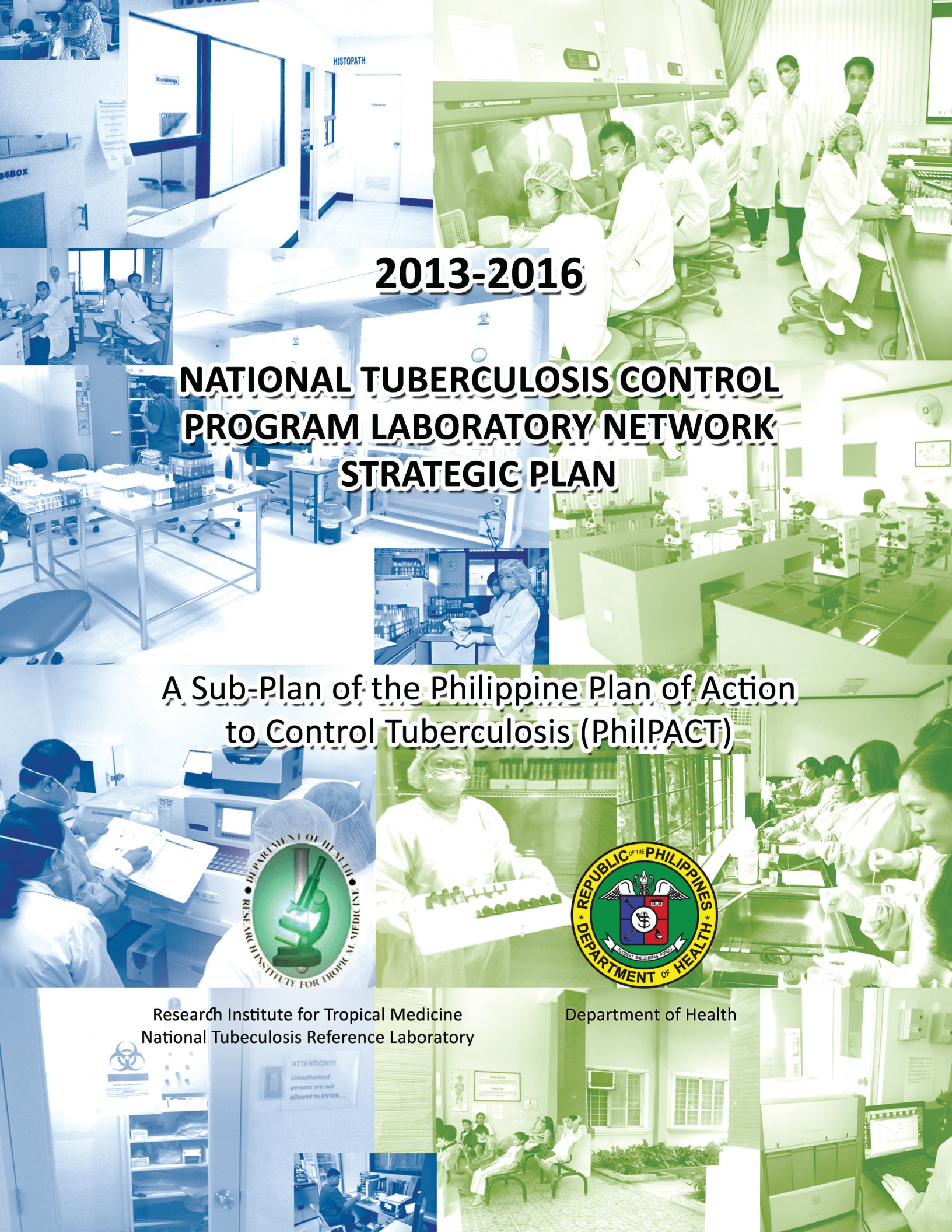

2013-2016

NATIONAL TUBERCULOSIS CONTROL PROGRAM LABORATORY NETWORK STRATEGIC PLAN

A Sub-Plan of the Philippine Plan of Action to Control Tuberculosis (PhilPACT)

Research Institute for Tropical Medicine
National Tubeculosis Reference Laboratory

Department of Health

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Foreword

Tuberculosis (TB) is still among the major public health problems globally and in the country. While the global Millennium Development Goal (MDG) target to halt and reverse the TB epidemic has already been achieved, TB burden remains significant with an estimated 8.7 million new cases and 1.4 deaths in 2011 (WHO, 2012). In the country, TB ranks 5th among the leading causes of death (NSO 2009) and 8th among the leading cuases of disease (FHIS2010). The Philippines is the ninth (9th) in the list of 22 high burden countries and eight (8th) among the 27 high priority countries for multi-drug resistant TB.

Significant progress has been achieved since the adoption of the Directly-Observed Treatment Short Course (DOTS) strategy in 1996. DOTS strategy achieved a 100 percent coverage in the public sector in 2002 and, subsequently, targets for cure rate and case detection rate have been reached. Although, the groundwork has been laid, there is still much to be done. The country's TB situation, with the advent of multi-drug resistant TB, demands the concerted effort all stakeholders including the country's TB laboratories both public and private.

Among the components of the global Stop TB strategy is health system strengthening with upgrading of laboratory networks as a major strategy. The 2013-2016 NTP Laboratory Network Strategic Plan was developed to provide a road map to strengthen the network's laboratory services to control TB. Likewise, the Plan is aligned with the goals and target performances of NTP through the Philippine Plan of Action to Control Tuberculosis (PhilPACT) and The Aquino Health Agenda (AHA) or Kalusugang Pangkalahatan (KP) in achieiving Universal Health Care (UHC) for all Filipinos. The plan highlights the role of the laboratory in detecting TB in high risk and vulnerable populations such as TB in children, TB in jail/prisons, TB in people living with HIV/AIDS and Indigenous Peoples.

The development of the NTP Laboratory Network Strategic Plan is very timely as it coincides with our recent efforts of strengthening laboratories throughout the country by establishing a National Health Laboratory Network. This is articulated in DOH Administrative Order 2012-0021.

Together, we can reduce TB prevalence and mortality to achive the MDGs and the vision of a TB-free Philippines.

