hard-won gains in immunization, recover from the disruptions caused by COVID-19, and achieve even more — ensuring that no one is left behind, in any situation or at any stage of life. The Immunization Agenda 2030 is built around seven strategic priorities, described below. The Strategic Framework for the South-East Asia Regional Vaccine Action Plan 2022–2030 is the regional adaptation of IA2030 for the South-East Asia Region.

3.2. NIS vision and strategic priorities

3.2.1. NIS vision

"All immunization-eligible Bhutanese enjoy full protection against vaccine-preventable diseases through sustained access to high-quality and equitable vaccination services"



3.2.2. Strategic priorities and NIS roadmap framework

The NIS strategic priorities correspond to specific priority areas identified during a series of meetings and consultations held with the participation of key stakeholders from national and sub-national levels. During these consultations, six strategic priorities were set. Subsequently, under each of these strategic priorities, specific objectives and main interventions were defined.

The NIS is a strategic document and therefore limited to objectives, strategies, and main interventions. Detailed activities are not enumerated, to avoid the NIS becoming an overly extensive listing. Activities and associated information will be further detailed in the Annual Operational Plan (AOP), which will be developed after the NIS, providing a clear description of all activities necessary to implement the NIS strategies and main interventions.

STRATEGIC PRIORITY # 1 - COVERAGE OF ROUTINE IMMUNIZATION

OBJECTIVE 1: MAINTAIN ROUTINE IMMUNIZATION VACCINATION COVERAGE AT 95% OR HIGHER THROUGH 2029

Strategies and main interventions

1.1. Sustain and improve routine immunization coverage

1.2. Strengthen in-country emergency preparedness and response capacity (e.g., for VPD outbreaks and pandemics).

1.3. Identify and vaccinate zero-dose and under-immunized children in all districts of the country.

1.4. Strengthen the management capacity of all immunization system components.

1.5. Ensure the availability of qualified human resources at all health facilities.

STRATEGIC PRIORITY # 2 - VACCINE SECURITY, COLD-CHAIN AND LOGISTICS

OBJECTIVE 2: Improve the performance of cold-chain and logistics systems

Strategies and main interventions

2.1. Procure VPDP vaccines and injection supplies.

2.2. Improve the performance of the cold chain system, vaccine supply, and distribution.

STRATEGIC PRIORITY # 3 - ACCELERATED DISEASE CONTROL INITIATIVES

OBJECTIVE 3: Sustain the Polio free status, elimination status of Measles, Rubella, MNT and elimination of Hepatitis B and Cervical Cancer

Strategies and main interventions

3.1. Sustain polio-free status

3.2. Sustain Measles & Rubella elimination status

3.3. Sustain MNTE status

3.4. Eliminate Hepatitis B by 2029

3.5. Eliminate Cervical cancer by 2029

3.6. Integrate childhood vaccination with adult vaccination, focusing on a life-course approach.

STRATEGIC PRIORITY # 4 - SURVEILLANCE SYSTEMS

OBJECTIVE 4: Strengthen surveillance capacity and systems

Strategies and main interventions

4.1. Strengthen VPD surveillance capacity and practices

4.2. Strengthen AEFI surveillance capacity and practices

STRATEGIC PRIORITY # 5 - NEW VACCINE INTRODUCTION

OBJECTIVE 5: Prevention of diseases protected by new and underused vaccines

Strategies and main interventions

5.1. Switch from the pentavalent to the hexavalent vaccine in 2026.

5.2. Switch from a 2-dose to a single-dose HPV vaccine in 2025.

STRATEGIC PRIORITY # 6 - COMMUNITY ENGAGEMENT AND DEMAND GENERATION

Strategies and main interventions

6.1. Implement awareness-raising campaigns to sustain and increase the uptake of immunization services.

6.2. Encourage collaboration among key stakeholders.

STRATEGIC PRIORITY # 7- NIS FINANCING

Strategies and main interventions

6.3. Advocate for additional funding allocation for NIS implementation.

6.4. Prepare the country for transition from external to domestic funding sources.

4. Resource requirements and financial analysis

Strategies and main interventions enumerated in the NIS document were subsequently broken down into detailed activities (roadmap) and costed using the new online software, 'NIS.Cost App.' This software was used not only for costing but also for budgeting and financing operations. Complete and detailed reports can be downloaded from the online Bhutan NIS.Cost application.

4.1. Resource requirements

4.1.1. Overview of the resource requirements' structure

Important note: *All following numbers and breakdowns are reflecting the basic scenario, with no new vaccine introduction. A separate scenario called "scenario A", with new vaccine introduction, will be presented in chapter 4.1.3.*

The total resource requirements for implementing the NIS during the period 2025–2029 are estimated at approximately USD 22,932,495, as shown in Figure 1 below.

Figure 1: National immunization program costs summary by EPI components and years

Immunization system components	Future resource requirements					Total 2025-2029
	2025	2026	2027	2028	2029	
Program management	144,323	47,946	65,536	195,946	32,536	**486,287**
Human resources management	34,875	134,625	58,925	36,175	83,150	**347,750**
Vaccine Supply, quality and logistics	4,209,978	4,236,969	4,381,432	4,361,025	4,430,424	**21,619,828**
Service Delivery	0	0	0	0	0	**0**
Immunization coverage and AEFI monitoring	19,620	7,980	1,980	154,620	7,980	**192,180**
Disease Surveillance	46,090	40,090	40,090	46,090	46,090	**218,450**
Demand Generation	0	24,000	10,000	10,000	24,000	**68,000**
Total immunization costs	**4,454,886**	**4,491,610**	**4,557,963**	**4,803,856**	**4,624,180**	**88,932,495**

Source: NIS Costing, financing, budgeting and funding analysis (NIS.Cost)

Considering the population projections, it could be translated into an investment of approximately 6 US$ per capita per year or of 53 to 60 US$ per fully vaccinated child per year (See Table 1 below)

Table 1: Cost dynamics of the national immunization strategy per capita and per immunized child

Bhutan	2025	2026	2027	2028	2029
NIS cost per capita	$6	$6	$6	$6	$6
NIS cost per immunized child	$53	$54	$56	$60	$58

The details of future resource requirements by NIS/VPDP components are presented in Annex 1 on page below.

4.1.2. Cost drivers of the future resource requirements

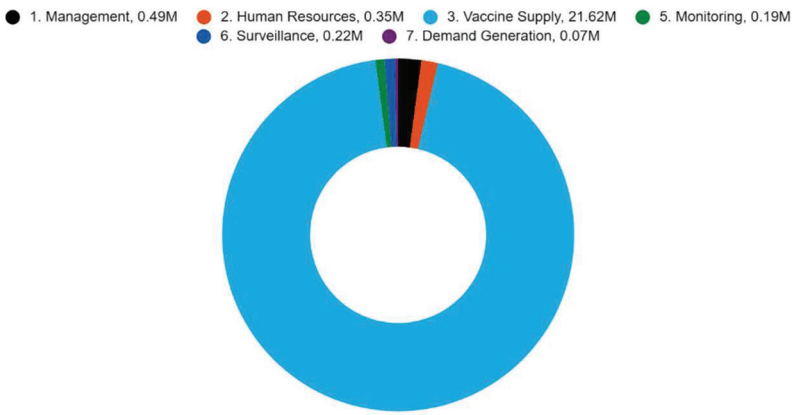
The main cost driver of the NIS resource requirements for 2025-2029 is the "Vaccine supply, quality and logistics" component of the NIS, which accounts for approximately 94% of the total NIS cost (or approximately 21.6 million U$S). The resource requirements for implementation of all remaining components of the NIS account for 6% of total NIS resource requirements (or nearly 1.3 million US$), as shown in Figure 2 below.

