FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

From Pilot to scale: KNCV Nigeria experience in TB LAMP implementation in Nigeria

Presenter: Dr. Bethrand Odume

Executive Director KNCV Nigeria

Presentation Outline

- Introduction of KNCV projects
- Rationale for TB LAMP Introduction
- Strategic Expansion
- Achievements recorded with TB LAMP
- Key to success
- Challenges and areas of improvement
- Conclusion
- Acknowledgement

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

KNCV Nigeria – projects till date

2004-2020

KNCV Global

USAID funding mechanisms (**TBCTA, TBCAP, TBCARE I, Challenge TB**)

2016-2020

Transition period to National entity

Capacity transfer
Technical & Managerial as part of Challenge TB
& transitioning projects-
WASP Project
through **SHOPS** funded by USAID

2020- to date

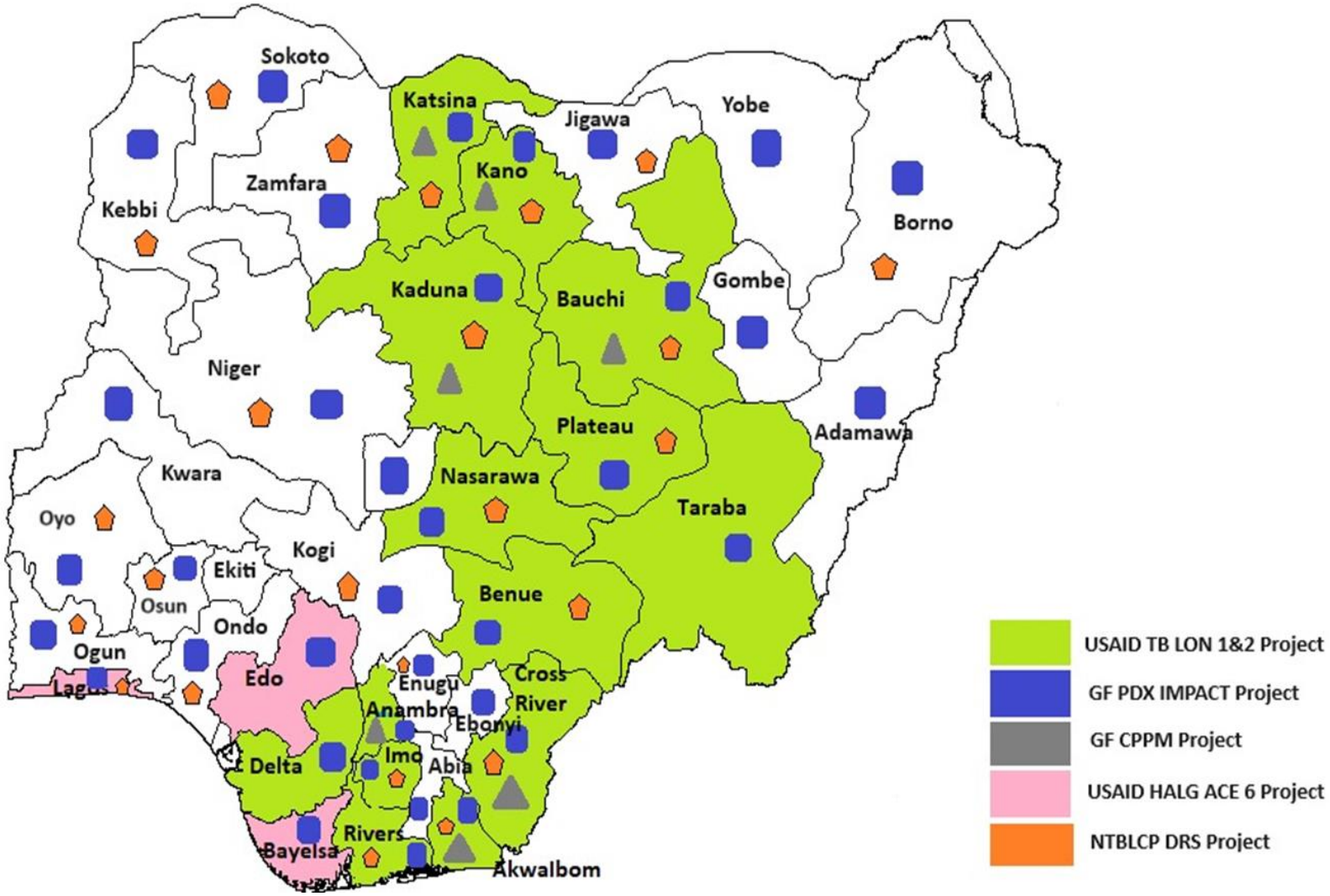
KNCV Nigeria- National legal entity

- **TB-LON I & 2**
- **GF TB PPM**
- **GloVax**
- **ACE 6**
- **DATS**
- **TB Connectivity**
- **TIFA – STOM & SOFT**
- **GF IMPACT**
- **NTBLCP DRS**

