

# Comprehensive EVM Improvement Plan to Strengthen the Immunization Supply Chain in Pakistan (2015-2018)



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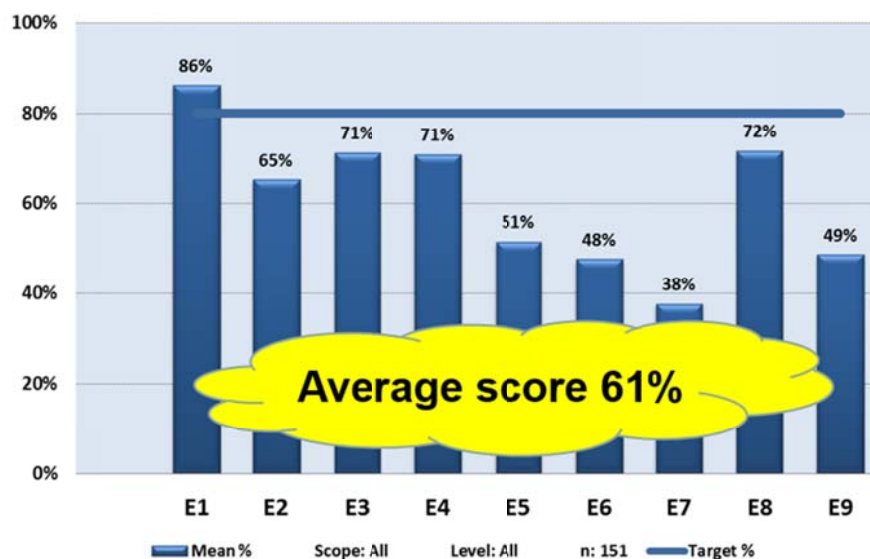
## 1. Situation Analysis – 2014

In 2014, an Effective Vaccine Management (EVM) assessment was conducted in the Pakistan. The EVM assessment adopts a methodology developed by the World Health Organization (WHO) to diagnose the strengths and weaknesses of an immunization supply chain in accordance with the 9 dimensions of an effective vaccine management during the storage, management, handling and transport of vaccines. In Pakistan, the assessment was carried out at all levels of the immunization supply chain. Total 151 sites were selected:

- 1 national store,
- 28 sub- national stores,
- 61 lowest distribution levels
- 61 service point

The full set of findings was compiled in a comprehensive EVM assessment report for Pakistan which was prepared in April 2014. The main results are presented below and highlight the situation analysis and baseline situation in Pakistan upon which a comprehensive EVM improvement plan was prepared (cEVM-IP).

Fig 1. Overall EVM Assessment results for Pakistan by EVM criteria



The overall scores of assessment criteria for Pakistan at all levels of the supply chain demonstrates a need for improvement in most areas of the vaccine and supply management system as only one criteria (Pre- arrival procedure) exceeds the standard required score of 80%. Performance levels of storage capacity, supply chain infrastructure and vaccine management policies were about 70% however, vaccine distribution, stock management and information management are notably weak with performance in each category less than 50% ( see figure 2 & 3)

Fig 2. Overall EVM Assessment results for Pakistan by EVM criteria and supply chain level

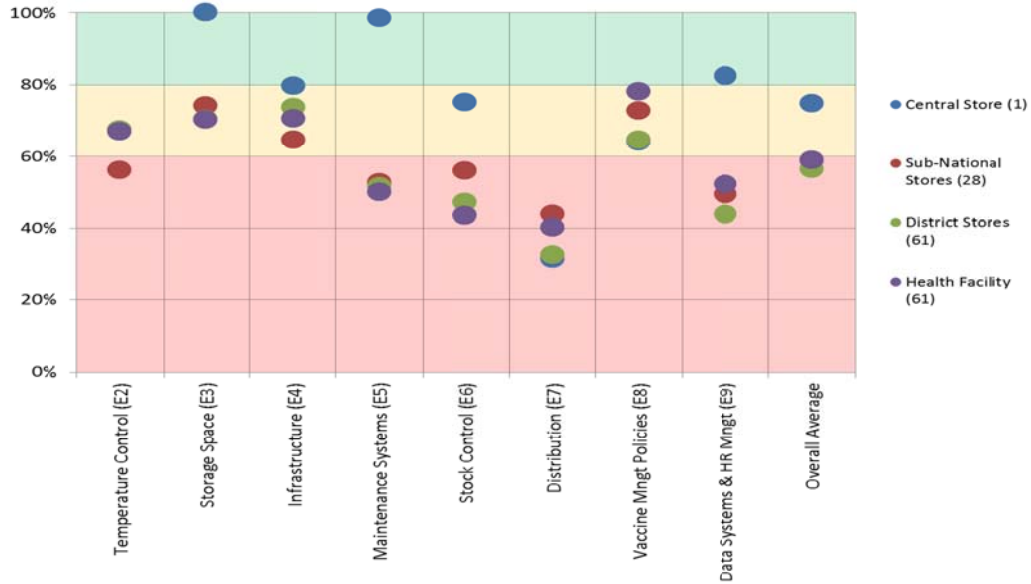




Fig 3. EVM scores by criteria by province


	Temperature Control	Storage Capacity	Building, Equipment & Transport	Maintenance	Stock Control	Distribution	vacc. Mngt Policies	Data system & HRMngt
Sindh Province	63%	68%	67%	50%	49%	34%	74%	49%
Punjab Province	69%	74%	76%	56%	50%	44%	74%	53%
KP Province	59%	65%	70%	38%	41%	28%	63%	38%
Balochistan Province	50%	66%	56%	51%	24%	12%	63%	20%
Sudhnoti District	60%	83%	42%	33%	41%	34%	60%	46%
Islamabad	64%	69%	69%	61%	71%	48%	75%	47%
central store	67%	100%	80%	99%	75%	32%	64%	83%
Avaragr	62%	75%	66%	55%	50%	33%	68%	48%
Priority by Criteria	A	B	A					