"Program management" component accounts for 2.1% (or approximately 486,287 US$) of total NIS resource requirements followed by "Human resource management" accounting for approximately 1.5% of total NIS resource requirements (or 347,750 US$).

The "Disease Surveillance" component represents approximately 1% (or US$ 218,450), while the "Immunization Coverage and AEFI Monitoring" component constitutes 0.84% (or US$ 192,180) of

the total resource requirement for NIS implementation. Finally, “Demand Generation” component accounts for 0.3% (or 68,000 US$) of total resource requirement for implementation of the National Immunization Strategy.

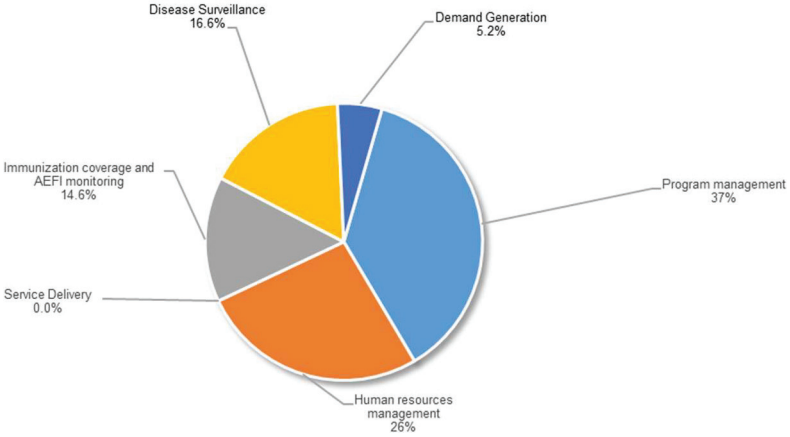
Figure 2: The future total resource requirement structure by NIS components



Analysis of the costing of the VPDP components without the main cost driver of the NIS, “Vaccine Supply, Quality and Logistics”, showed the following configuration of the NIS cost components:

The “Program Management” component — the second main cost driver of the NIS — represents approximately 37% of the total NIS budget (excluding the resource requirement for vaccine procurement). This is followed by the “HR Management” component, which accounts for 26% of total resource requirements (excluding vaccines). “Disease surveillance” accounts for 17% of total resource requirement, immunization coverage and AEFI monitoring accounts for 15% of total resource requirement (excluding vaccine costs) and “Demand generation” – for 5% of total NIS costs (excluding vaccine costs. See Figure 3 below).

Figure 3: Resource requirements for the EPI components excluding requirements for vaccine procurement

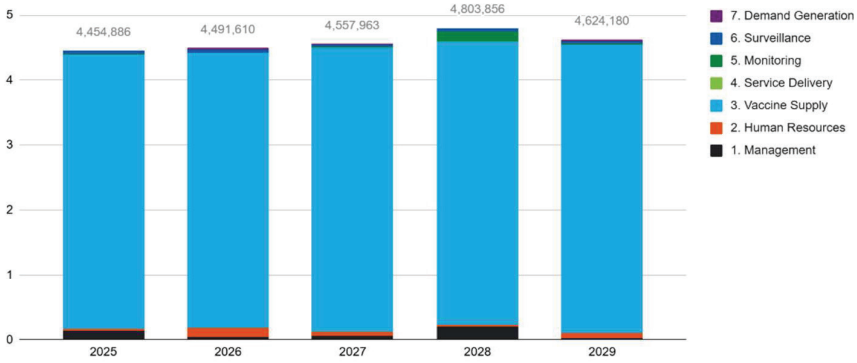


The resource requirements for NIS implementation per projection years vary between approximately 4.5 million US$ in 2025 and 4.8 million US$ in 2028:

- In the first projection year (2025) the resource requirements will be 4.5 million US$. This amount includes financial resource requirements for procurement of vaccines included in the national immunization schedule and implementation of various programmatic interventions.
- In the second year of NIS projection (2026) the resource requirements will slightly increase by approximately 0.84% (or 36,724 US$).
- In the third year of projection (2027) the resource requirements will further increase by 1.5% (or 66,353 US$) which could be attributed to the increased requirements for implementation of program management and vaccine procurement.

- In the year four of the NIS (2028) the resource requirement will further increase by 5% (or 245,893 US$) which could be attributed with the increased resource requirements for implementation of program management and immunization coverage and AEFI monitoring activities.
- In the final year of the projection (2029) the resource requirements for the NIS implementation will decrease by 3.7% (or 179,676 US$).
- Overall, the analysis of resource requirement fluctuation shows that in almost all cases and in all years, it is driven by the vaccine supply, quality and logistics and program management components of the NIS as shown in Figure 4 below:

Figure 4: The structure of future resource requirements by the NIS components and years



Vaccines and injection supplies

Two different scenarios were developed during the costing, budgeting and financing analysis of the Bhutan NIS 2025-2029:

- Baseline scenario – the vaccine schedule is not changed, and no new vaccines are introduced.

Scenario A – In addition to the baseline scenario, the country will switch from Pentavalent to Hexavalent vaccine in 2026 (which considers withdrawal of IPV from the national immunization schedule). In addition, the Scenario A includes strengthening the adult vaccination through the immunization of the 65+ population with PCV vaccine over the course of the NIS period.

Projection of the resource requirements for procurement of vaccines and injection supplies is based on the following assumptions:

- Coverage rates were set in line with the objectives and targets of the National Immunization Program (>=98% for all years).
- Wastage rates are estimated at 50% for BCG; 40% for Hep B (birth dose); 30% for bOPV and IPV; 10% for Pentavalent, MMR and HPV vaccines; 5% for DTP, Td and Influenza vaccines.