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

KNCV NIGERIA PROJECT MAP – Spread across 36 states and FCT



FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

Rationale for TB LAMP Introduction

- The limitations of culture and direct microscopy, necessitated recommendation of molecular tests (GeneXpert and TB-LAMP) as the initial diagnostic test by WHO

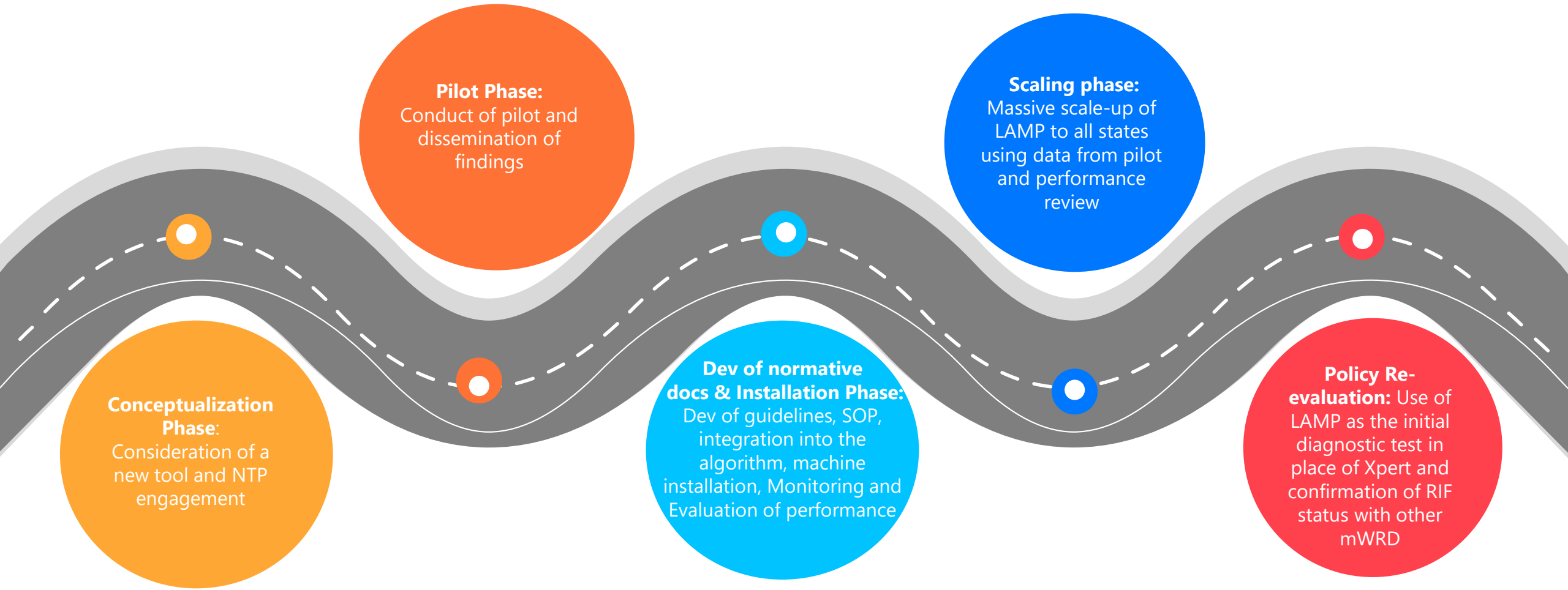
- Given the vast population , endemic nature of TB and the power challenges in the rural areas in Nigeria, it was unrealistic to use Xpert as the sole diagnostic test for TB

- TB LAMP was introduced by KNCV Nigeria in collaboration with NTBLCP through USAID funding to close testing gap and complement Xpert in power challenged locations

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

Strategic Expansion: From start-up to scale-up



FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

CONCEPTUALIZATION PHASE

- The poor TB case notification and low utilization rate of Xpert machines were great concerns to KNCV and NTP at the onset of the LON project.
- This was primarily due to the infrastructural challenges and low throughput of the 4-module Xpert machines being used at the time
- We needed a tool that
  - Can withstand our **high temperature** and **dusty environment**
  - Can operate **uninterruptedly** at the rural health facilities with pervasive power issues
  - Can test **multiple samples** in a run
  - It is **rugged** enough to withstand **frequent tear** and wear from **frequent transportation** of instruments to communities for ACF

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

CONCEPTUALIZATION PHASE

Reasons for choosing TB LAMP

- It does not require an air conditioner to function optimally
- Instruments are simple and user-friendly: (Human Loop T and centrifuge)
- Uses solar system, hence no interruption during testing in areas with power challenges
- TAT is <2hrs, ability to test 70 samples in a day
- Good sensitivity and specificity