Enrique T. Ona, MD, FPCS, FACS
Secretary of Health

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Abbreviations & Acronyms

AFB	Acid Fast Bacilli
AHA	Aquino Health Agenda
AO	Administrative Order
AOP	Annual Operations Plan
ARMM	Autonomous Region in Muslim Mindanao
BHFS	Bureau of Health Facilities and Services
BHS	Barangay Health Station
BHW	Barangay Health Worker
CALABARZON	Cavite, Laguna, Batangas, Rizal, Quezon
CC	Culture Center
CDR	Case Detection Rate
CHD	Center for Health Development
CIPH	City-wide Investment Plan for Health
COSFIT	Costing and Financing Tool
CR	Cure Rate
CUP	Comprehensive Unified Policy
DALY	Disability Adjusted Life Year
DOH	Department of Health
DOST	Department of Science and Technology
DOTS	Directly Observed Treatment Short Course
DRTB	Drug-resistant Tuberculosis
DSSM	Direct Sputum Smear Microscopy
DST	Drug Susceptibility Testing
EPTB	Extra-Pulmonary Tuberculosis
EQA	External Quality Assessment
FDA	Food and Drug Administration
FLD	First Line Drug
GAA	General Appropriations Act
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GIDA	Geographically Isolated and Disadvantaged Areas
GLC	Green Light Committee
GOP	Government of the Philippines
HHRDB	Health Human Resources Development Bureau
HIV	Human Immunodeficiency Virus
HPDPB	Health Policy Development and Planning Bureau
HSRA	Health Sector Reform Agenda
IDO	Infectious Disease Office
ILW	Informal Laboratory Worker
IMS	Information Management Service
ITIS	Integrated Tuberculosis Information System
JICA	Japan International Cooperation Agency

KP	Kalusugang Pangkalahatan
LCE	Local Chief Executive
LCP	Lung Center of the Philippines
LED/FM	Light Emitting Diode/Florescent Microscopy
LGU	Local Government Unit
LIS	Laboratory Information System
LPA	Line Probe Assay
MC	Microscopy Center
MDG	Millennium Development Goals
MDR-TB	Multi-Drug Resistant TB
MIMAROPA	Mindoro, Marinduque, Romblon, Palawan
MIPH	Municipal Investment Plan for Health
MSE	Monitoring, Supervision and Evaluation
MSH	Management Sciences for Health
NAAT	Nucleic Acid Amplification Test
NCDPC	National Center for Disease Prevention and Control
NCR	National Capital Region
NGO	Non-Government Organization
NOH	National Objectives for Health
NTP	National Tuberculosis Control Program
NTPS	National TB Prevalence Survey
NTRL	National Tuberculosis Reference Laboratory
PBSP	Philippine Business for Social Progress
PAGCOR	Philippine Amusement and Gaming Corporation
PASMETH	Philippine Association of Schools of Medical Technology and Public Health
PCHRD	Philippine Council for Health Research and Development
PCSO	Philippine Charity Sweepstakes Office
PHIC/PhilHealth	Philippine Health Insurance Corporation
PhilPACTPIPH	Philippine Plan of Action to Control Tuberculosis Province-wide Investment Plan for Health
PIR	Program Implementation Review
PMDT	Programmatic Management of Drug Resistant TB
PPP	Public-Private Partnership
PPMD	Public-Private Mix DOTS
PTSI	Philippine Tuberculosis Society, Inc.
QA	Quality Assurance
QAC	Quality Assurance Center
QAS	Quality Assurance System
RHU/HC	Rural Health Unit/ Health Center
RITM	Research Institute for Tropical Medicine
RIT-JATA	Research Institute for Tuberculosis - Japan Anti-TB Association

RSS	Remote Smearing Station
SLD	Second Line Drug
STD	Sexually-Transmitted Disease
TAT	Turnaround Time
TB	Tuberculosis
TBDC	TB Diagnostic Committee
TB LINC	Linking Initiatives and Networking to Control Tuberculosis
TC	Treatment Center
TDF/TDFI	Tropical Disease Foundation, Inc.
TML	Tuberculosis Microscopy Laboratory
TSR	Treatment Success Rate
TWG	Technical Working Group
UHC	Universal Health Care
USAID	United States Agency for International Development
WHO	World Health Organization
XDR TB	Extensively Drug Resistant Tuberculosis
Xpert MTB/RIF	Xpert Mycobacterium TB/ Rifampicin

Executive Summary

The 2013-2016 Laboratory Network Strategic Plan (LNSP) is a sub-plan of the 2010-2016 Philippine Plan of Action to Control Tuberculosis (PhilPACT). This plan will serve as a roadmap to strengthen the network's laboratory services to control TB. It is aligned with various existing strategic plans to improve the laboratory facilities and activities in the country.

The development of the LNSP took a significant amount of time, various multi-stakeholder consultations and technical expertise from DOH, NTP and partner technical agencies. The Technical Working Group (TWG) of the LNSP ensured alignment of the plan to various important documents of different agencies of the government, administrative and department orders, memoranda and office orders.

The Strength-Weakness-Opportunity-Threat (SWOT) analysis serves as the backbone for the prioritization of the key gaps to be addressed by the LNSP. Since the laboratory network is a complex system and various challenges need to be addressed in the next four years, there are four key gaps that will be addressed as priority, namely: (1) limited access to TB diagnostic services, (2) insufficient laboratory network management systems, (3) inadequate funding for the laboratory network and (4) weak leadership and management of the laboratory network.

The skeletal summary of the LNSP is presented in Box 1, which also represents its logical framework. For the attainment of the final objectives (outcome), the intermediate objectives, strategic interventions and activities are structured and numbered in such a way as to illustrate the logical relationship between them (i.e., objective 1, strategy 1.1, activity 1.1.1.). Integration of these elements is deemed to contribute to achieving the goals and vision of the PhilPACT.