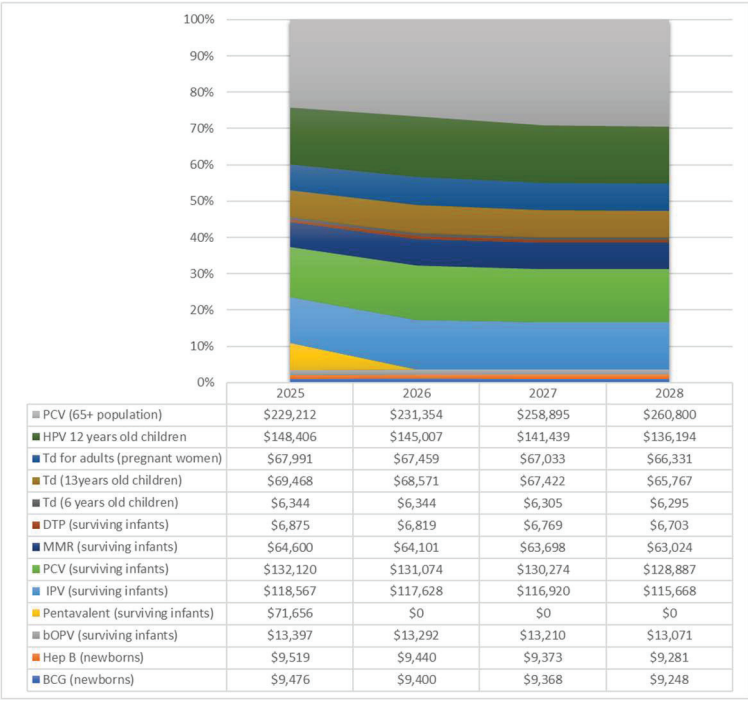
The present projections are based on historical cost estimates for vaccine procurement and include handling fee (15%), freight, insurance and inspection costs (4% of costs).

The estimate of the resource requirement for routine immunization vaccines envisages costs of following vaccines:

- **Traditional vaccines (Basic Scenario):** BCG, HepB, bOPV, MMR, DTP, Td and Influenza vaccines;
- **New and Underused vaccines (Basic Scenario):** Pentavalent vaccine, IPV, PCV and HPV.
- **New and Underused vaccines (Scenario A):** Pentavalent vaccine, Hexavalent vaccines, IPV, PCV and HPV.

Figure 5 below illustrates the cost structure of vaccines included into the Scenario A by vaccines and years during the NIS projection period.

Figure 5: Vaccine and injection supply cost projections- Routine immunization Scenario A

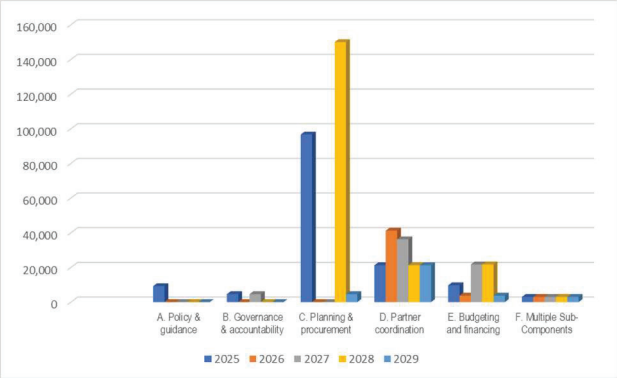


	2025	2026	2027	2028
PCV (65+ population)	$229,212	$231,354	$258,895	$260,800
HPV 12 years old children	$148,406	$145,007	$141,439	$136,194
Td for adults (pregnant women)	$67,991	$67,459	$67,033	$66,331
Td (13years old children)	$69,468	$68,571	$67,422	$65,767
Td (6 years old children)	$6,344	$6,344	$6,305	$6,295
DTP (surviving infants)	$6,875	$6,819	$6,769	$6,703
MMR (surviving infants)	$64,600	$64,101	$63,698	$63,024
PCV (surviving infants)	$132,120	$131,074	$130,274	$128,887
IPV (surviving infants)	$118,567	$117,628	$116,920	$115,668
Pentavalent (surviving infants)	$71,656	$0	$0	$0
bOPV (surviving infants)	$13,397	$13,292	$13,210	$13,071
Hep B (newborns)	$9,519	$9,440	$9,373	$9,281
BCG (newborns)	$9,476	$9,400	$9,368	$9,248

Program management and financing

Total resource requirement for implementation of interventions related to the Program Management and Financing related component of VPDP amounts to 429,287 US$. These funds are required to implement various interventions and activities for improving policy and guidance, government and accountability, planning and procurement, partner coordination, budgeting and financing and multi-sub-components of Program management and financing. The detailed information is provided in Figure 6 below:

Figure 6: The future resource requirements for “Program Management and Financing” component of the NIS



Human resources management

HR development and management will be one of the most critical components of the NIS in the period of 2025-2029.

In total approximately 347,750 US$ will be required to implement all planned interventions under this component. These interventions are mainly related to the capacity strengthening of the personnel at all levels and for all components of the NIS including, immunization service delivery, demand generation and interpersonal communication, cold-chain maintenance and repairs, improvement of the eLMIS system, etc.

Vaccines supply, quality and logistics

The total resource requirement of this component was estimated at approximately 21.6 million US$ (see details in Annex 2 on page).

This amount was calculated based on the resource requirements of Basic Scenario of NIS for procurement of all routine immunization vaccines and Influenza vaccine for vaccination of various high-risk groups.

Immunization coverage and AEFI monitoring

The total amount required for Immunization coverage and AEFI monitoring component of this NIS was estimated at 192,180 US$. The planned interventions aim at the strengthening of capacity in data recording, reporting and analysis as well as improvement of the AEFI management and causality assessment.

Disease surveillance

The total resource requirements estimated for implementing the disease surveillance related interventions of the NIS amounted to approximately 218,450 US$. The interventions under this component will aim at strengthening of VPD surveillance and AEFI surveillance systems through the improved sample transportation and lab performance.

Demand Generation

In total approximately 68,000 US$ was estimated for implementation of the demand generation activities, which considers design and implementation of specific and targeted communication, awareness raising and demand generation activities. The communication strategy will be tailored to the local context and will incorporate lessons learned from similar activities implemented over the past decade, along with enhanced social mobilization and engagement of various community-level actors.

4.1.3. Description of scenarios for new vaccines introduction

Scenario building parameters

Costing and financing analysis developed for two different scenarios for Bhutan NIS 2025-2029:

- Basic Scenario – envisions implementation of existing routine immunization program without introduction of any new vaccine in the national routine immunization schedule.

- Scenario A – considers the switch from Pentavalent to Hexavalent vaccine in 2026 and vaccination of the 65+ years old age group with PCV vaccine.

Results – financial implications of new vaccine introduction

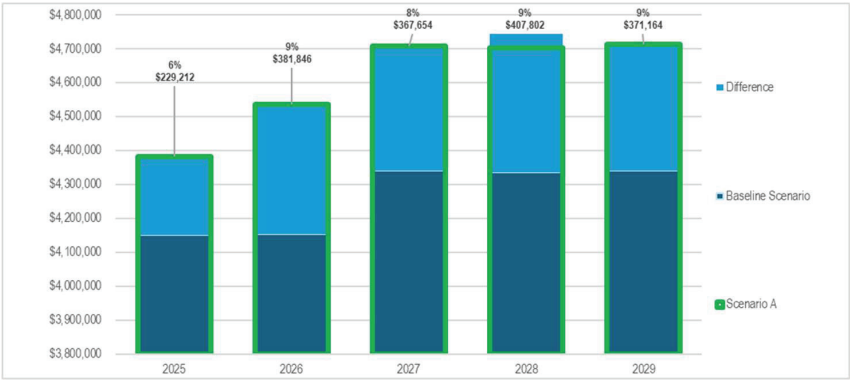
The implication of resource requirements for vaccines and injection supplies by scenarios and years is presented in Figure 7 below.