Unsophisticated equipment that is easily transportable for community ACF

Centrifuge

Human Loop T

TB LAMP solar system that addresses power issues even in rural areas

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

PILOT PHASE

A pilot study was conducted in 2 states across 5 sites to investigate the diagnostic accuracy of TB-LAMP in routine laboratories

It was an operational research and cross-sectional in design

Summary of findings

	XPERT	LAMP	MICROSCOPY
Sensitivity	84.50%	76.7%	54.30%
Specificity	99.10%	99.30%	99.80%
Kappa Score	0.83 (0.79 - 0.87)	0.8(0.76 - 0.84)	0.67 (0.64 - 0.71)

Findings was disseminated widely among key TB stakeholders and in Greener Journal of Medical Sciences
https://www.gjournals.org/2021/10/11/092921097-odume-et-al/

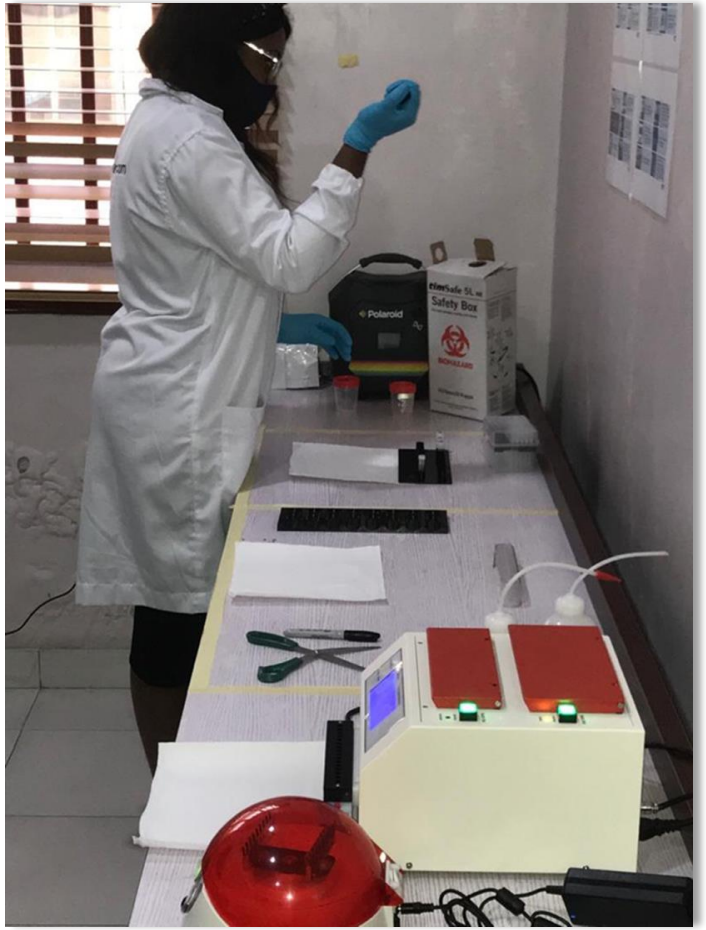
Pilot Study team in 2020 during the COVID-19 Pandemic

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

INSTALLATION AND TRAINING PHASE

- KNCV Nigeria commenced TB LAMP implementation with 5 pilot machines installed in 2 states in 2021
- Additional instruments were procured with USAID funds and added to the pool of 5 instruments
- Gift donations of TB LAMP machines and reagents were received from partners Agbami, Human, and the BUA group
- A local service provider Mcpage was engaged for maintenance of machines
- A strong monitoring and evaluation system was instituted to monitor the quality and performance of the assay
- The National TB LAMP implementation guideline and SOP were developed
- The assay was also integrated in the national diagnostic algorithm in preparation for scale up