BOX 1: SUMMARY OF THE 2013-2016 NTP LABORATORY NETWORK STRATEGIC PLAN

VISION
A TB-free Philippines through a cohesive and collaborative network of laboratories for TB diagnosis

GOALS
Reduce prevalence of all forms of TB from 799 per 100,000 in 1990 to less than 400 per 100,000 in 2016 (PhilPACT)

Reduce TB mortality from 87 per 100,000 in 1990 to less than 44 per 100,000 in 2016 (PhilPACT)

Efficiently and effectively managed laboratory network providing quality TB diagnostic services based on national standards by 2016

Final Objectives
Increase in rapid detection of bacteriologically confirmed pan susceptible TB from 75% in 2011 to 90% in 2016

Increase in rapid detection of bacteriologically confirmed multi-drug resistant TB from 3,546 in 2011 to 15,406 in 2016

INTERMEDIATE OBJECTIVES, STRATEGIES, ACTIVITIES

OBJECTIVE 1. IMPROVE ACCESSIBILITY AND QUALITY TB DIAGNOSTIC SERVICES

Strategy 1.1 Strengthen the regulatory framework to facilitate delivery of TB diagnostic services
- Activity 1.1.1. Review existing policies and guidelines
- Activity 1.1.2. Update existing or develop new policies and guidelines
- Activity 1.1.3. Implement, monitor and evaluate new policies and guidelines

Strategy 1.2 Expand the TB laboratory network and upgrade laboratories at all levels
- Activity 1.2.1. Establish additional TB diagnostic facilities across the country
- Activity 1.2.2. Engage private sector for laboratory services and management

Strategy 1.3 Ensure quality of TB laboratory services at all levels of the network
- Activity 1.3.1. Develop and implement a quality assurance (QA) program for the other diagnostic technologies
- Activity 1.3.2. Review and update guidelines for QA program for TB sputum microscopy
- Activity 1.3.3. Strengthen implementation of laboratory QA program

Strategy 1.4 Generate and utilize new knowledge to improve services
- Activity 1.4.1. Conduct researches in TB diagnostics based on laboratory research agenda
- Activity 1.4.2. Adoption of research findings in service delivery mechanisms

OBJECTIVE 2. IMPROVE THE TB LABORATORY NETWORK MANAGEMENT SYSTEMS

Strategy 2.1 Improve human resource management at all levels
- Activity 2.1.1. Develop a Laboratory Human Resource (HR) Management Plan
- Activity 2.1.2. Enhance existing training program for laboratory staff
- Activity 2.1.3. Implement the human resource development plan

Strategy 2.2: Improve facility and equipment management system
- Activity 2.2.1. Develop maintenance plan and budget for all laboratory facilities and equipment
- Activity 2.2.2. Implement Maintenance plan

Strategy 2.3 Improve supply management system
- Activity 2.3.1. Assessment of existing supply management system
- Activity 2.3.2. Develop intervention plan
- Activity 2.3.3. Implement intervention plan

Strategy 2.4 Enhance Laboratory Information System (LIS)
- Activity 2.4.1. Develop and implement an electronic LIS
- Activity 2.4.2. Enhance existing LIS
- Activity 2.4.3. Enhance capacity for data analysis and use of information

Strategy 2.5 Enhance laboratory network monitoring and evaluation
- Activity 2.5.1. Develop and implement a laboratory network M and E plan and budget
- Activity 2.5.2. Build capacity of laboratory managers in M and E

OBJECTIVE 3. ENSURE ADEQUATE AND SUSTAINABLE FINANCING FOR THE LABORATORY NETWORK

Strategy 3.1 Develop sustainable financing strategies
- Activity 3.1.1:Institutionalize financing mechanism for the laboratory network
- Activity 3.1.2 Develop mechanisms to tap other fund sources
- Activity 3.1.3 Collaborate with PhilHealth for the integration of TB laboratory services on the TB benefit package
- Activity 3.1.4. Explore other income-generating activities

Strategy 3.2 Strengthen laboratory financial management system
- Activity 3.2.1 Review and enhance existing financial management tools
- Activity 3.2.2 Training of TB managers in financial management
- Activity 3.2.3 Utilization of laboratory financial information in support of budgeting

OBJECTIVE 4. STRENGTHENING LEADERSHIP AND MANAGEMENT OF THE TB

Strategy 4.1: Build leadership and managerial capacity of the TB laboratory network

Activity 4.1.1. Improve leadership and management skills of laboratory managers

Activity 4.1.2. Strengthen institutional capacity for leadership and management

The total financing requirements of the LNSP is estimated at PhP6.54 billion. This amount was determined through a developed costing tool using secondary data review and key informant interviews. The calculations involved costing of some enabling and administrative related activities.

Objectives 1 and 2 carry the highest percentage share among the objectives with PhP2.96 billion and PhP3.5 billion, respectively, while strategies 1.2 and 2.3 have the highest percentage share among the strategies. These strategies cover the expansion of the TB laboratory network and upgrading of facilities at all levels and improvement of supply management. Financing requirement of about PhP1.84 billion is highest in the year 2016. The estimated cost of the LNSP is assumed to be shared by various stakeholders/sources including the national government, local government units (LGUs), foreign assisted projects, the Philippine Health Insurance Corporation (PHIC or PhilHealth) and out-of-pocket sources. LGUs collectively have to share 38% of the requirement which is a little more than the national government contribution of 28% for reason of sustainability.

The Monitoring and Evaluation (M&E) Plan outlines the 3 goals, 4 objectives plus all the 12 strategies with corresponding activities and 25 performance targets. The M&E Plan/ Matrix presents each goal, objective, strategy, activity and performance target with its corresponding indicator, calculation, source of information for both numerator and denominator; the value at baseline and target in 2016; the unit responsible for the data; level of collection and frequency of reporting. The M&E plan serves as tool to assess and measure the impact, outcome, output and process indicators for the goal, objective, strategic intervention and activity respectively.

To ensure smooth implementation, coordination at the national, sub-national and local levels will go through the existing structures under the PhilPACT. In the course of implementation, regular consultations, reporting, review, monitoring and evaluation activities will be conducted. The LNSP will be duly disseminated under the theme “TB Laboratoryo Natin Sama-samang Paghusayin (LNSP).”

The operational and technical assistance plans of LNSP will be developed separately with the key stakeholders and technical assistance providers using multi-level consultative meetings. These are not contained in the LNSP but encompassed as initiatives in support of its implementation.