Analysis of Scenario A (switch from Pentavalent to Hexavalent vaccine and PCV vaccination of adults) considers costs and financial implications of vaccines and injection supplies, as well as the costs of other introduction-related activities such as operational costs for introduction and program management activities.

All **cost implications related** to the implementation of Scenarios A presented in this NIS are "indicative" and should be used for strategic decision making and advocacy purposes only. Therefore, in case of selection of scenario A, **it will be mandatory to assess readiness and capacity of critical components of EPI** such as program management and cold-chain to ensure the effectiveness of Scenario A implementation in the country.

Figure 7 below compares the resource requirements for vaccines and injection equipment of the Baselines scenario and Scenario A and shows that implementation of the Scenario A (Switch from Penta to Hexavalent vaccine, withdrawal of IPV and vaccination of the 65+ population with PCV) will increase the annual resource requirement for procurement of vaccines and injection supplies by 28% (or 1.1 million US$) in 2025, by 29% (or 1.2 million US$) in the second year of projection (2026), by 30% (or 1.3 million US$) in 2027, by 31% (or 1.3 million US$) in 2028 and by 30% (or 1,3 million US$) in the final year of projection (2029).

Figure 7: Comparison of resource requirements for vaccines and injection supplies between the Baseline Scenario and Scenario A by years



Overall, implementation of Scenario A will increase required financial resources for vaccines and injection supplies by approximately 8% or 1.7 million US$ over the course of the NIS implementation period – 2025-2029.

4.2. Financial analysis

4.2.1. Future financing and funding gaps

The total budget required for implementation of the basic scenario of the NIS during the period 2025-2029 is estimated at approximately 22,964,730 US$ (basic scenario) and the total budget required for the implementation of the Scenario A is estimated at 29,198,754 US$.

The total estimate of secured and probable funding for the implementation of the NIS amounts to 22,875,090 US$.

The Government of Bhutan through the Bhutan Health Trust Fund will be the major source of funding of the NIS implementation, contributing approximately 15 million US$ over the five years of

the NIS implementation which will constitute 67% of total resource requirement for the NIS implementation (or 65% of total secured and probable funding).

Gavi will contribute 583,116 US$ which constitutes approximately 3% of total secured funding for the NIS implementation (or 2.5% of total resource requirement for the implementation of basic scenario).

UNICEF will contribute approximately 996,524 US$, constituting 3% of the total probable and secured funding (or 3% of total resource requirement for the implementation of Basic Scenario).
WHO will contribute approximately 535,540 US$ which accounts for 2.4% of secured and probable funding (or 2.3% of total resource requirement for the implementation of the Basic Scenario).

MSD contribution will amount to 356,982 US$ which accounts for 1.6% of secured and probable funding (or 2% of total resource requirement for implementation of the Basic Scenario of the NIS).

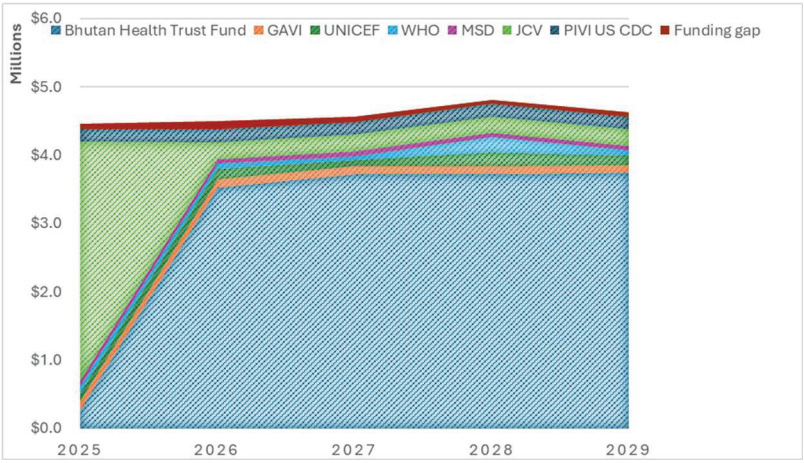
JCV contribution will be 4.5 million US$, accounting for 20% of total secured and probable funding (or 19% of total resource requirement for the implementation of the Basic Scenario);

PIVI contribution will amount to 921,045 US$ which constitutes approximately 4.08% of the total secured and probable funding (or 4.02% of resource requirement for the implementation of the NIS Basic Scenario).

Figure 8 illustrates financial sustainability of the NIS 2025-2029 considering the available funding and shows the size of the funding gap by years.

The size of the funding gap by the NIS projection years varies between 1.08% (in 2028) and 2.6% (in 2026). The total funding gap for all years accounts for 1.65% of total resource requirements for the NIS implementation.
A more detailed analysis of the funding gap is provided in the next section.

Figure 8: Financing sources and funding gap by years (with secured funding)



4.2.2. Implications of funding gaps on system performance

Analysis of the funding gap showed that the gap in the amount of approximately 378,667 US$ will affect implementation of the planned interventions of the NIS implementation (considering NIS basic scenario).

This calculation assumed that a) the Bhutan Health Trust Fund will continue allocation of sufficient budgets for financing of the underused and new vaccines and b) GAVI will continue financing of the IPV vaccine, c) MSD will provide funding for procurement of HPV

vaccine for boys, d) JCV will continue support for procurement of the traditional vaccines and PIVI will continue support for procurement of the influenza vaccines for health workers and pregnant women.

The funding gap analysis shows that the major drivers of the funding gap are "Service Delivery", "Immunization coverage and monitoring" and "Disease surveillance" components of the cEPI accounting for 99%, 99% and 98% of resource requirements respectively. This is followed by "program management and financing", "HR management" and "demand generation" components accounting for 86%, 83% and 79% of the funding gap respectively. The funding gap for each component of the immunization program is illustrated in Figure 9 below.

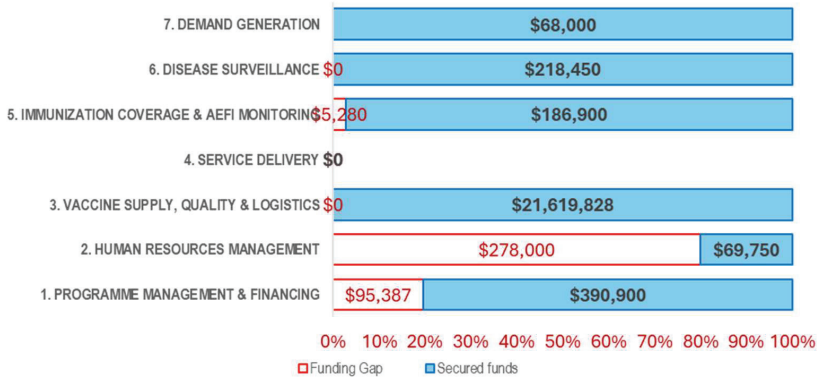
Figure 9: Funding gap structure

	Resource Requirements (RR)	Funding Gap	Funding Gap as % of RR
1. Programme Management & Financing	$486,287	$95,387	20%
2. Human Resources Management	$347,750	$278,000	80%
3. Vaccine Supply, Quality & Logistics	$21,619,828	$0	0%
5. Immunization Coverage & AEFI Monitoring	$192,180	$5,280	3%
6. Disease Surveillance	$218,450	$0	0%
7. Demand Generation	$68,000	$0	0%

The results of the funding gap analysis suggest that if additional funds are not mobilized, the immunization system of Bhutan will not

be able to ensure full-scale implementation of the NIS, which will put at risk the achievement of the NIS objectives.