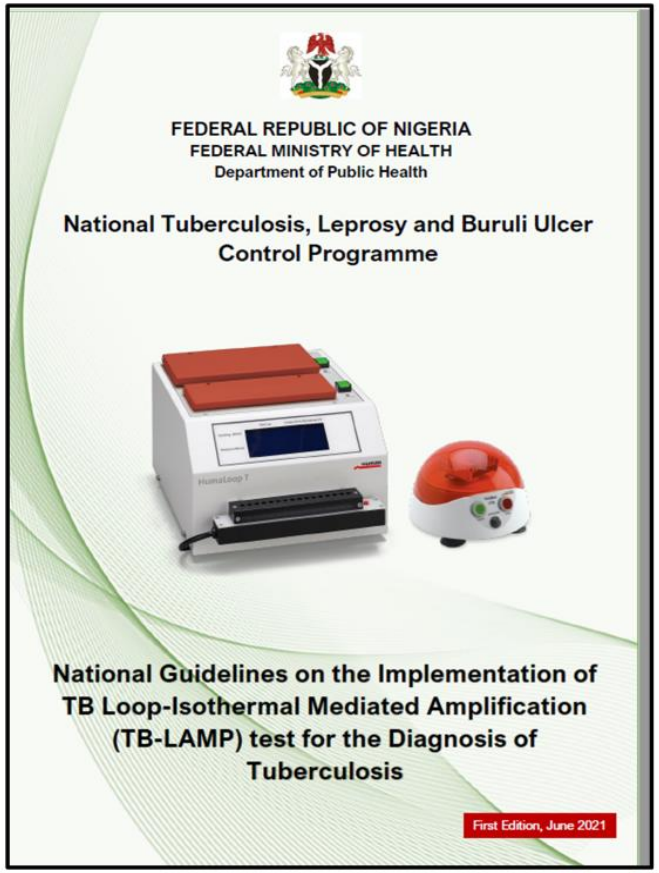
Machine installation and training

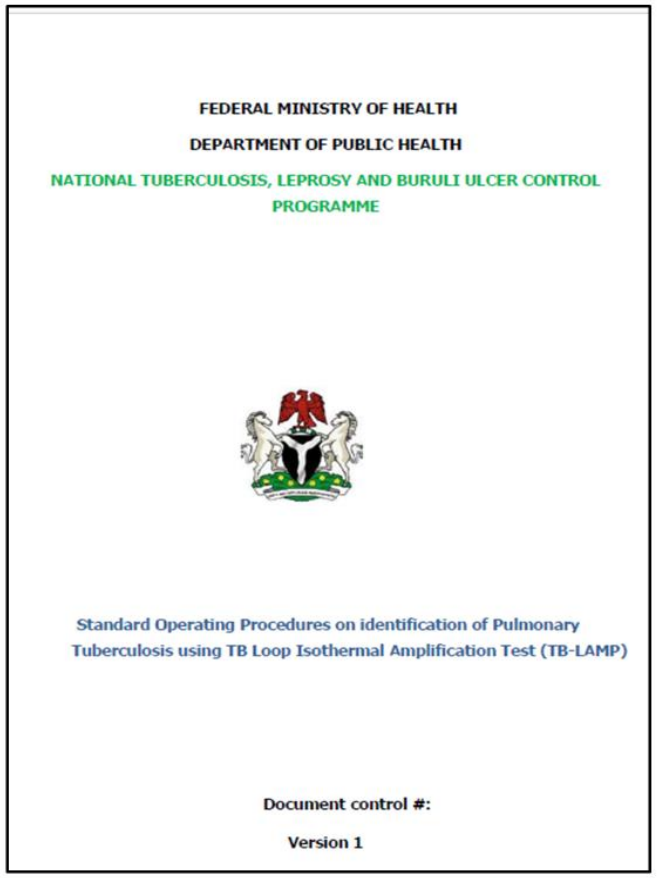
FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