**A** <=69%  
1st priority  
(Very)



**B** >=70%-79%  
2nd priority  
(Medium)



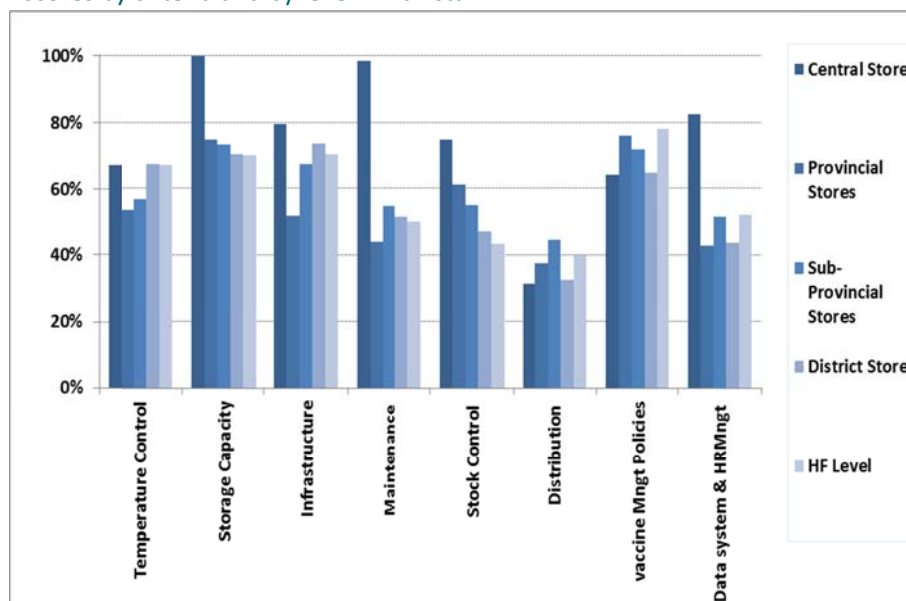
**C** >=80%  
3rd priority

The review by criteria provides insight on the strengths and weaknesses of the immunization supply chain situation in 2014. The overall EVM scores based on the criteria indicate the following as the top four weaknesses in the immunization supply chain for Pakistan:

- Maintenance (E5)
- Stock control (E6)
- Distribution (E7)
- Data systems and supportive management (E9)

Which resulted in frequent stock-outs, inadequate cold chain capacity, and potential administration of compromised vaccines that increasingly threaten coverage, equity, and cost-effectiveness of national immunization programmes.

Fig 4. EVM scores by criteria and by level in Pakistan



In summary, the situation analysis of the immunization supply chain in Pakistan highlights that the key bottlenecks are present around the EVM criteria which relates to the:

1. Data for management systems and human resources management (E9)
2. Distribution systems to ensure the timely transport of vaccines and supplies (E7)
3. Effective stock control to maintain uninterrupted availability of vaccine (E6)
4. Sufficient storage capacity with quality cold chain storage to maintain adequate temperatures (E3 and E2)
5. Sufficient infrastructure for cold/dry storage and vehicles (E4)

Pakistan should increase efforts and oriented towards comprehensive approach for improvement of its immunization supply chain systems, recognising that efficiently designed and optimized immunization supply chains are fundamental to ensuring uninterrupted vaccine availability and critical for safeguarding vaccine potency .

## 1.1. General recommendations that applied for all levels:

### Temperature monitoring:

Temperature monitoring system needs to be improved using the new technologies for temperature measuring, data communication technologies and procedures to minimize risk of damage to vaccines, specific measures can include:

1. Conduct the temperature mapping study for all cold rooms with good documentation to make sure that Vaccine correctly stored inside the rooms.
2. Shift to an event data logger system at the central, sub national and big district stores where cold / freezer rooms are used.
3. Use continues electronic temperature data loggers (30 days data logger) in all refrigerators to make sure that vaccine are stored at the proper recommended temperature the whole day even during weekends and official holidays
4. Incorporate temperature alarm data parameters into LMIS data management system and input data forms
5. Use freeze monitoring devices with freeze sensitive vaccines during storage and transport.
6. Encourage the senior supervisor to monthly review the temperature recording forms for any out of range of temperature and sign and document the action taken at all levels.

### Cold Chain Storage capacity, Building, Equipment and Transport

Whilst storage capacity would not appear to be a major issue (performance is rated at approx. 70%), storage quality of the cold and dry storage are of a major concern regarding introduction of new vaccines we recommend:

1. Expand CCEM nationwide and use the results for expansion of cold chain capacity of some locations to accommodate new vaccine introduction as needed.
2. Locations where the availability of electricity is not assured with at least 8 hrs/day every day should be provided solar AC hybrid power packs to provide auxiliary power to vaccine refrigerators during periods of load shedding. These power packs should include provision to charge laptop computers/printers.
3. Future procurement of vaccine refrigerators should be WHO/PQS compliant and should be rated for "hot climate" (430 C) performance. 2000 vaccine refrigerators recently supplied through USAID support are rated only for "Temperate Climate" (320 C).
4. Ensure adequate dry store capacity at lower levels.
5. Develop and distribute detailed satisfactory contingency plan per level.

### Maintenance

Improve the maintenance system by:

1. Develop a comprehensive multi-year or annual preventive maintenance plan for buildings, cold chain equipment and vehicle.
2. Routine maintenance should be carried out regularly with well documentation at all levels.
3. Data generated from CCEM should be incorporated in the module of LMIS and ensure up to date equipment status is available and maintenance performed.
4. Vaccine and Supply Stock Management

5. Improve the vaccine stock management system by:
6. Update, standardize /uniform and distribute stock log books to include all the required information about the vaccine and diluents (presentation, batch no., manufacture, expiry date, VVM) and collect data to calculate wastage rate and use it in vaccine forecasting and programme monitoring.
7. Alignment of the stock management and reporting forms with the LMIS nationally to include all prerequisites input and reporting parameters with complete EPI needs inclusive of reports generated from the different WHO management tools.
8. Enforce and strengthening the concept of vaccine stock level policy (maximum, minimum, re- order level) to minimize over stock or stock out events.
9. Continue the manual system in parallel to the LMIS until it is fully functioning nationwide.
10. Encourage the staff to calculate their annual/ monthly needs of vaccines and safety injection equipment using the standard national method for each level.

### Distribution

Strengthen the distribution system by:

1. Develop comprehensive distribution plan for all stores.
2. Conduct temperature monitoring study for vaccine during transport to make sure that there is no risk of freezing for vaccines during transport using the WHO\_IVB\_05.01\_REV.1.
3. Establish a uniform system for ordering, issuing and receiving vaccines and supplies between levels using standardized voucher include all the important information about the vaccine, diluents and the monitoring indicators (VVM and freeze indicator).
4. Supportive Functions And Information System
5. Conduct continuous training for all health workers on proper vaccine management practices and new practices related to temperature monitoring.
6. Print and paste VVM and Shake Test Posters (WHO/PATH model) at all levels of the supply chain.
7. Supportive supervision should take place at least once per quarter for higher level and monthly for lower level.