I. INTRODUCTION

Tuberculosis is a major public health problem in the Philippines and is a leading cause of morbidity and mortality among Filipinos. The National TB Control Program (NTP) is one of the public health programs managed by the National Center for Disease Prevention and Control (NCDPC) of the Department of Health (DOH). The central NTP management team is responsible for the development of program policies, standards, and strategic plans for TB control; coordination with key partners in government, the private sector, and foreign technical assistance partners; and management of health sub-systems for the program. Regional DOH offices, together with health offices in provinces and highly urbanized cities (HUCs), provide technical support and oversight to the implementing units at the district, municipal and barangay levels.

The adoption of Directly Observed Treatment Short Course (DOTS) Strategy in the NTP in 1997 ushered an era where quality of diagnosis and treatment was given a strong focus alongside a strong program management to make the program effective, efficient, and sustainable. The NTP's strategy for TB control then was to prioritize the diagnosis and treatment of the highly infectious TB patients, particularly the smear positive cases, to reduce the transmission of infection and development of new cases within the medium term. The observed decline in the country's TB prevalence based on the 2007 TB prevalence survey is a strong indication of the soundness of the country's strategy.

Central to the DOTS strategy was the strengthening of the NTP's laboratory services. The laboratory plays a critical role in the diagnosis of TB and in monitoring treatment. The NTP recognizes that "effective TB programs involves access to laboratory services at every level, which requires managing and supporting laboratory networks that provide reliable and consistent decentralized services"; the strength of the laboratory network often reflects the success of TB control programs. [1] Efficient and reliable health laboratories are an essential part of any strong and effective health system.

The NTP established a network of microscopy laboratories integrated within the primary care services to make it accessible to the majority of the population. A quality assurance system (QAS) was established in the 1990s, and enhanced in 2004, to ensure accuracy of sputum microscopy results.[2] This initiative was made in collaboration with JICA, WHO, USAID, local technical partners, and local government units.

The TB reference laboratories in the country including the Cebu TB Reference Laboratory (CTRL) established in 1997 under DOH CHD Central Visayas, and the National TB Reference Laboratory (NTRL) established in 2002 under the Research Institute for Tropical Medicine (RITM), provide technical support to intermediate and peripheral laboratories. NTRL is mandated to provide overall leadership and management to the NTP laboratory services.[3]

The NTP also established TB Diagnostic Committees (TBDC) starting in 1997 to improve the quality of diagnosis using chest x-ray and clinical diagnosis among patients with negative sputum smears.

In the mid-2000s, TB culture and drug susceptibility tests (DST) were included in the NTP's array of diagnostic services to support Multi-Drug Resistant (MDR) TB detection and treatment. Towards the end of the decade, culture/DST centers were expanded to regional government facilities and several private organizations. New rapid diagnostic technologies were adopted including molecular tests to reduce turnaround time (TAT) for TB detection and treatment.

Among others, the aforementioned initiatives significantly contributed to the achievements of the NTP, particularly with regards to the Millennium Development Goal (MDG) targets. However, the health sector still recognized the need to scale-up interventions at the same time address major issues like wide variation in performance across regions and LGUs. Thus, the Philippine Plan of Action to Control TB (PhilPACT, 2010-2016) was developed as the country's strategic plan for TB control in the medium term.[4]

The achievement of PhilPACT's goal and objectives requires a robust NTP laboratory network. Thus, the NTP LNSP was formulated to guide the "effective development and continuous improvement of laboratory organization, capacities, workforce, and resources" in support of the national health plans.[5] The development of the LNSP involved a number of multi-stakeholder consultations and technical expertise from DOH, NTP and partner technical agencies.

II. OVERALL CONTEXT OF TB PROGRAM IMPLEMENTATION IN THE PHILIPPINES

Relevant Demographic and Socio-Economic Variables

The Philippines is an archipelago consisting of more than 7,107 islands with an area of 343,000 square kilometers located in Southeast Asia and surrounded by three large bodies of water. The Philippine landscape is characterized by high mountains and volcanoes, extensive valleys, and plateaus interspersed by many rivers and lakes. The islands are grouped into three big regions: Luzon, covering 148,000 square kilometers, Visayas, with 60,000 square kilometers, and Mindanao with 136,000 square kilometers. Climate is tropical with an average temperature of 27 degrees Celsius with two pronounced seasons: wet and dry.[6]

The country is divided into 17 administrative regions, with 80 provinces, 143 cities including 16 highly urbanized centers, 1,491 municipalities, and 42,028 barangays.[7]

The population of the Philippines was 92.3 million in 2010 with an annual growth rate from 2000 to 2010 of 1.9%.[7] Life expectancy among Filipinos is 67 years for males and 73 years for females. The age structure of the population in 2010 based on broad age groupings are as follows: 33.4% belong to 0-14 years age group (young); 62.3% in the 15-64 years (working group), while 4.3% are 65 years and older (older age group).[8] From 1970 to 2010, the age structure of Philippine population exhibited different trends for the broad age groups: the proportion of population in the older age group (65 and over) increased from 2.9 percent in 1970 to 4.3 percent in 2010. The number of persons 65 years and older increased at a faster rate of 3.4 percent per year compared to the younger and working age groups at 1.5% and 2.8%, respectively.[8]

The average simple literacy rate for both sexes 10 years old and over is 95.6%, with the highest rate in NCR (99%) and lowest in ARMM (81.5%); functional literacy rate in the population is 86% and is higher among females than males.[9]

The Philippines is considered a lower middle income country. The total labor force is 38.1 million with around 46.5% in the service sector, 13.75% in industries, and 32% in agriculture. The economy relies heavily on remittances as a source of foreign currency.[10] Poverty incidence in the population was 26.5% in 2009.[11]

The transportation infrastructure in the country is relatively underdeveloped partly due to the mountainous terrain and scattered geography of the islands, but is also the result of the government's under-investment in infrastructure.[10] The overall quality of transport in the country needs improvement while transportation cost is higher than in neighboring countries.[12] Of the total road length in the country, only 23% is paved, and large sections of these are in need of rehabilitation.[13]

The Philippines has a sophisticated cellular phone industry and a high concentration of users with about 67.9 million cellular phone subscribers in 2008. Estimates for internet penetration in the Philippines vary widely ranging from 2.5 million people to 24 million people.[10] Internet accessibility is still variable in different parts of the country.