Figure 10: Funding gap structure by the major cost categories



4.2.3. Financial sustainability strategies

The main and most important strategies to ensure financial and programmatic sustainability of the Bhutan National Immunization Strategy during the period of 2025-2029 will be focused on the following main directions:

1. Mobilizing additional funding through:

    a) Increasing government allocation for strengthening capacity of the immunization system of the country and meeting increased resource requirements in the context of expansion of Routine Immunization schedule with the new vaccines.

    b) Advocate with MoH for timely and fully releasing funds for financing all critical components of NIS outlined above.

    c) Conducting fundraising and advocating activities to secure additional financial support for switching from Pentavalent to Hexavalent vaccine and extending PCV vaccination to the adult groups (65+).

2. Select the most balanced and feasible scenario for the new vaccine introduction in the target population groups to sustain polio free status, measles, rubella and MNT elimination status and eliminate Hepatitis B and Cervical Cancer by 2029, as well as to strengthen preparedness against VPD outbreaks.

3. Increasing reliability of financing from domestic sources.

4. Optimize and select the most cost-effective modality for implementation of the "program activities", to decrease recurrent costs and ensure cost-effectiveness of the immunization program.

This could include following:

- Advocate for increased budget allocations and timely release of funds for full-scale implementation of all components of the NIS at all levels, including budget allocations for introduction/roll-out of the new vaccines.
- For mobilizing outstanding financial resources, accelerate communication and collaboration with international development partners and provide evidence-based information and strong justification of the need in implementation of all NIS activities over the course of implementation (2025-2029).
- Prepare and share with the national level decision makers the evidence-based information on the essential needs for ensuring full-scale implementation of the NIS and meeting national, regional and global objectives in protection of population against the VPD and effectively manage accelerated disease control initiatives (Polio, Measles, Rubella MNT, Hepatitis B and Cervical Cancer);
- Develop the cost-effective Annual Operations Plan, which will guide the national immunization program throughout the implementation of the NIS.

4.3. Special financial considerations

Immunization strategies' financing could be impacted by some specific time and resources taking interventions, but also by economic circumstances. It is therefore important to highlight those special financial considerations, in order to keep them in perspective for the NIS implementation and make sure they will be properly budgeted and financed.

Future transition out of Gavi financial support

Although international development partners are not yet phasing out their support, Bhutan must begin preparing for the transition; therefore, ensuring financial sustainability is a key priority.

New vaccine introduction

New vaccines like Hexavalent will most likely be introduced before 2029. However the decision on Hexavalent vaccine introduction into the national immunization schedule has to be based on epidemiological factors, financial capacity and WHO latest recommendations. Disease burden study and cost effectiveness analysis planned before the vaccine introduction will be instrumental to support such introduction.

5. Monitoring and evaluation

5.1. Monitoring NIS

To ensure the national immunization program remains focused and manageable, a streamlined set of indicators was selected for the M&E framework. These are categorized into four sections: a) impact indicators, b) outcome indicators, c) output indicators, and d) Regional Framework for Vaccine Action Plan 2030 indicators that Member States are committed to. The M&E framework presents a summary of these core indicators, while a separate M&E template outlines the full set of indicators, including data sources, baseline values, and target values through 2030.

5.2. Monitoring and evaluation framework

I. Health impact indicators
Under-five mortality rate: Number of deaths of < 5-year-old children per 1,000 live births
Measles incidence: Number of laboratory-confirmed measles cases per 1,000,000 population
Hepatitis B incidence: Number of chronic hepatitis cases among < 5-year-old children
II. Immunization outcomes indicators
Immunization coverage
DTP3/Penta3 coverage: Proportion (%) of children under one year receiving 3 doses of DPT containing vaccine
MCV1 coverage: Proportion (%) of children under one year receiving the 1st dose of measles containing vaccine
Hepatitis B coverage: Proportion (%) of live births receiving the hepatitis B vaccine within 24 hours
All basic vaccinations: Proportion (%) of children under one year receiving all basic vaccinations as per the immunization schedule (one dose BCG, three doses DPT-HepB-Hib, three doses OPV, one dose IPV, one dose MR, 3 doses of PCV, one dose of JE, two doses of Rota)
Immunization demand and utilization
Dropout rate: Proportion point difference (%) between DTP1/ Penta1 and DTP3/Penta3 vaccine coverage
Timeliness of vaccination: Proportion (%) of surviving infants receiving BCG and DTP1 on time

Immunization equity
Geographic equity: Proportion (%) of operational districts with at least 80% for DTP1 vaccine coverage
Zero-dose children: Proportion (%) of children who did not receive 1st dose of DPT by 1 year of age
III. Immunization output indicators
Program management and financing
Government expenditures for immunization
Proportion (%) of total estimated costs funded with dedicated budget lines
Proportion (%) of funds disbursed by versus allocated for immunization activities
Proportion (%) of health facilities with completed reports submitted on time?
Presence of an independent scientific advisory group (e.g. NITAG) that meets functionality criteria
Human resources management
Proportion (%) of vacant positions out of budgeted positions for immunization provincial officers
Proportion (%) of immunization staff from health facilities which participated in an immunization training
Proportion (%) of healthcare facilities providing immunization that received at least 1 supervision visit per year

Vaccine supply, quality and logistics
Proportion (%) of districts vaccine stores that did not experience any stockout of any childhood vaccine
Proportion (%) of healthcare facilities providing immunization that have a functioning cold chain equipment (CCE)
Proportion (%) of healthcare facilities with adequate cold space availability
Proportion (%) of township vaccine stores equipped with temperature monitoring device (Fridge Tag)
Proportion (%) of townships that introduced and implemented eLMIS system
Service delivery
Proportion (%) of townships with completed micro plan for immunization activities
Proportion (%) of fixed immunization sessions conducted against planned immunization sessions
Proportion (%) of outreach immunization sessions conducted against planned sessions
Immunization coverage and AEFI monitoring
Percent point (%) between administrative data and survey data (e.g. MICS, DHS) for DTP3/Penta3 coverage
Proportion (%) of townships reporting administrative coverage of DTP3/Penta3 >95%
Proportion (%) of townships with a negative drop-out rate between DTP3/Penta3 and DTP1/Penta1
Proportion (%) of states/regions which conducted at least one data quality assessment per year
AEFI rate: Number of AEFI cases reported for 100,000 surviving infants