### 1.2. Comprehensive Effective Vaccine Management Improvement Plan

As a first step in the process comprehensive approach for improvement a planning work shop involving (national, provincial and district concerned staff), all the partners and stakeholders was arranged to develop the improvement plan process based on the new Joint WHO/UNICEF statement “Achieving Immunization Goals with Effective Vaccine Management” starting with detail review and analysis of their vaccine management system at all levels.

During **23-24 February 2015**, a 2 days consultative preparatory workshop was conducted in Islamabad, following by 3-4 days provincial workshops on EVM assessment findings and design of provincial and federal IP processes, methods and tools provincial workshop with key stakeholders and technical experts within the provinces to take this situation analysis to the next level. During the workshops, participants were invited to:

- Review the situation analysis on the basis of the provincial EVM assessment results
- Identify the root causes and major bottlenecks
- Prioritize the key solutions to address the bottlenecks

- Develop a provincial vision and strategy with a 4-year roadmap
- Develop a comprehensive EVM improvement plan

This comprehensive EVM improvement plan document pulls together the main outcomes from the workshops and presents the vision, strategy and roadmap to address the shortcoming in the immunization supply chain and implement the recommended changes, including the ones identified in the 2014 EVM assessments. This document is compilation of Provincial Improvement Plans for Pakistan as a country, and at the same time each province has Province Specific Improvement Plans.



## 2. Bottleneck Analysis – 2015

For each of the key areas identified from the situation analysis, a root-cause and bottleneck analysis was undertaken and bottlenecks were prioritized. Given the overlap across many of the EVM criteria and the need to consider prioritization, the root causes identified were grouped according to four high-levels supply chain dimensions of: (a) logistics data for management (LMIS); (b) availability of skilled human resources for vaccine logistics; (c) adequacy of storage capacity and quality with temperature monitoring and effective maintenance (4) distribution system, transport practices and network design. The major bottlenecks by main supply chain areas are presented below.

### 2.1. Logistics data for management systems

The outcome of the root-causes for the low performance identified from the EVM analysis has exposed the following bottlenecks in logistics data for management:

1. No timely information on critical vaccine supply chain indicators and data which impacts on the ability to accurately forecast needs at all levels
2. Delays in data submission and reporting from provincial level to national level
3. Available data that is reported poor quality and unreliable for improving forecasts and estimating storage and distribution needs
4. Data utilization and analysis for efficient supply chain management is limited
5. Paper data system still will be used
6. Limited implementation of the networked and computerized LMIS
7. No computer or IT/internet connection equipment available in some districts to move data management away from a paper based system
8. Lack of skilled and trained human resource to manage LMIS data at all levels of the provincial immunization supply chain
9. Lack of guidelines, SOPs and real-time data/alerts related to emergency problems to prevent vaccine stock out and wastage at all levels
10. Lack of standardized data collection and reporting tools across all levels

### 2.2. Availability of skilled human resources for vaccine logistics

The outcome of the root-causes for the low performance identified from the EVM analysis has exposed the following bottlenecks:

1. Insufficient quantities of staff to manage the immunization supply chain today and in the future with new vaccine introductions
2. Insufficient dedicated staff for store keeping, routine cold chain maintenance, LMIS data management, forecasting; and supportive supervision at all levels

3. Limited quality of staff to manage vaccines and the cold chain – many have no formal training is basic vaccine management practices.
4. Limited training and professional development plans for National, provincial and regional store keepers that are managing an important logistics workload
5. Unavailability of specific operational funds to support on the job-training and formal training workshops for capacity building of staff involved in the immunization supply chain at all levels
6. Inadequate supportive management, monitoring and supportive supervision at all levels
7. No feedback loop to sub-ordinates on vaccine management policies and practices to ensure compliance
8. Unclear human resource policies for all types of staff working on the immunization supply chain (no clear job descriptions, terms of reference...etc.)
9. Limited availability of SOPs for vaccine management and contingency plans
10. Low staff motivation and lack of accountability

### **2.3. Adequacy of storage space and maintaining its quality with temperature monitoring and effective maintenance**

The outcome of the root-causes for the low performance identified from the EVM analysis has exposed the following bottlenecks:

1. Insufficient infrastructure and equipment for cold and dry storage particularly in view of new vaccine introductions (IPV and Rotavirus)
2. Cold rooms at National Store have not conducted a temperature mapping exercise and therefore, it is unclear vaccine storage is done with a good understand of where temperature in the cold room risk putting vaccines at risk of heat or freeze damage
3. Dial thermometers are still used at all level with only manual temperature monitoring twice a day on working days only
4. Cold rooms are not equipped with continuous temperature recording devices with remote alarm systems (SMS) and remote monitoring (Web) and cold chain equipment at lower levels are not equipped with 30 day temperature recording devices (30DTR devices)
5. Few from existing cold chain equipment is outdated and need up gradation
6. No clear policy to ensure the right equipment selection based on needs (size, energy source, environmental consideration). As a results, some cold chain equipment procured for the province is unsuitable for high ambient temperature countries like Pakistan and put vaccines are risk of potency loss for heat or freezing

7. No National strategy and guidance on address the challenge of unreliable electricity and dealing with frequent power-cuts that lead to breaks in the cold chain
8. Back-up generators and solar refrigerator options are not available for vaccine storage points that require these technologies.
9. Insufficient numbers of skilled cold chain technicians for routine maintenance and small repairs
10. No formal maintenance strategy and plan that can be implemented at the various levels
11. Limited operational funds for maintenance and repairs
12. Guidelines, SOPs and other tools for maintenance lacking
13. No clear policy for declassification of aging cold chain equipment (at what point does a unit of CCE get declassified even if it still works but works poorly)

#### **2.4. Distribution system, transport practices and network design**

The outcome of the root-causes for the low performance identified from the EVM analysis has exposed the following bottlenecks:

1. Non-Implementation of a formal level specific strategy and plan for distribution for vaccines and supplies
2. “Push” system of distribution to lower levels based on unreliable forecasts (bottom-up consumption and stock data not taken into consideration)
3. Mixed system of collection and distribution that leads to an unreliable distribution system of vaccines and supplies at certain levels that can compromise their timely availability
4. Refrigerated trucks and vehicles at province, regional and district level are poorly maintained and operational funds for transport are lacking (fuel, routine repairs...)
5. No temperature monitoring of the cold chain during transport, even with refrigerated trucks and no freeze indicators not used for non-refrigerated transport in cold boxes or vaccine carriers
6. No guidelines, SOPs, training on transportation best practice are available, including contingency plans for transport in the event of an emergency