Philippine Health Situation and Health System Context

Cardio-vascular diseases are the top causes of death among Filipinos, although TB (all forms) is still the sixth leading cause of mortality in the country.[14] On the other hand, communicable diseases are still the major causes of illness with Respiratory TB in sixth position.[15]

The Philippine health system consists of the public sector, financed largely through a tax-based budgeting system at national and local levels, and the private sector which is market-oriented and charges user fees at points of service. The public sector consists of the DOH, LGUs, and other government agencies. DOH is the lead agency for health and provides national policy directions, plans, standards and guidelines.[16]

The DOH regional offices or Centers for Health Development (CHDs) provide technical guidance to LGUs in the implementation of health programs. LGUs and the private sector are responsible for delivering health services.[17]

Provincial governments are tasked to provide secondary level care through the devolved provincial and district hospitals. They also coordinate public health programs at the local level. Municipal and city governments are responsible for the provision of primary level care through their rural health units or city health centers (RHU/HC), and the community-level barangay health stations (BHS).[17]

Magnitude of TB Burden

The 2007 national TB prevalence survey (NTPS) showed TB prevalence rates of 4.9/1000 for culture positive TB, 2.0/1000 for smear-positive TB, and 47.0/1000 for x-ray positive PTB.[18] The survey also showed that symptoms suggestive of TB were present in 13.5% of subjects aged 20 years or older, and was slightly higher in males (14.2%) than females (12.9%). The prevalence of TB symptoms in rural areas is 14.6%, 13.9% in Metro Manila, and 11.8% in other urban areas. An earlier survey in 1997 showed that the prevalence of bacteriologically positive TB is almost twice higher in urban poor settlements compared to the general urban population.[19] In its Global TB Report, the WHO estimates that there were 460,000 prevalent TB cases, and 260,000 incident cases in the country in 2011.[20]

The prevalence of MDR TB in the country is 3.8% among new cases, and 20.9% among those with previous treatment, with a combined resistance rate of 5.7%.[21] The country is one of the 27 countries with high burden of MDR/XDR (or Extensively Drug-Resistant) TB representing over 85% of the world's estimated incident MDR and XDR TB cases.[22]

Serious economic consequences result from loss of income due to disability and premature death. This has resulted in loss of income equal to around 8 billion pesos annually, which is about 514,000 disability adjusted life years (DALYs) lost due to TB in the Philippines.[23]

National TB Control Program (NTP) Components and Initiatives

1. Adoption of DOTS by NTP

The NTP adopted the DOTS strategy in 1997 in an effort to strengthen program and case management. Five elements comprise the strategy, to wit: (1) strong political commitment to support and sustain the program; (2) diagnosis by quality assured bacteriologic examination that is accessible and affordable to all; (3) uninterrupted supply of quality-assured anti-TB drugs and laboratory supplies; (4) treatment with standardized short-course regimens that are administered under the direct observation of a responsible treatment partner; and (5) standardized recording and reporting system that allows monitoring and evaluation of the program and of each patient under treatment.

The country adopted the global targets of 70% Case Detection Rate (CDR) for new smear positive cases, and Cure Rate (CR) of 85%. A DOH review of NTP achievements under DOTS reported that, from 2003 to 2011, more than four million TB symptomatics were examined by microscopy, and a total of 1,379,390 cases of TB all forms were diagnosed and treated. The report also showed that the country level targets of 70% CDR and 85% CR were achieved in 2005 and 2010, respectively.[24]

During the period of DOTS implementation (from 1997 onwards), a decline in TB prevalence was observed, with a 32% reduction for culture-positive TB and 29% for smear-positive TB.[18]

2. DOTS Expansion to Other Sectors

Public-Private Collaboration

In 2002, the NTP initiative on public-private collaboration went on a larger scale with the installation of public-private mix DOTS (PPMD) facilities mostly in private clinics and hospitals. The PPMD initiative was institutionalized through DOH-Administrative Order (AO) 2004-154, entitled "Implementing Guidelines for the Creation of National and Regional Coordinating Committees on Public Private Mix DOTS".[25] At the same time, the passage of Executive Order no. 187 in 2004 institutionalized the adoption of DOTS in major government agencies and private partners.[26]

Hospital DOTS

The involvement of hospitals in implementing the TB control program was institutionalized through two AOs. The first was issued in 1997 which provided the "Guidelines in the Implementation of Hospital-Based TB Control Program under the Hospitals as Centers of Wellness Program". It was revised in 2004 and directed hospitals to "adopt DOTS as the overarching strategy for TB prevention and treatment" (DOH AO 2004-140)27 for all DOH-retained hospitals and those administered by LGUs. Initiatives to improve and scale up the participation of hospitals to TB control were also implemented under the public-private collaboration.

Treatment Program for TB in Children

In 1998, the NTP began to address the problem of TB in children with the creation of the Task Force on Childhood Tuberculosis through DOH Department Order No. 248-H. In 2004, DOH issued the first Guidelines for Implementing TB Control in Children (DOH AO 2004-178) which paved the way for the expansion of the childhood TB program throughout the country. The national guidelines were revised in 2008 to align with new WHO recommendations and new developments in the management of TB in children.[28]

Programmatic Management of Drug Resistant Tuberculosis (PMDT)

The management of MDR-TB within the NTP was started in 1998 through the DOTS Plus Project of the Tropical Disease Foundation Inc. (TDFI) with technical guidance from the Green Light Committee (GLC/WHO) and the NTP. This initiative was then integrated into the NTP in 2008 through DOH-AO 2008-0018 (Guidelines for the Programmatic Management of Drug-resistant Tuberculosis) and is under the technical leadership of the Program Management Office at the Lung Center of the Philippines (PMO/LCP).[29]

TB in Jails and Prisons

Implementation of DOTS in jails and prisons, already stated under the Comprehensive Unified Policy (CUP), was further strengthened with the issuance of DOH's technical guidelines for DOTS in jails and prisons.

TB – HIV Collaboration

Cognizant of the potential threat of TB and HIV to public health, DOH issued AO 2008-0022 regarding the collaboration between the NTP and HIV Prevention and Control program. The initiative aims to detect TB, and treat in a timely manner, among patients with HIV as well as to detect HIV among TB patients under the NTP.[30]

3. National TB Prevalence Surveys (NTPS)

The NTP has implemented three national TB prevalence surveys (1983, 1997 and 2007) and two nationwide anti-TB drug resistance surveys. These are commendable activities since not all high-TB burden countries have undertaken such surveys. The surveys provided valuable information that strengthened the country's surveillance system and contributed to the epidemiologic bases for its TB control policies and initiatives, as well as to the global TB information base.