VPD surveillance and control
Proportion (%) of regions which did not report any AFP case
Non-polio AFP rate: Number of Acute Flaccid Paralysis (AFP) cases reported per 100,000 < 15 years population
AFR rate: Number of Fever and Rash cases reported per 100,000 population
Advocacy, communication and demand generation
Proportion (%) of HCF providing immunization where community awareness/engagement meeting was conducted
Proportion (%) of healthcare facilities providing immunization where village health volunteers were engaged
IV. Strategic Framework for the Southeast Asia 2022-2030 – Impact indicators
Goal: Prevent disease – **Indicators:** Number of future deaths averted through immunization Achieve endorsed regional and global VPD control, elimination and eradication targets Number of large or disruptive VPD outbreaks
Goal: Promote equity **Indicators:** Number of zero-dose children Introduction of new or under-utilized vaccines

Goal: Build strong immunization program

Indicators:

Vaccination coverage across the life course (DTP3, MCV2, PCV3, HPV)

UHC index of service coverage

6. Implementation and operationalization

The NIS 2030 is a strategic document, and as such, its purpose and implementation are multi-sectoral. This is also an advocacy document, which will be used for discussing programmatic and financial priorities within the Government and stakeholders, including donors. The NIS is finally a document linked and inter-dependant to other immunization strategic documents, i.e. IA 2030, Regional Strategic Framework 2030 and Gavi 5.0 Strategy.

The NIS will be concretely translated into annual operational plans (AOPs), at national and subnational levels, enabling a clear description of all activities necessary to implement the NIS strategies and main interventions. These AOPs will be guided by the NIS but will also align with existing technical workplans used within the immunization program. The representation below illustrates the interrelationship between the NIS and various strategic and operational plans.

6.1. Risk, assumption and mitigation

The NIS 2025–2029 is a dynamic document and may require amendments or revisions if the context or underlying assumptions change. Should the situation shift in a negative direction—such as an unexpected decrease in funding, a vaccine-preventable

disease (VPD) outbreak, or the emergence of a new disease like COVID-19—the scope of the NIS 2025–2029 may need to prioritize or deprioritize certain interventions. However, not all changes should trigger a revision; only significant developments warrant such action, and care should be taken to avoid frequent shifts in direction. A mid-term review, scheduled around 2027, will serve as a key step to assess whether the NIS 2025–2029 is on track and whether any adjustments are needed.

6.2. From NIS to AOP

The annual operational plan (AOP) identifies actionable activities to be carried out to achieve the objectives, strategies, and main interventions of the NIS. The AOP is managerial and short-term, in contrast to strategic planning, focusing on month-by-month or quarter-by-quarter activities, typically within a one-year time horizon. The AOP will operationalize NIS strategies and main interventions at both national and subnational levels; therefore, it is essential that all activities in the AOP align with the NIS strategies and main interventions.

Rolling AOP

In addition to the standard AOP, the MoH will consider describing activities expected to be implemented over a period of one to two years beyond the AOP timeframe. This is called the 'Rolling AOP.' The purpose of capturing additional activities in a rolling AOP is to increase the visibility of upcoming initiatives and improve the planning of activities that specifically contribute to a common objective (e.g., NVI, SIA) and require sequencing over a multi-year period. The rolling AOP should only include prioritized interventions outlined in the NIS.

7. Annexed documents to NIS 2025–2029

Various documents were referenced throughout the text of the NIS 2025–2029. To avoid cluttering the main document, these will not be attached as physical annexes but are available from the national immunization program and on the mentioned websites.

1. List of all stakeholders involved in the NIS development
2. List of all reports and assessments reviewed for the situation analysis
3. NIS.Cost App filled-in with costing, budgeting and financial information
4. M&E framework, including indicators, sources of data, baseline and target values
5. Guidelines for developing a National Immunization Strategy (NIS)[3], WHO Aug. 2021
6. NIS costing approach NIS.Cost App[4], UNICEF Sep. 2021
7. Guidelines for development or optimization of AOP for immunization services[5], UNICEF Aug. 2021

3 www.who.int/teams/immunization-vaccines-and-biologicals/vaccine-access/planning-and-financing/nis

4 immunizationeconomics.org/unicef-niscost

5 https://immunizationeconomics.org/unicef-national-planning-and-budgeting

Annex 1: Resource requirements of the Bhutan NIS 2025-2029 basic scenario

NIS Component	2025	2026	2027	2028	2029	Total 2025-2029
Grand Total	$4,454,886	$4,491,610	$4,557,963	$4,803,856	$4,624,180	$22,932,495
1. PROGRAMME MANAGEMENT & FINANCING	$144,323	$47,946	$65,536	$195,946	$32,536	$486,287
A. Policy & guidance	$9,180	0	0	0	0	$9,180
B. Governance & accountability	4,590	0	4,590	0	0	$9,180
C. Planning & procurement	96,667	0	0	150,000	4,590	$251,257
D. Partner coordination	21,240	41,240	36,240	21,240	21,240	$141,200
E. Budgeting and financing	9,680	3,740	21,740	21,740	3,740	$60,640
F. Multiple Sub-Components of Program Management & Financing	2,966	2,966	2,966	2,966	2,966	$14,830
2. HUMAN RESOURCES MANAGEMENT	$34,875	$134,625	$58,925	$36,175	$83,150	$347,750
A. HR planning	0	0	0	0	0	$0
B. Capacity-building	34,875	134,625	58,925	36,175	83,150	$347,750
C. Supervision & performance monitoring	0	0	0	0	0	$0
D. Multiple Sub-Components of Human Resources Management	0	0	0	0	0	$0
3. VACCINE SUPPLY, QUALITY & LOGISTICS	$4,209,978	$4,236,969	$4,381,432	$4,361,025	$4,430,424	$21,619,828
A. Cold chain	40,532	83,032	40,500	25,500	89,000	$278,564
B. Supply management	4,169,446	4,153,937	4,340,932	4,335,525	4,341,424	$21,341,264
C. Transport	0	0	0	0	0	$0
D. Waste management	0	0	0	0	0	$0
E. Multiple Sub-Components of Vaccine Supply, Quality & Logistics	0	0	0	0	0	$0
4. SERVICE DELIVERY	$0	$0	$0	$0	$0	$0
A. HR & strategies						$0
B. Session quality						$0
C. Integration						$0
D. Multiple Sub-Components of Service Delivery						$0
5. IMMUNIZATION COVERAGE & AEFI MONITORING	$19,620	$7,980	$1,980	$154,620	$7,980	$192,180
A. HR & systems Immunization Coverage	0	0	0	0	0	$0
B. Recording & reporting	0	0	0	0	0	$0
C. Data quality	0	0	0	0	0	$0
D. Coverage monitoring & use	2,640	0	0	152,640	0	$155,280
E. AEFI monitoring	16,980	7,980	1,980	1,980	7,980	$36,900
F. Multiple Sub-Components of Immunization Coverage & AEFI Monitoring	0	0	0	0	0	$0
6. DISEASE SURVEILLANCE	$46,090	$40,090	$40,090	$46,090	$46,090	$218,450
A. HR & systems Disease Surveillance	0	0	0	0	0	$0
B. Detection and response	13,590	13,590	13,590	13,590	13,590	$67,950
C. Preformance	6,000	6,000	6,000	6,000	6,000	$30,000
D. Multiple Sub-Components of Disease Surveillance	26,500	20,500	20,500	26,500	26,500	$120,500
7. DEMAND GENERATION	$0	$24,000	$10,000	$10,000	$24,000	$68,000
A. Demand	0	14,000	0	0	14,000	$28,000
B. Advocacy & communication	0	0	0	0	0	$0
C. Community engagement	0	10000	10000	10000	10000	$40,000
D. Multiple Sub-Components of Demand Generation	0	0	0	0	0	$0