### 3. Vision 2018 and Strategic Goals

In defining the vision and strategic goals for strengthening the immunization supply chain at Federal level, it was important to ensure these were aligned with the 5 year strategic plan for strengthen routine immunization more broadly (National cMYP 2014-2018). it was recognized during the development of the cMYP that the EVM assessment had not yet been conducted and that modifications and revisions would be expected once this was completed

#### 3.1 – Vision 2018

The agreed vision for the supply chain 2018 was:

**"To improve and sustain uninterrupted supply of vaccines to immunization service delivery".**

#### 3.2 – Strategic Goals

Strategies to achieve the component objective are as follows:

##### Strategic Goal 1:

##### **Scaling up LMIS to ensure reliable and timely data to effectively manage the immunization supply chain**

This strategic goals will focus on developing and implementing a comprehensive vaccine logistics management information system (LMIS) for real time and reliable data for managing the immunization supply chain management including for improving forecasts, tracking vaccine consumption, monitoring stock levels in each store, monitoring temperatures in the cold chain and having an up-to-date inventory of cold chain equipment.

→ *Expected Impact of SG1*

- Ensure uninterrupted availability of vaccine and cold chain equipment up to service delivery points.
- Ensure quality storage for all vaccines with no breach in the cold chain
- Increasing efficiency in supply chain with improved data for management that will reduce overall costs of the immunization supply chain.

##### Strategic Goal 2:

##### **Strengthening human resources for logistics at all levels to ensure compliance with effective vaccine and cold chain management policies and practices.**

The focus of this strategic goal is to ensure sufficient and skilled human resources for managing the end-to-end immunization supply chain in Pakistan. This leads to enhanced capacity building and supportive supervision to the highest level of compliance with effective vaccine management policies and practices.

→ *Expected Impact of SG2*

- Ensure uninterrupted availability of vaccine up to the service delivery points by improving the capacity and skills of the health workers managing and handling vaccines at all levels.
- Fig 4. Strategic goals of the EVM improvement plan of Pakistan to achieve the 2020 vision

- Ensure quality storage for all vaccines with no breaks in the cold chain that can compromise vaccine potency by strengthening the capacity and skills of the health workers, managing cold chain equipment, and through supportive supervision which will increase compliance in the vaccine management policies.
- Increasing the efficiency in supply chain management by reducing opportunities for wastage with a more effective workforce managing vaccines at all levels.

### **Strategic Goal 3:**

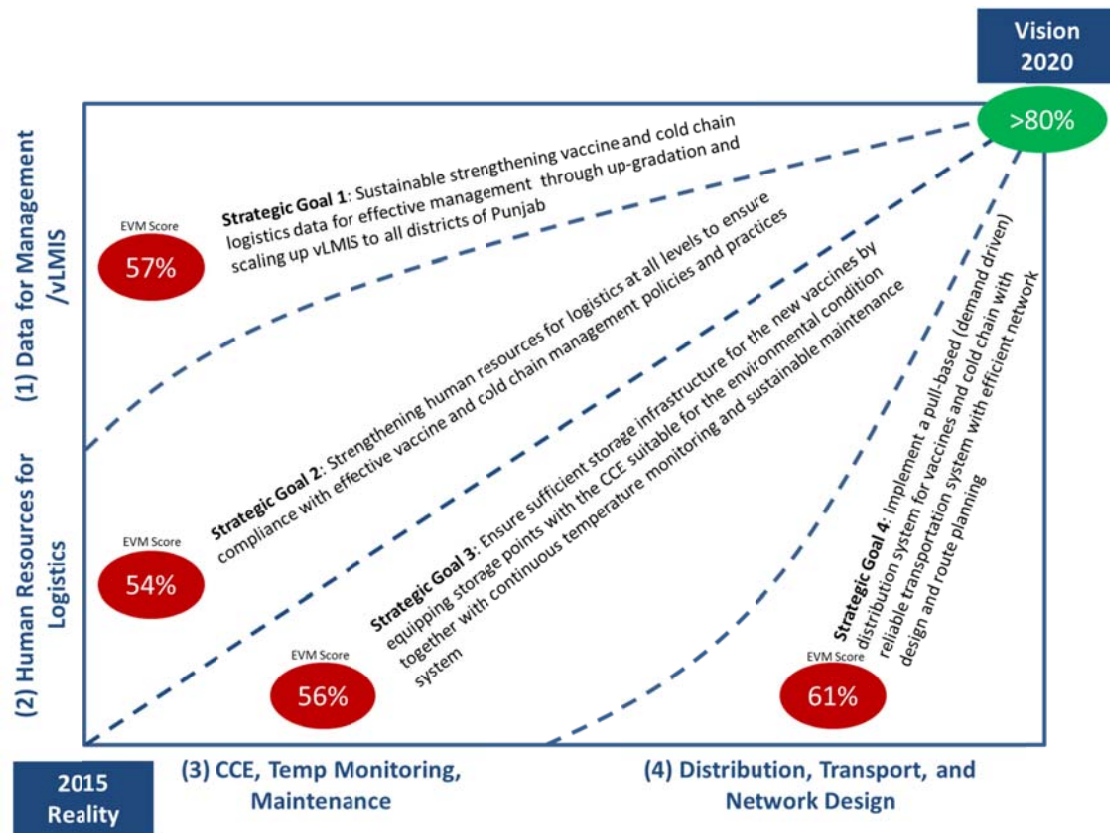
**Ensure sufficient storage infrastructure for the new vaccines by equipping storage points with the CCE suitable for the environmental condition together with continuous temperature monitoring and sustainable maintenance system.**

The focus of this strategic goal is to upgrade the infrastructure at all levels to respond to the need for vaccines currently available and to prepare the province for the introduction of new vaccines expected by 2018 (IPV and Rotavirus). The focus of this strategic goal will also be to raise the quality of the cold chain by implementing a system for continuous temperature monitoring and preventive maintenance so that the potency of vaccines is not compromised due to the breach in the cold chain.