4. Strategic Planning for TB Control (PhilPACT 2010-2016)

In 2010, the country launched its new strategic plan for TB control, the 2010-2016 PhilPACT. The vision is a TB-free Philippines with the goal of reducing by half TB prevalence and mortality compared to 1990 levels. The targets set under PhilPACT are 90% CDR for TB all forms, and 90% treatment success rate (TSR). Consistent with the Health Sector Reform Agenda (HSRA), PhilPACT has four objectives that address gaps in the major reform pillars of the health sector, namely: governance, regulation, service delivery and financing.

The key strategies of PhilPACT focus on (1) reducing local variations in TB control program performance with stronger local leadership and management of the program; (2) addressing the needs of vulnerable and high-risk populations by scaling up DOTS coverage in a sustainable manner, by increasing partnerships between the public and private sectors, and by promoting a more positive behavior in the communities; (3) ensuring the provision of high quality TB control services through better regulation of service providers and increasing the availability of quality TB diagnostics and medicines; and (4) reducing out-of-pocket expenses through better financing and more efficient fund utilization. With the development of PhilPACT, previous program initiatives were mainstreamed as regular NTP components, particularly the PMDT, the TB-HIV Collaboration, Hospital DOTS, PPMD and TB in children.

5. Strengthening Laboratory Services

NTP recognizes the critical role of laboratories for TB control. The aim of laboratory strengthening is to ensure the accessible, effective, efficient, and sustainable delivery of services in support of the various programmatic initiatives.

The establishment of a nationwide quality-assured network of microscopy laboratories within the primary care services played an important role in detecting highly infectious TB cases and getting them into treatment. The laboratory strengthening strategy aims to address the challenges in laboratory service delivery and its management systems for infrastructure, equipment, human resources,

financing, information, technology, quality assurance, supplies, and laboratory leadership, management and governance.

Specialized TB diagnostics were adopted by the program including culture, drug susceptibility tests (for first and second line drugs or FLD/SLD), and molecular testing such as line probe assay (LPA) and Xpert MTB/RIF. These tests are primarily for the detection of DRTB), although Xpert MTB/RIF will also be employed to diagnose smear negative TB including extra-pulmonary TB (EPTB).

The laboratory services are provided through a network that resembles a pyramid (see Figure 1) with three levels - central, intermediate, and peripheral – with clearly stated functions and mandates.[3]

The peripheral level laboratories consist of remote smearing stations (RSS) that were established in strategic areas, and TB microscopy laboratories (TMLs) that are based in primary care units (e.g. RHUs, DOTS facilities) as well as hospitals in the public and private sector. The main functions of the TMLs are to provide quality-assured TB sputum microscopy services, record and report NTP laboratory data, and participate in quality assurance activity.

The intermediate level laboratories consist of provincial/city QA centers and the specialized laboratories providing higher level TB diagnostic tests. The provincial/city QA centers are responsible for implementing external quality assessment (EQA) on all TMLs under their jurisdiction, provide technical assistance to the peripheral microscopy laboratories and LGUs, collect and analyze data on EQA and TB laboratory activities, submit regular reports to the regional laboratory managers, and support the LGUs in managing the laboratory services in their area. A number of microscopy examinations may also be done at the provincial/city QA centers to maintain staff's skills for microscopy training, supervision, and quality assurance. Specialized TB diagnostic laboratories provide laboratory services such as culture, drug susceptibility tests, and new technologies including molecular tests.

The NTP regional laboratories under the CHD are responsible for preparing the laboratory strategic plans in their respective regions, assist the NTRL in the development, dissemination, and monitoring the implementation of policies and guidelines, provide technical support to provincial/city and specialized laboratories, and submit quarterly and annual reports to the central level.

The central level laboratory is the National TB Reference Laboratory (NTRL) and is responsible for the overall leadership and management of the NTP laboratory services. The NTRL is responsible for developing and disseminating NTP laboratory strategic plans, policies, guidelines, and standards; for the monitoring and evaluation of these plans, policies and guidelines as they are implemented; and for providing technical advice to the NTP in laboratory matters including the requirements for equipment and supplies. NTRL is also expected to provide technical assistance to the CHD regional laboratories as well as to the specialized laboratories. NTRL is in charge of leading the implementation of laboratory operational researches including anti-TB drug resistance surveillance.

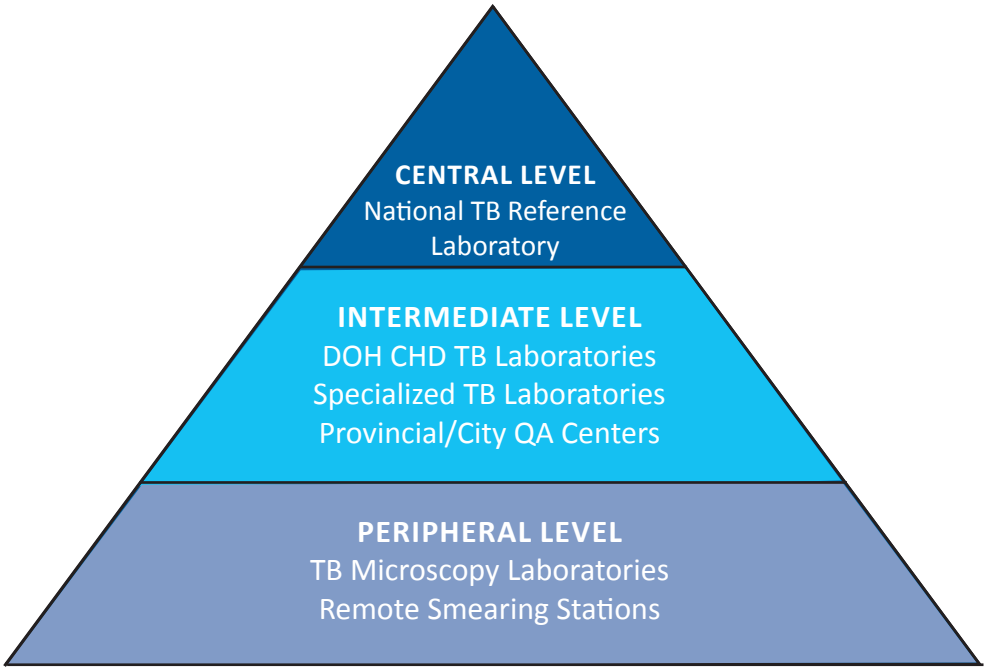

Figure 1. Diagrammatic presentation of the NTP laboratory network, Philippines 2012

Supplemental information about the laboratory network such as the TB diagnostic services framework, list of QA centers, culture/ DST centers, laboratory human resources, and other elements of the network are contained in Annex 1/ Annexes 1.1 to 1.7).