Annex 2: Bhutan NIS 2025-2029. Resource requirements according to the planned interventions and activities (Basic Scenario)

SN	Activities	Year 1	Year 2	Year 3	Year 4	Year 5	Total YY 1-5
OBJECTIVE 1	MAINTAIN ROUTINE IMMUNIZATION COVERAGE AT 95% OR HIGHER THROUGH 2029						
Intervention	1.1. Strengthening emergency preparedness capacity						
1.1.1	Development of contingency plan to sustain immunization						
1.1.2	Conduct consultation and validation workshop on contingency plan	$1,760					$1,760
Intervention	1.2. Identify and vaccinate zero-dose and under-vaccinated children in all districts						
1.2.1	Development of the protocol for mapping of zero-dose and undervaccinated children						
1.2.2	Conduct consultative meetings for validation of the protocol	$9,180					$9,180
1.2.3	Verification of mapping results	$2,966	$2,966	$2,966	$2,966	$2,966	$14,830
1.2.4	Conduct consultative meetings for the validation of proposed strategy	$4,590		$4,590			$9,180
Intervention	1.3. Strengthening planning and management capacity of all immunization system components						
1.3.1	SOP: vaccine shipment from the entry point to the districts (temperature monitoring during the transportation)						
1.3.2	SOP: Immunization waste management and leftover and expiry of vaccines						
1.3.3	SOP: VVM monitoring (Vaccine Vial Monitoring)						
1.3.4	SOP: Customs clearance of vaccines						
1.3.5	SOP: Prevention and maintenance of the CCE						
1.3.6	SOP: Institutionalization of annual HH system						
1.3.7	SOP: Definition of the immunization target population groups						
1.3.8	Presentation and validation of SOPs	$4,590				$4,590	$9,180

1.9	Conduct HH survey (annual HH survey)						
1.3.10	Workshop for validation of immunization data (denominator, coverage, etc.)	$2,640			$2,640		$5,280
1.3.11	Advocacy for additional fund allocation - development of the advocacy plan						
1.3.12	Development of the advocacy materials	$4,590					$4,590
1.3.13	Development of the advocacy materials	$5,747					$5,747
1.3.14	Conduct advocacy workshops for securing required funds	$1,760	$1,760	$1,760	$1,760	$1,760	$8,800
Intervention	**1.4. Strengthen HR capacity for improving performance of all components of the immunization program**						
1.4.1	Training in Micro-Planning		$6,500	$6,500	$6,500	$6,500	$26,000
1.4.2	Training in AEFI surveillance	$6,500	$6,500				$13,000
1.4.3	Training in VPD surveillance		$7,800	$7,800			$15,600
1.4.4	Training in data management and analysis		$9,750	$9,750			$19,500
1.4.5	Training in implementation of the SBC and IPC activities	$6,500	$6,500				$13,000
1.4.6	Training in cold-chain management and repairs		$15,900			$15,900	$31,800
1.4.7	Training in vaccine handling and immunization waste management, including open vial policy		$19,500			$19,500	$39,000
1.4.8	Training - MLM			$13,000			$13,000
1.4.9	Training in cold-chain preventive management and temperature monitoring devices including the reporting system		$19,500			$19,500	$39,000
1.4.10	Training in financial management and budget development		$7,800		$7,800		$15,600
1.4.11	Training in transportation of vaccines	$13,125	$13,125	$13,125	$13,125		$52,500
Intervention	**1.5. Ensure active engagement of communities, local governments, and village health workers in promotion of immunization and demand generation for vaccination**						
1.5.1	Conduct an assessment and mapping of the zero-dose and under-vaccinated children (to identify the last mile population) and analysis on the nuances around vaccine uptake among the population	$12,000					$12,000

1.5.2	Design a generic SBC plan to re-enforce and sustain the high coverage for the general population and a targeted SBC plan for the zero-dose and under-vaccinated population.	$10,000					$10,000
1.5..3	Strengthen alliance with key stakeholders i.e. local governments, community leaders, faith leaders, CSOs, CBOs, local media and other implementing partners and build their capacity for community engagement.		$20,000	$15,000			$35,000
1.5.4	Implement the SBC plan and monitor progress		$10,000	$10,000	$10,000	$10,000	$40,000
OBJECTIVE 2	**VACCINE SECURITY, COLD-CHAIN AND LOGISTICS**						
Intervention	**2.1 Procurement of vaccines and injection supplies**						
2.1.1	BCG (newborns)	$9,476	$9,400	$9,368	$9,248	$9,153	$46,645
2.1.2	Hep B (newborns)	$9,519	$9,440	$9,373	$9,281	$9,182	$46,795
2.1.3	bOPV (surviving infants)	$13,397	$13,292	$13,210	$13,071	$12,919	$65,889
2.1.4	Pentavalent (surviving infants)	$71,656	$71,084	$70,653	$69,895	$69,077	$352,365
2.1.5	IPV (surviving infants)	$118,567	$117,628	$116,920	$115,668	$114,333	$583,116
2.1.6	PCV (surviving infants)	$132,120	$131,074	$130,274	$128,887	$127,378	$649,733
2.1.7	MMR (surviving infants)	$64,600	$64,101	$63,698	$63,024	$62,294	$317,717
2.1.8	DTP (surviving infants)	$6,875	$6,819	$6,769	$6,703	$6,635	$33,801
2.1.9	Td (6 years old children)	$6,344	$6,344	$6,305	$6,295	$6,253	$31,541
2.1.10	Td (13years old children)	$69,468	$68,571	$67,422	$65,767	$63,336	$334,564
2.1.11	Td for adults (pregnant women)	$67,991	$67,459	$67,033	$66,331	$65,566	$334,380
2.1.12	HPV 12 years old children	$148,406	$145,007	$141,439	$136,194	$128,917	$699,963
2.1.13	Influenza (65+ population)	$1,693,929	$1,709,672	$1,913,321	$1,927,409	$1,956,791	$9,201,122
2.1.14	Influenza (health workers)	$184,209	$184,209	$184,209	$184,209	$184,209	$921,045
2.1.15	Children from 6 to 24 months	$652,076	$649,063	$642,163	$638,150	$633,688	$3,215,140
2.1.16	Influenza (pregnant women)	$325,420	$322,881	$320,882	$317,500	$313,800	$1,600,483
2.1.17	Influenza (people with co-morbidities)	$577,893	$577,893	$577,893	$577,893	$577,893	$2,889,465