→ *Expected Impact of SG3*

- Ensure uninterrupted availability of vaccine by ensuring that storage capacity is sufficient enough to move vaccines down the supply chain up to service delivery level.
- Ensure quality storage for all vaccines through enhanced continuous temperature monitoring, addressing the energy and maintenance challenge of the cold chain equipment.
- Increasing efficiency in supply chain management by moving to the cold chain equipment which relies on renewal energy sources (solar refrigeration).

Fig 4. Strategic goals of the EVM improvement plan of Pakistan to achieve the 2020 vision



**Strategic Goal 4:**

**Implement a pull-based (demand driven) distribution system for vaccines and cold chain with reliable transportation system with efficient network design and route planning.**

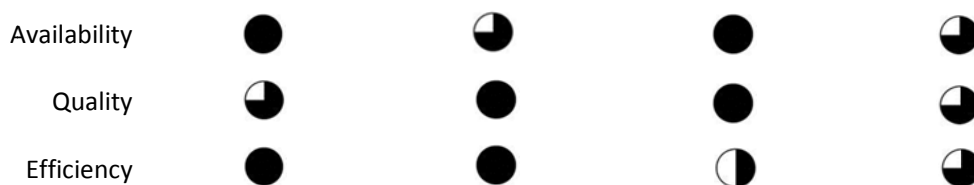
The focus of this strategic goal is to redesign the distribution system for vaccines and supplies to a “pull” system based on the bottom-up consumption information through LMIS. In addition, the focus of this strategic goal is to upgrade the transport infrastructure at all levels and ensure a reliable transport system with temperature monitoring in the cold chain to safeguard current and new vaccines from breach in the cold chain during transportation.

→ *Expected Impact of SG4*

- Ensure uninterrupted availability of vaccine moving from a “push” system for vaccine distribution to a “pull” strategy based on bottom-up consumption information reported through LMIS.
- Ensure quality storage for vaccines by implementing a strategy for temperature monitoring during transport.
- Increasing efficiency in supply chain management by moving from less efficient collection system to a planned and organized distribution system for vaccines.

Table 1. Indicative impact of the strategic goals on the desired outcomes\*

Desired outcome	SG 1	SG 2	SG 3	SG 4
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\* Harvey balls indicate the order of magnitude of the impact of each strategic goal on desired outcomes for increasing uninterrupted availability of vaccines, safeguarding the potency of vaccine in quality cold chain and raising the efficiency of the supply chain. The proportions in the Harvey ball are not accurate proportions. This is just a visual representation for not impact to maximum impact on desired outcome. ○ ◐ ◑ ◒ ◓

### 3.3 - Synergy with cMYP

As such, the strategic goals and visions described in this document should serve as revised versions of those found in the cMYP The EPI Programme; MoNHSRC has prepared comprehensive Multi Year Plan 2014-2018 with the help of partner agencies. In which the Cold Chain and Vaccine Management is also highlighted with future plan objectives and strategies which means that by 2018:

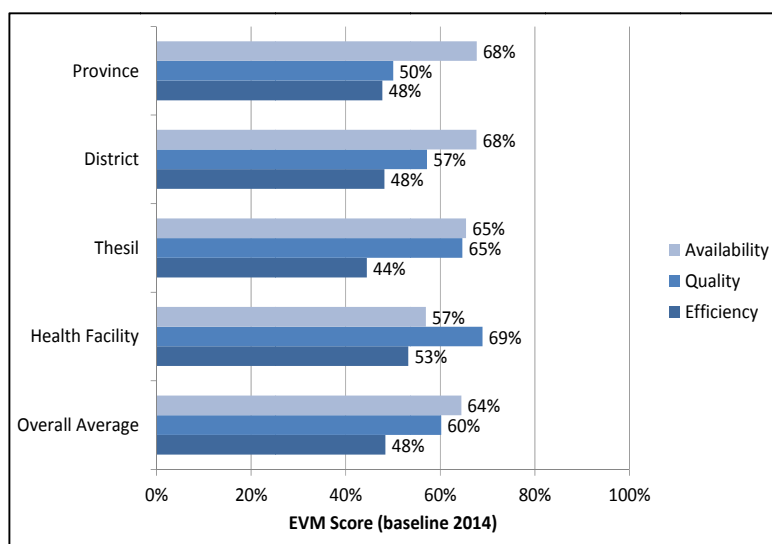
1. Number (%) of EPI Centres experiencing stock-outs equals to zero
2. % of districts with average EVM score above 80% increased.

For measuring progress towards this vision the same outcome indicator included in the cMYP was kept as the: **% of Vaccine Stores with average EVM scores in five criteria above 80% by 2018**. The **EVM target should be 80% or more by 2018 and 100% by 2020**. In addition, it was felt that the 80% EVM benchmark score indicators should be included as an outcome indicator with a target of achieving an **overall average EVM score across all criteria of 80% or more by 2018**. The EVM assessment from 2014 indicates that the **baseline value for all criteria across all levels is 61% and the target should be 80% or more by 2018**. See figure

Table 2. Outcome indicators of the Vision 2018 and strategic goals

	2014 (Baseline)	2018
% of districts with average EVM score 80% or above	2%	80%
Average EVM score across all criteria and levels	61%	80%
Average EVM score for SG1	47%	80%
Average EVM score for SG2	64%	80%
Average EVM score for SG3	69%	80%
Average EVM score for SG4	33%	80%

Fig 5. Outcome indicators of the strategic goals



The strategic Objectives for cold chain and vaccine management with its activities in cMYP were in line with that of the EVMIP strategies and it was as follow:

1. Improve/sustain uninterrupted supply of vaccines to immunization Service delivery.
2. Upgrade/maintain adequate cold chain equipment and storage infrastructure:
  - Assess of needs for cold chain upgrade
  - Develop specifications and procurement plan (aligned with the availability of funding)
  - Purchase and install necessary activity
  - Provide maintenance services on a regular basis
  - Construct new and/or refurbish existing warehouses at provincial and sub-provincial levels
3. Improve vaccine management by implementing EVM Improvement plan
  - Carry out EVM assessment
  - Revise the annual work plan in accordance with the EVM improvement plan
  - Report on the progress of implementation of the EVM improvement Plan
4. Prepare cold chain and vaccine management for the introduction of new vaccine (the federal and provincial levels)
5. Expand cold chain storage capacity if needed  
Train vaccine management personnel (as needed, linked to 2 above)

LMIS benefits for all steps of vaccine supply management at federal level

1. Forecasting and quantification
2. Financial arrangements
3. Procurement planning (what, how and when)
4. Supply and distribution planning
5. Stock adjustments
6. Determining cold chain and storage capacity
7. Product expiry (FEFO)
8. Vaccine wastages control