III. SITUATIONAL ANALYSIS OF THE NTP LABORATORY SERVICES

The analysis of the NTP laboratory services was informed by relevant information and activities in the NTP laboratory services particularly over the last five years. Information was collected from the critical review of laboratory assessment reports, NTP special studies, and program developments; results of initiatives undertaken by NTP/NTRL and by various technical assistance projects in the Philippines; discussions and consensus among program and laboratory managers and experts; as well as by field observations and critical insights from field implementers, program managers, and experts.

Unlike in past analyses of the laboratory services that focused mainly on laboratory procedures and technologies, the current focus is on the laboratory sub-systems to better identify the barriers to the sustainable, efficient, and effective delivery of laboratory services in the NTP.

The findings on the situational analysis of the status of the laboratory network were organized based on the elements of a health system as described by WHO, including (1) leadership, management, and governance, (2) human resources, (3) laboratory information system, (4) financing, (5) medical products (i.e., diagnostic technologies) and (6) service delivery. These findings were classified into strengths, opportunities, weaknesses, and threats (SWOT). These are discussed in this section and summarized in Annex 2.

1. Leadership, Management and Governance

Strengths and Opportunities

- The NTP laboratory network has been organized with a clear vision for the program and well defined mandates for all levels of the network and participation of other sectors.[3]

- There is a high level of interest and financial support for the laboratory services. Strengthening of the TB laboratory network is part of the overall strategic thrust of the country's TB control program as stated in the PhilPACT.[4] Huge investments are being made by the program to improve diagnostic capacity and reduce turnaround time to adopt modern diagnostic technologies including Xpert MTB/RIF, LPA, and liquid culture.

- The existence of a TB laboratory network is supported by international program standards that require quality-assured bacteriologic diagnosis within country TB control programs. It is also aligned with DOH's initiative to develop the national health laboratory network. The NTP laboratory service is implementing a decentralized quality assurance system (QAS) program for sputum microscopy to ensure reliable and accurate microscopy results.[3]

- There is strong political will at NTP and NTRL to improve the laboratory services through a systems' strengthening approach recognizing the laboratories' contribution to overall health systems improvement. Laboratory specific action plans are developed and implemented at the national level and has influenced program planning at regional and local levels. Program managers at national, regional and LGU levels are providing increased technical and financial support to the NTP laboratory network.

Weaknesses and Threats

- Existing laboratory policies and guidelines are outdated relative to the new developments and priorities in the NTP. This includes redefining the functions and roles of the various categories of laboratories in the network, including those of other relevant agencies in the public sector (e.g. regulatory agencies), private care providers, academe, and industry. In addition, NTP policies on case finding and case holding need to be updated to make the most of the potential benefits of new diagnostic technologies.

- Lack of specific policies and/or guidelines for i) the implementation of laboratory biosafety, ii) the adoption of new diagnostic technologies, iii) quality assurance for new diagnostic technologies, and iv) certification and/or accreditation of TB laboratories.

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- The processes and mechanisms for coordination and communication between program managers, laboratory managers, clinic staff, technical assistance partners, and donor-assisted projects are not formally established resulting to overlaps and inefficient use of resources.[34]

- Processes for decision making and the flow of funds and information in the laboratory services are complex, and not in harmony with the agencies/bureaus (e.g. NCDPC, RITM, CHDs, BHFS, FDA) that NTRL and the laboratories need to interact with. This leads to difficulties in decision-making and implementation of mandates including the physical management and maintenance of NTRL and other laboratories, and collaboration in training and research activities and use of facilities.[16]

- There is a lack of operations researches that can help improve services, and inform laboratory management and policy development. There is no clear research agenda at this time.[34]

- Laboratory monitoring and evaluation at all levels for both public and private facilities need to be strengthened. Monitoring and evaluation activities are usually focused only on the implementation of quality assurance activities while other aspects of the laboratory services are neglected.[34] Laboratory performance relative to program results including laboratory management is not measured appropriately.

- The management systems for laboratory supplies, finance, facility management and equipment maintenance, information, training, quality assurance, and human resources are fragmented and need to be organized. The implementation of the external quality assessment program for TB microscopy is limited by the lack of logistical support particularly in the big provinces.[31,34,35]

- At all levels of the laboratory network, management capacity is weak particularly in planning, budgeting, logistics management, equipment and facility maintenance, human resource management, laboratory quality assurance, training, supervision, waste management, and monitoring and evaluation. The implementation of the external quality assessment program for TB microscopy is limited by the lack of logistical support particularly in the big provinces.[31,34,35]

- There are no specific operational plans for TB laboratories at the sub-national level as this is nested within the program's operational plan. Collaboration between program and laboratory managers during planning is minimal.[16]

2. Human Resources (Laboratory Workforce)

Strengths and Opportunities

- There is a high level of technical competence in a large percentage of the professional laboratory workers in the NTP laboratory services.

- Laboratory professionals at the central and regional levels hired with GFATM support complement the organic staff in these laboratories. CHD and province-paid medical technologists have been deployed to support provincial and/or municipal laboratories in areas without microscopists.

- Informal laboratory workers (ILWs) working in RHUs or in remote smearing stations (RSS) located in geographically isolated and disadvantaged areas (GIDA) help improve TB case finding by bringing laboratory services closer

to the poor TB-clients in these far-flung areas.36 Task shifting has been implemented effectively in underserved LGUs using non-professional or ILWs to complement the professional laboratory staff at the peripheral level particularly in Zamboanga Peninsula and Compostela Valley.