Intervention	2.2 Improve performance of the cold-chain, vaccine supply and distribution systems						
2.2.1	Conduct EVM assessment				$150,000		$150,000
2.2.2	Procurement of the temperature monitoring devices including temperature mapping devices in EPI stores		$25,000			$25,000	$50,000
2.2.3	Conduct regular CCE inventory and assessment, including the strengthening of the eLMIS2		$28,000			$28,000	$56,000
2.2.4	2.1.5 Procurement of additional CCE for extension of the CC system	$4,532	$4,532				$9,064
2.2.5	2.1.6 Procurement of the cold-chain equipment spare parts	$14,000	$14,000	$14,000	$14,000	$14,000	$70,000
2.2.6	Development of the CCE replacement and decommissioning plan						
2.2.7	Repair and maintenance of the CCE	$11,500	$11,500	$11,500	$11,500	$11,500	$57,500
2.2.8	Improve vaccine distribution from district to the PHC level						
2.2.9	Procurement of heating systems for selected vaccine stores	$17,500					$17,500
2.2.10	Conduct assessment of effectiveness of solar refrigerators	$10,500				$10,500	$21,000
2.2.11	Update SIM cards of the real time temperature monitoring devices			$15,000			$15,000
Intervention	2.3. Improve immunization data collection and management practices						
2.3.1	Strengthen the immunization data triangulation capacity and practices						
2.3.2	Establish feedback mechanisms on performance of data management						
Intervention	2.4. Ensure active engagement of communities, local governments, and village health workers in promotion of immunization and demand generation for vaccination						
2.4.1	Design and implement awareness-raising campaigns for demand generation and promote the uptake of routine immunization vaccines, including supportive supervision and monitoring		$14,000			$14,000	$28,000

2.4.2	Strengthen collaboration between the key stakeholders for demand generation, i.e. local governments, community leaders, religious leaders, CSOs, municipalities and other implementing partners	$15,300	$15,300	$15,300	$15,300	$15,300	$76,500
OBJECTIVE 3	**SUSTAIN THE POLIO FREE STATUS, ELIMINATION STATUS OF MEASLES, RUBELLA, MNT AND ELIMINATION OF HEP B AND CERVICAL CANCER**						
Intervention	**3.1. Sustain Polio Free Status**						
3.1.1	AFP surveillance						
3.1.2	Routine immunization with OPV and IPV vaccines						
3.1.3	Assessment of Environmental surveillance need						
3.1.4	Transportation of samples (in- and out of the country)						
3.1.5	Independent review Polio sustaining polio free Status (NCCPEP)	$6,000	$6,000	$6,000	$6,000	$6,000	$30,000
3.1.6	Development and submission of reports to the regional level						
3.1.7	Conduct integrated simulation exercise for outbreak preparedness	$6,000			$6,000	$6,000	$18,000
Intervention	**3.2. Sustain Measles and Rubella Elimination status**						
3.2.1	VPD surveillance						
3.2.2	Routine immunization with MMR vaccine						
3.2.3	Case investigation of positive cases	$6,000	$6,000	$6,000	$6,000	$6,000	$30,000
3.2.4	Transportation of samples	$3,000	$3,000	$3,000	$3,000	$3,000	$15,000
3.2.5	Independent review of Measles and Rubella Elimination status (NVC)	$3,000	$3,000	$3,000	$3,000	$3,000	$15,000
3.2.6	Development and submission of reports to the regional level	$4,590	$4,590	$4,590	$4,590	$4,590	$22,950
3.2.7	Conduct integrated simulation exercise for outbreak preparedness						
Intervention	**3.3. Sustain MNT Elimination status**						
3.3.1	Desk review assessment for the MNT						

Intervention	**3.4. Hepatitis B elimination by 2030**						
3.4.1	Routine immunization						
3.4.2	Strengthen coordination with the HIV program	$5,940	$5,940	$5,940	$5,940	$5,940	$29,700
3.4.3	Conduct sero-survey in 2027				$150,000		$150,000
Intervention	**3.5. Cervical Cancer elimination by 2030**						
3.5.1	Routine immunization with HPV						
3.5.2	Strengthen coordination with the Cancer Program						
OBJECTIVE 4	**STRENGTHEN SURVEILLANCE SYSTEMS AND PRACTICES**						
Intervention	**4.1 VPD surveillance**						
4.1.1	Basic training in VPD surveillance	$8,750	$8,750	$8,750	$8,750	$8,750	$43,750
4.1.2	Refresher training in VPD surveillance		$13,000			$13,000	$26,000
4.1.3	Sample collection and shipment						
4.1.4	Carry out specific interventions for including VPD surveillance in integrated surveillance system in 32 surveillance sites	$17,500	$17,500	$17,500	$17,500	$17,500	$87,500
Intervention	**4.2 AEFI surveillance and management**						
4.2.1	Revision and institutionalization of the AEFI surveillance guidelines	$15,000					$15,000
4.2.2	Building capacity of AEFI committee members in causality assessment		$6,000			$6,000	$12,000
4.2.3	Annual review of AEFI cases and submission to the NITAG	$1,980	$1,980	$1,980	$1,980	$1,980	$9,900
OBJECTIVE 5	**EXPAND PROTECTION OF POPULATION AGAINST VPD**						
Intervention	**5.1 Prepare for introduction of the new vaccines (Switch to Hexa, Adult PCV, Switch from Td to DTaP)**						
5.1.1	Discussion of new vaccine introduction	$1,980					$1,980
5.1.2	Conduct cost effectiveness study for introduction of the new vaccines	$27,000					$27,000
5.1.3	Operational research on cost effectiveness, efficacy and vaccine wastage	$29,000					$29,000

5.1.4	Switch from Pentavalent to Hexavalent in 2026 based on the result of the study						
5.1.5	Switch from a 2-dose to a single-dose HPV vaccine schedule						
OBJECTIVE 6	**ENSURE FINANCIAL SUSTAINABILITY OF THE NIS**						
Intervention	**6.1 Advocacy and fundraising capacity for immunization program**						
6.1.1	Advocate for additional fund allocation for the NIS implementation	$1,980	$1,980	$1,980	$1,980	$1,980	$9,900
6.1.2	Development of the evidence for empowering key decisions makers for informed decision making (raising additional funds for the immunization strategy implementation)						
6.1.3	Ensure inclusion in ACT (highlight childhood immunization in the revised 1988 act)		$5,940				$5,940
7.2.2	Preparation of country for transition - Development and distribution of the transition plan for the NIS period			$18,000	$18,000		$36,000
	Total	**$4,448,946**	**$4,497,550**	**$4,557,963**	**$4,803,856**	**$4,624,180**	**$22,932,495**