- Introduce integrated IT solutions for effective vaccine supply and stock management.
- Develop advanced versions of LMIS (releases 3.0 and 4.0)
- Procure and install necessary IT equipment in selected 54 districts with further expansion to 97 districts
- Train end-users (designated specialists) at all levels
- Introduce monitoring and SMS reporting in the LMIS
- Introduce a pooled procurement mechanism for vaccines and injection supplies (at the federal level):
  - Develop in consultation with provincial teams procedures for forecasting vaccine and injection supply needs and posting procurement requests, as well as for the payment by provinces
  - Endorse a pooled procurement mechanisms and revise regulations at federal and provincial as needed
  - Carry out pooled procurement in accordance with the regulations and standard operational procedures
  - Establish vaccine and injection buffer stock in accordance with the National Immunization Policy requirements (at the federal and provincial levels)
  - Assess the availability of required funding (see section **Error! Reference source not found.** **“Error! Reference source not found.” Error! Bookmark not defined.**) as well as storage space and purchase the necessary volume of commodities
  - Revise the National Immunization Policy adjusting it to the availability of funds and/or storage capacity (as interim measure) if needed.

## 4. Roadmap and Strategic Actions (2015-2018)

During the cEVM improvement planning workshop organized on **26th to 28th February and 2nd March, 2015** at Islamabad, a prioritized list of solutions to the major bottlenecks identified were delineated, and these were then converted into strategic actions that need to be implemented in order to achieve the 2018 vision for the immunization supply chain. For each strategic goal, a specific roadmap was developed and these are presented below.

### 4.1 – Roadmap for Strategic Goals

#### Roadmap for Strategic Goal 1

**Strategic Goal 1: *Scaling up LMIS to ensure reliable and timely data to effectively manage the immunization supply chain***

#### Broad Strategic Areas of Action

##### *Standardized data collection and reporting tools*

7. Print and disseminate the set of standardized data collection and reporting tools to all level.
8. Conduct necessary training activities (eg. Data management for logistic.....etc) so that all concerned staff at all levels are proficient in the standardized data collection and reporting tools and strengthened analytical skills and data utilization for supply chain management.
9. Conduct supportive supervision and monitoring to all levels to ensure timeliness and quality of data reporting at all levels.
10. Review , update and roll-out of SOPs on data management/record keeping at all levels

##### *Scale-up the LMIS in remaining districts of Pakistan*

11. Advocate for and raise required financial resources from external donors for scaling-up LMIS across the country.
12. Update the existing LMIS modules to include:
  - Vaccine stock levels management indicators and batch expiry warning systems
  - Cold chain equipment inventory (CCEM) and maintenance status
  - Temperature monitoring indicators and alarms
  - Standardized issue vouchers to use during vaccine distribution between all levels.
  - Setting up the standard report format/Dashboards for Federal, provincial and district stores.
  -
13. Switch over the LMIS from DELIVER|Project to Government.
8. Equip districts with the necessary hardware support to operate the LMIS (computer, IT, internet connection, and printers) to ensure that all the districts of Pakistan are implementing its use for reliable and timely data reporting on all vaccine logistics information.
9. Monitoring and evaluation of the LMIS scale-up and performance improvements of the information system in all districts of the country.
10. Implement a barcoding system to strengthen the tracking and tracing of vaccines batches and ensure that the barcode system interfaces with LMIS through relevant upgrades.

11. Establish an operational LMIS control room with deployment of the Federal EPI LMIS Operation Centre

#### **Roadmap for Strategic Goal 2**

**Strategic Goal 2: *Strengthening the human resources for logistics at all levels to ensure compliance with effective vaccine management (EVM) policies and practices***

#### **Broad Strategic Areas of Action**

##### ***Address the gap in human resource for cold chain and logistics management***

1. Review the current human resource for cold chain and logistics management for Federal EPI (according to the required TORs/ job description and functions) and identify the gap needs for HR in all areas of the supply chain.
2. Fill sanctioned posts with skilled human resources for logistics to address identified gaps with clear job descriptions, expected duties, monitoring indicators and yardsticks for recruitment

##### ***Capacity development of existing and new staff***

3. Conduct a comprehensive training in VM for all cold chain staff at all levels
4. Conduct on-the-job / refresher training in effective vaccine management (EVM) by higher skilled staffs at all levels.
5. Develop, print and deploy a comprehensive set of visual posters and other communications materials that summarize key SOPs for effective vaccine management (ex: conditioning ice packs, VVM, shake test...etc.) to all levels
6. Development of Performance Indicators for each position with monthly assessment and promote the a Performance based motivations by higher management at all levels
7. Conduct comprehensive and refresher training on cold chain equipment maintenance and repairs for all technicians for all levels.
8. Advocate for resource mobilization.
9. Conduct training on data management for logistics (forecasting, data collection, analysis, and utilization .....etc.)

##### ***Strengthen supportive supervision for improved performance***

10. Develop a supportive supervision logistic plan for Federal EPI.
11. Establishment an EVM Secretariat at the Federal level to steward the supply chain management agenda

##### ***Establish non-financial performance based incentives to increase staff accountability***

12. Develop performance monitoring indicators for CCL staff according to TORs.
13. Increase accountability through performance certificates/achievement awards
14. Provide outside country training opportunities as incentives based on performance indicators.

#### **Roadmap for Strategic Goal 3**

**Strategic Goal 3: *Ensure sufficient storage infrastructure for today and tomorrow's vaccines by equipping storage points with the right Cold Chain Equipment (CCEM) suitable for the environmental condition together with continuous temperature monitoring and sustainable maintenance system***

#### **Broad Strategic Areas of Action**

***Ensure quality storage space for vaccines and supplies***

1. Complete data entry and update the CCEM inventory for all districts of Pakistan with support of UNICEF Pakistan
2. Use the CCEM data to have regular an up-to-date forecast of cold chain storage capacity needs.
3. Procure and equip relevant cold chain equipment with auxiliary power systems
4. Advocate with the provincial level to secure adequate dry storage capacity at all levels (especially at district level)

#### ***Safeguard the potency of vaccines with strengthened temperature monitoring system***

5. Undertake a temperature mapping of all cold rooms at all levels
6. Procure and install for all cold rooms at all levels a computerized continues temperature alarming system with sms notification.
7. Procure and equip all refrigerators all levels with 30 day temperature recorders (30DTR) and Freeze tag.
8. Ensure training of store keepers in the use of the new temperature monitoring devices.
9. Establish a temperature monitoring data collection system linked with LMIS.
10. Procure and use Temperature monitoring devices (thermometers and Freeze tag) in vaccine carriers during transport of vaccines for all levels.