INSTALLATION AND TRAINING PHASE

National TB LAMP Implementation guideline and SOP

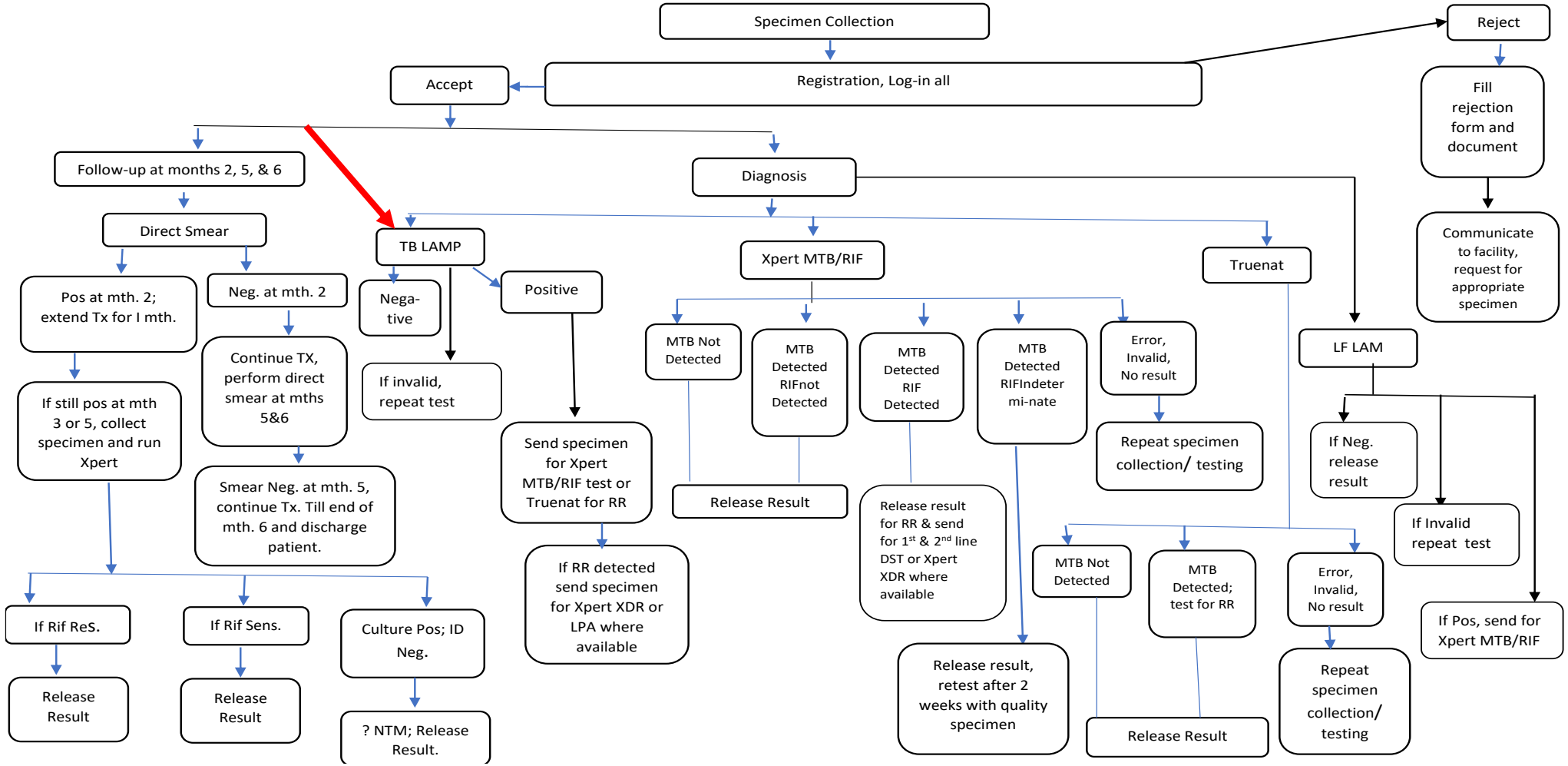




FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

INSTALLATION AND TRAINING PHASE - TB LAMP integrated into the National TB Laboratory Diagnostic Algorithm



FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

SCALE-UP PHASE

- The comprehensive database from the pilot study and weekly performance data tracking from the M&E unit made adoption and scale up of TB LAMP seamless
- It was easy to convince funders to procure more machines with the proof of concept from pilot study and the scientific evidences from the performance review data
- In 2024, one hundred TB LAMP machines were procured and installed in all states with GF funding
- Laboratory staff were trained and retrained on TB LAMP assay.
- Massive sensitization of health care workers was done in all states to create demand for the assay

Implementation models adopted for expansion in the Scale-Up Phase

- **Model 1:**

  Use in power challenged hard-to-reach communities lacking a molecular diagnostic tool for facility active case search

- **Model 2**

  Use in high burden facilities to complement GeneXpert or Truenat tool

- **Model 3**

  Use in a mobile fashion with wellness on Keke (WoK) for active case search in community (One-stop-shop)