#### ***Safeguard the quality of the cold chain with preventive maintenance***

11. Develop and distribute a preventive maintenance strategy and plan for buildings, CCE and refrigerated vehicles to all levels.
12. Develop and distribute SOP, standards and tools for routine maintenance of CCE for all levels
13. Undertake routine maintenance of equipment at all levels with documentation for any repair activities.
14. Establish and equipped a cold chain repair and maintenance workshop at Federal level.
15. Explore options for outsourcing preventive maintenance services to the private sector.

### **Roadmap for Strategic Goal 4**

***Strategic Goal 4: Implement a pull-based distribution system for vaccines with reliable transport system organized around efficient network redesign and route planning***

#### **Broad Strategic Areas of Action**

##### ***Distribution and transport management system***

1. Develop, distribute and implement level specific distribution plans based on a bottom up approach
2. Develop and distribute a level specific SOPs and relevant tools for implementing the bottom up approach
3. Moving from a push to informed pull system based on district /health center consumption data/ coverage of target population on LMISsystem.
4. Procure CTM devices with remote alarms and equip all refrigerated vehicles/vans
5. Equip districts and sub-district levels with the right passive cold chain equipment for transport
6. Develop SOP, standards and tools to strengthen transport management including contingency plans

7. Build capacity of relevant staff in EVM during transport

## 4.2 Elements of Prioritization

Table3. Elements of prioritization for the strategic action of the cEVM improvement plan

No.	Operational Activities	Priority	Impact
<b>SG 1</b>	<b>Scaling up LMIS to ensure reliable and timely data to effectively manage the immunization supply chain</b>		
<i>Standardized data collection and reporting tools</i>			
1	Print and disseminate the set of standardized data collection and reporting tools to all level.	High	High
2	Conduct necessary training activities (eg. Data management for logistic.....etc) so that all concerned staff at all levels are proficient in the standardized data collection and reporting tools and strengthened analytical skills and data utilization for supply chain management.	High	High
3	Conduct supportive supervision and monitoring to all levels to ensure timeliness and quality of data reporting at all levels.	High	High
4	Review , update and roll-out of SOPs on data management/record keeping at all levels	High	High
<i>Scale-up the LMIS in remaining districts of Pakistan</i>			
5	Advocate for and raise required financial resources from external donors for scaling-up LMIS across the country.	Medium	High
6	Update the existing LMIS modules to include all needed indicators for proper VM system	High	High
7	Switch over the LMIS from DELIVER  Project to Government.	Medium	Medium
8	Equip districts with the necessary hardware support to operate the LMIS (computer, IT, internet connection, and printers) to ensure that all the districts of Pakistan are implementing its use for reliable and timely data reporting on all vaccine logistics information.	High	High
9	Monitoring and evaluation of the LMIS scale-up and performance improvements of the information system in all districts of the country.	High	High
10	Implement a barcoding system to strengthen the tracking and tracing of vaccines batches and ensure that the barcode system interfaces with LMIS through relevant upgrades.	Low	High
11	Establish an operational LMIS control room with deployment of the Federal EPI LMIS Operation Centre	Medium	High
<b>SG2</b>	<b>Compliance with effective vaccine management (EVM) policies and practice by strengthening the human resources for logistics at all levels</b>		
<i>Address the human resource gap</i>			
1	Review the current human resource for cold chain and logistics management for Federal EPI (according to the required TORs/ job description and functions) and identify the gap needs for HR in all areas of the supply chain.	High	High
2	Fill sanctioned posts with skilled human resources for logistics to address identified gaps with clear job descriptions, expected duties, monitoring indicators and yardsticks for recruitment	High	High

<b>Capacity development of existing and new staff</b>			
3	Conduct a comprehensive training in VM for all cold chain staff at all levels	Medium	High
4	Conduct on-the-job / refresher training in effective vaccine management (EVM) by higher skilled staffs at all levels.	High	High
5	Develop, print and deploy a comprehensive set of visual posters and other communications materials that summarize key SOPs for effective vaccine management (ex: conditioning ice packs, VVM, shake test...etc.) to all levels	High	High
6	Development of Performance Indicators for each position with monthly assessment and promote the a Performance based motivations by higher management at all levels	High	High
7	Conduct comprehensive and refresher training on cold chain equipment maintenance and repairs for all technicians for all levels.	Medium	High
8	Advocate for resource mobilization.	Medium	High
9	Conduct training on data management for logistics (forecasting, data collection, analysis, and utilization .....etc.)	High	High
<b>Strengthen supportive supervision for improved performance</b>			
10	Develop a supportive supervision logistic plan for Federal EPI.	High	High
	Establishment an EVM Secretariat at the Federal level to steward the supply chain management agenda	High	High
<b>Establish non-financial performance based incentives to increase staff accountability</b>			
11	Develop performance monitoring indicators for CCL staff according to TORs.	High	High
12	Increase accountability through performance certificates/achievement awards	High	High
13	Provide outside country training opportunities as incentives based on performance indicators.	Medium	Medium
<b>SG3</b>	<b>Ensure sufficient storage infrastructure for today and tomorrow's vaccines by equipping storage points with the right Cold Chain Equipment (CCEM) suitable for the environmental condition together with continuous temperature monitoring and sustainable maintenance system</b>		
<b>Ensure quality storage space for vaccines and supplies</b>			
1	Complete data entry and update the CCEM inventory for all districts of Pakistan with support of UNICEF Pakistan	Medium	High
2	Use the CCEM data to have regular an up-to-date forecast of cold chain storage capacity needs.	High	High
3	Procure and equip relevant cold chain equipment with auxiliary power systems	Medium	High
4	Advocate with the provincial level to secure adequate dry storage capacity at all levels (especially at district level)	Medium	Medium
<b>Safeguard the potency of vaccines with strengthened temperature monitoring system</b>			
5	Undertake a temperature mapping of all cold rooms at all levels	Medium	High
6	Procure and install for all cold rooms at all levels a computerized continues temperature alarming system with sms notification.	High	High
7	Procure and equip all refrigerators all levels with 30 day temperature recorders (30 DTR) and Freeze tag.	High	High
8	Ensure training of store keepers in the use of the new temperature	High	High