FEDERAL MINISTRY OF HEALTH

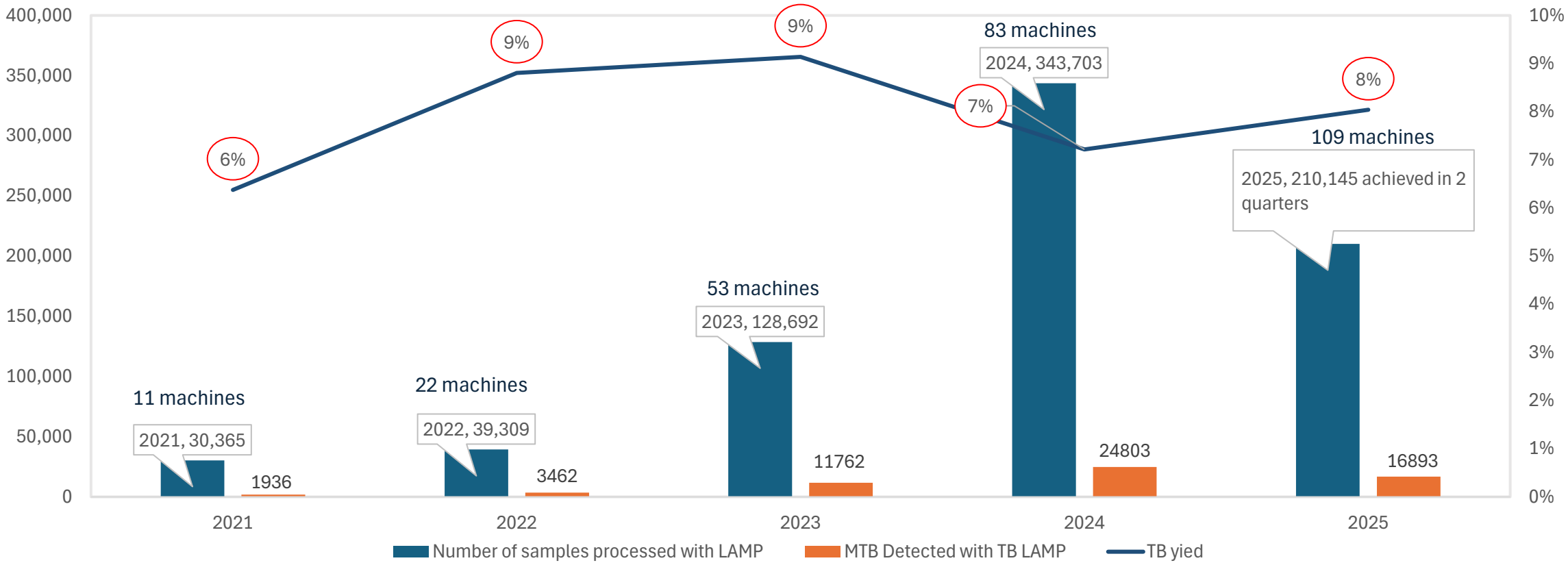
KNCV NIGERIA

Model 3: Use of TB LAMP in a mobile fashion with wellness on Keke (WoK)

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

IMPACT OF SCALE-UP ON TESTING CAPACITY AND CASE FINDING



FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

POLICY RE-EVALUATION PHASE

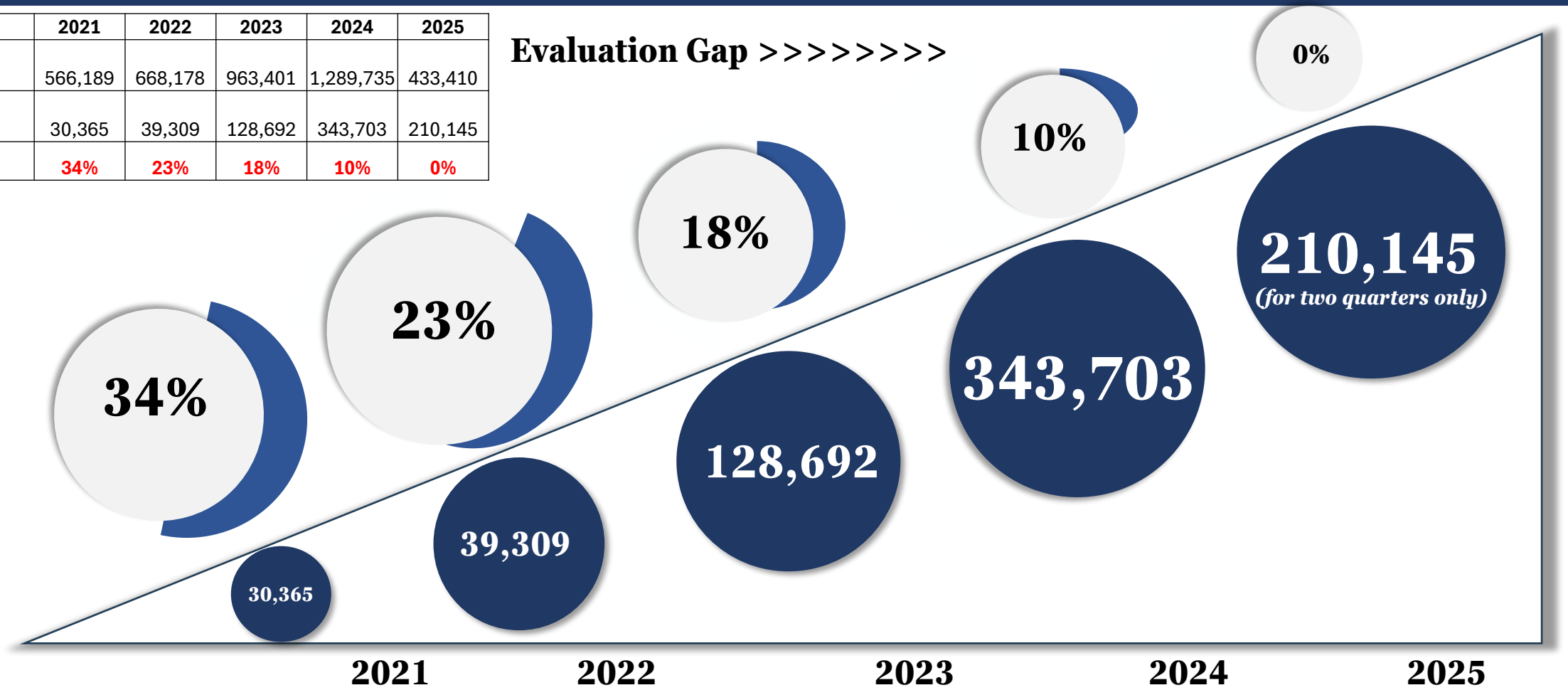
- Prior to 2024, TB LAMP, Xpert, and Truenat were all used as initial TB tests where available; positive TB LAMP samples were processed with Xpert and Truenat platforms for RIF confirmation
- As the country got better with implementation strategies, the number of samples for laboratory tests steadily increased
- Laboratories with low-throughput instruments were increasingly overwhelmed with high workload and widening evaluation gap
- This informed a change in policy to a more efficient approach- Use of TB LAMP, not Xpert for initial testing
- Positive samples still processed with Xpert or Truenat for confirmation of the RIF status
- The approach facilitated high-volume testing and the gradual closing of the evaluation gap

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

Significant increase in the proportion of tests conducted and reduction in evaluation gap during the policy re-evaluation phase (2025)

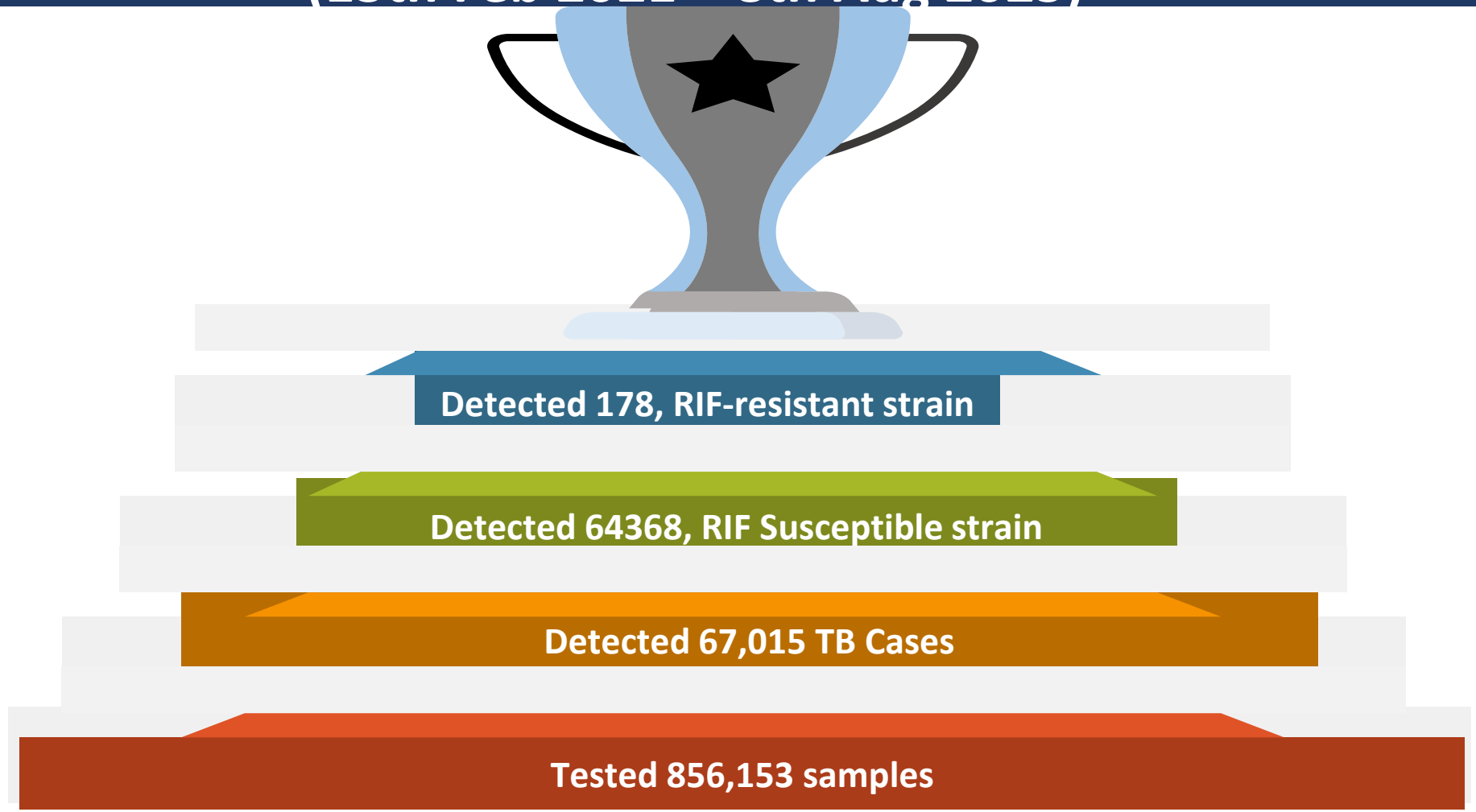
Year	2021	2022	2023	2024	2025
Total Tested (All Diagnostics)	566,189	668,178	963,401	1,289,735	433,410
# Tested with TB LAMP	30,365	39,309	128,692	343,703	210,145
Evaluation gap	**34%**	**23%**	**18%**	**10%**	**0%**



FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

Overall achievement recorded with TB LAMP across 14 KNCV-supported states (13th Feb 2021 – 8th Aug 2025)



FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

Keys to Success

02- Stakeholder's engagement

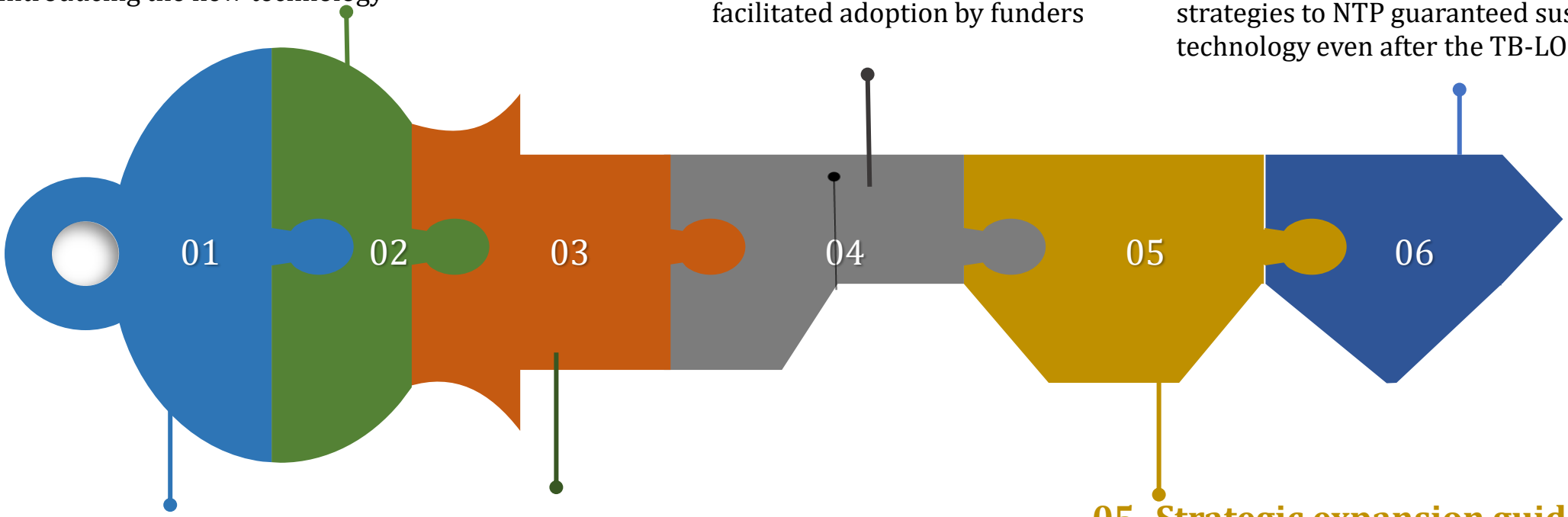
Getting NTBLCP buy-in was very critical to introducing the new technology

04-Robust database

The availability of scientific evidence facilitated adoption by funders

06- Well-articulated Transition plan

Seamless transition of machines and implementation strategies to NTP guaranteed sustainability of TB LAMP technology even after the TB-LON project closeout



01-Proof of concept

Demonstrated practical implementation of TB LAMP through a pilot study

03 -TB LAMP strategic placement

Strategic placement of machines in selected sites increased test accessibility

05- Strategic expansion guided by well-defined implementation models

The deployment of the implementation models increased machine utilization rate and TB notification

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

Challenges and areas of improvement

- Sample other than sputum cannot be processed using TB LAMP
- No digital connectivity interface for real time data upload
- Test results are not stored on the platform for future reference and process validation

Conclusion

- TB-LAMP is an alternative test for sputum smear microscopy
- It is valuable in settings where resources and infrastructure requirements for other molecular tests such as Xpert technology are inadequate
- It is suitable for community ACF owing to its portable nature and use of solar system and has improved diagnostic services to underserved communities
- TB LAMP diagnostic tool has significantly bridged diagnostic gaps and ultimately increased TB case notification in Nigeria

FEDERAL MINISTRY OF HEALTH

KNCV NIGERIA

Acknowledgement

- National Tuberculosis Leprosy and Buruli Ulcer Control (NTBLCP) – and the state Teams
- United States Agency for International Development
- The Global Fund
- KNCV Nigeria, staff members
- Mcpage Investment – TB LAMP local partner
- TB LAMP focal persons

FEDERAL MINISTRY OF
HEALTH

KNCV
NIGERIA


THANK YOU