	monitoring devices.		
9	Establish a temperature monitoring data collection system linked with LMIS.	Medium	High
10	Procure and use Temperature monitoring devices (thermometers and Freeze tag) in vaccine carriers during transport of vaccines for all levels.	High	High
<b>Safeguard the quality of the cold chain with preventive maintenance</b>			
11	Develop and distribute a preventive maintenance strategy and plan for buildings, CCE and refrigerated vehicles to all levels.	Medium	Medium
12	Develop and distribute SOP, standards and tools for routine maintenance of CCE for all levels	High	High
13	Undertake routine maintenance of equipment at all levels with documentation for any repair activities.	High	High
14	Establish and equipped a cold chain repair and maintenance workshop at Federal level.	Medium	High
15	Explore options for outsourcing preventive maintenance services to the private sector.	Medium	Medium
<b>SG4</b>	<b>Implement a need based distribution system for vaccines with reliable transport system organized around efficient network redesign and route planning</b>		
<b>Distribution and transport management system</b>			
1	Develop, distribute and implement level specific distribution plans based on a bottom up approach	High	Medium
2	Develop and distribute a level specific SOPs and relevant tools for implementing the bottom up approach	High	High
3	Moving from a push to informed pull system based on district /health center consumption data/ coverage of target population on LMIS system.	High	High
4	Procure CTM devices with remote alarms and equip all refrigerated vehicles/vans	Low	Medium
5	Equip districts and sub-district levels with the right passive cold chain equipment for transport	High	High
6	Develop SOP, standards and tools to strengthen transport management including contingency plans	Medium	High
7	Build capacity of relevant staff in EVM during transport	Medium	High

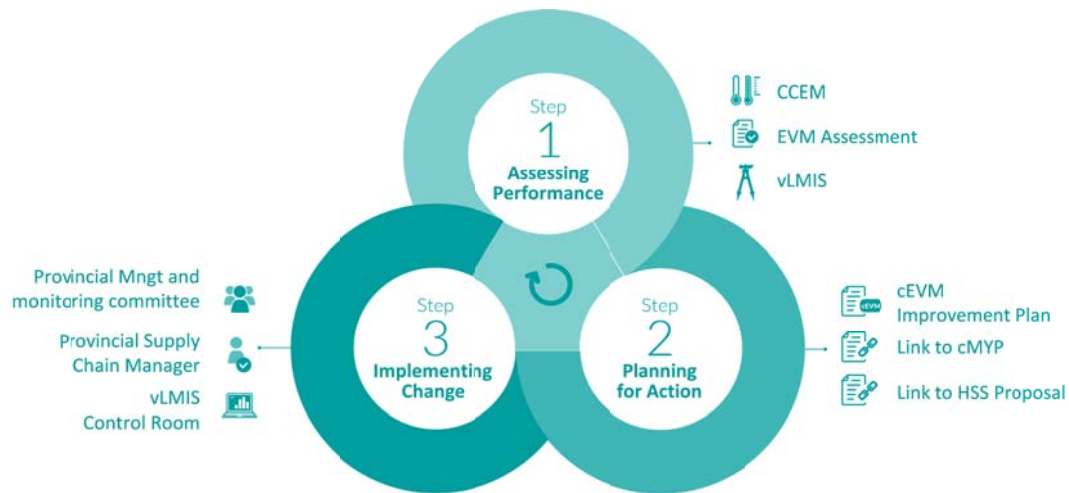
## 5. Management and accountability framework for EVMIP

### Implementation:

In order to monitor and evaluate the implementation of the cEVM improvement plan all over the country, an EVM secretariat should be **urgently** put in place at Federal and provincial level with key stakeholders and technical experts with overarching framework.

A comprehensive cEVM improvement plan is only part of the process for strengthening the immunization supply chain and that this cEVM-IP addresses all the priorities and strategies for a technical perspective but another mechanism is required to ensure the plan is implemented and **enablers of implementation are addressed – namely accountability, management, policies and financing.**

Fig 6. Comprehensive EVM initiative – 3 steps for continuous improvements of the supply chain



### 5.1. Federal and Provincial Management and Monitoring Committee/secretariat

To address the accountability, management and policies enablers, the following recommendations are ***a top priority*** issues to start with to insure cEVM-IP implementation:

- Establish a Federal and Provincial Vaccine Management Committees/ secretariat (FVMC &PVMC) with dedicated technical members for the purposes of operationalizing and monitoring the implementation of the EVMIP. Suggestion as below:
  - a. Secretary Department of Health (Chair)
  - b. Director General of Health Services (co-Chair)
  - c. Director EPI (Secretary)
  - d. Federal / Provincial Cold Room In charge (member)
  - e. Represented donors and partners in the Pakistan (WHO, UNICEF, USAID, JIKA /PPHI.....etc.) (technical expert )
- TORs to include:
  - Work with an expert technical team/ consultant in operationalizing the EVMIP with detail budget.
  - Develop detail monitoring frame work and agree on process and outcome monitoring indicators and link Provincial to the Federal.
  - Monthly review of the implementation status of the cEVM-IP
  - Discuss how to overcome financial challenges and any delays in implementation
  - Make recommendations regarding supply chain policy questions



In order to monitor and evaluate the implementation of the cEVM improvement plan, an overarching framework must be developed with key stakeholders and technical experts with specific monitoring indicators that can be developed by the technical group, the following are some suggestions:

### **5.2. Process Indicators:**

Firstly, process indicators are needed to track implementation of the cEVM improvement plan and the status of implementation of the strategic actions. Traffic light process indicators will be used to monitor progress (green=on track, red= not on track...etc.) and these will be reviewed regularly by the Federal/Provincial Management and Monitoring Committee for implementation of the cEVM improvement plan.

### **5.3. Performance Indicators:**

Secondly, performance indicators are needed to track whether the implementation of the cEVM improvement plan is having the desired impact on improving the performance of the immunization supply chain. The recommendation is to select and report back on key performance indicators (KPIs) using LMIS indicators for each strategic Goal.

### **5.4. Evaluation**

Lastly, in the top of the regular internal monitoring framework we periodic follow-up missions from WHO/UNICEF are required for technical advice.

An evaluation is required after three years of the cEVM improvement plan implementation to make sure that the 80% targets have been achieved for the various sets of indicators and if there has been progress to reach the vision of the immunization supply chain, in this case we recommend conducting full EVM assessments in 2018.