- A laboratory training program in the technical areas of QAS, DSSM, culture, and new TB diagnostic tools (LED/FM, LPA, and Xpert MTB/RIF) has been developed and implemented by NTRL. A structure for supervision composed of trained laboratory coordinators and supervisors has been organized at the national, regional and provincial/HUC levels.

Weaknesses and Threats

- The laboratory staffing pattern at all levels are usually not based on needs (e.g. type of services, workload) and official mandates; most staff do not have clear job descriptions and qualifications. At NTRL, the bulk of the staff is performing laboratory services, whereas the other core functions of a reference laboratory (i.e., monitoring and evaluation, training, research, and policy development) are lacking full-time qualified staff.[32] The ideal staff complement relative to expected workload and outputs of TB laboratories particularly with the advent of new technologies is not well defined. Annex 1.2 shows the number of staff in culture/DST laboratories.

- The potential for high turnover exists among project-paid (e.g. GFATM) contractual technical staff at central (NTRL) and regional culture laboratories because of lack of security of tenure.[32] With over 50% of professional laboratory staff hired under a contractual basis through GFATM, there is a very high risk that laboratory service delivery will be seriously compromised if these laboratory workers will leave their jobs after GFATM support ends. At the local level, laboratory services were disrupted when regional or provincial paid medical technologists were pulled out from the municipal microscopy laboratories.[31,38]

- Perceptions of staff shortages have been expressed at all levels including LGUs. Assessment of laboratory services and staff has indicated a relative shortage of microscopists in peripheral microscopy laboratories.[31] The shortage of microscopists has created a situation where microscopists are handling several laboratories leading to reduced overall service provision but has markedly increased the workload of the microscopist.

- The staff shortage also includes the lack of provincial NTP medical technologist coordinators who are in charge of implementing external quality assessment, and monitoring and supervising the peripheral laboratories, especially in Mindanao.[31]

- At central level, current HR development plans and policies are out of date and do not address issues in staff shortages, recruitment, retention (security of tenure), just compensation and benefits, professional development, and career advancement.[32]

- Existing laboratory training and development programs and policies focus only on improving skills and practices in laboratory techniques but neglects development of laboratory leadership and management skills.[32] Laboratory training plans are often drawn up as a reaction to perceived or identified performance gaps without clear strategic perspectives. A system for post-training supportive supervision is not built into the human capacity building process.

- The current national laboratory training policy needs to be updated to conform to the strategic thrusts of the NTP and to meet the new demands on laboratory services.

- There is inadequate institutional and human capacity at the intermediate level to implement training effectively for all types of laboratory workers. Institutional capacity building for training has focused mainly at the NTRL. The number of NTRL-certified regional and/or LGU level training facilities is also inadequate leading to higher travel and accommodation costs and less number of trainings conducted. NTRL-certified trainers are few and cannot accommodate the increasing laboratory training and supervisory requirements. About 7% of TMLs in the country have untrained microscopists or medical technologists.[33]

- Laboratory supervisory programs have outdated plans and budgets, and lack adequate logistical, technical and administrative support. Performance problems are often not identified because of the lack of supportive supervision in the periphery.[34] Laboratory field monitoring and supervisory capacity at the regional and provincial levels is generally weak.[31] As a consequence, problems in smear quality and/or reading proficiency have not been addressed in many areas. An assessment of microscopy proficiency in 2007 showed that less than 80% of TMLs achieved the benchmark in each of the six smear quality assessment points.[31]

3. Laboratory Information System

Strengths and Opportunities

- A process has been established for the upward flow of reports starting at the peripheral level up to the central level. At the NTRL, a unit is assigned to process data received from the sub-national level, and are consolidated and summarized for submission to the NTP central team.[34]

- A dedicated DOH unit, the Information Management Service (IMS/DOH) supports the development and enhancement of online laboratory data management systems including the Integrated TB Information System (ITIS). There is a renewed interest within program management, technical partners, and funding agencies to improve health information systems as part of overall health systems strengthening.[34]

Weaknesses and threats

- The LIS has no clear processes, policies or procedures for data management and utilization, sharing and reporting with relevant offices, and providing feedback to health workers. The products of the LIS are few in number with inadequate

substance to inform planning, decision making, policy development and service delivery improvement.[34]

- Current laboratory data collection focuses only on laboratory performance data but neglects the collection of information related to program performance, service provision, and management of equipment, facilities, supplies and finances.[34] Data from non-NTP (e.g., private) laboratory service providers are not part of the routine laboratory reporting system. Indicators are often developed to serve specific donor requirements rather than the needs of program management and service delivery.

- The physical and structural resources for the TB LIS are inadequate including funds, infrastructure (offices, equipment, etc.) and skilled staff to effectively implement information management tasks.[34]

- The capacity of laboratory managers for data management and utilization is inadequate. There is no standard laboratory data management tool at this time with most laboratories using in-house tools (usually Excel-based). The ITIS laboratory module is still under development.[39]

4. Financing

Strengths and Opportunities

- Financing of the NTP laboratory network come from several sources including DOH, CHDs, LGUs, foreign assistance, and the private sector. These are used to finance infrastructure, facilities and equipment, supplies, staff, technical assistance, and operations.[34] GFATM is currently the source of the biggest chunk of funds supporting the laboratory services particularly the nucleic acid amplification tests (NAATs), and culture/DST for PMDT use.

- Sputum microscopy services at the local level are largely financed by the national and local government. Private and NGO microscopy laboratories in the NTP network are funded by their mother organizations.

Weaknesses and Threats

- Public sector financing of laboratory services at national and local levels may be inadequate to sustain effective service delivery, management and maintenance of facilities and equipment, and retention of technical staff over the long term. There is currently no mechanism under PHIC's TB-DOTS OPB (out-patient benefit) package to reimburse laboratories providing TB microscopy services.[39]

- There are currently no alternative financing strategies for the specialized TB laboratory services after donor support (e.g., GFATM) ends. This puts the TB diagnostic services at risk of being scaled down when donor support ends or markedly reduced. Funds allocated by LGUs for microscopy services are strongly dependent on variable local government priorities and availability of funds.[40]

- The capacity for financial management including costing of services, tracking of fund utilization and revenues, and budgeting within the laboratory services is inadequate.[16] No detailed costing of laboratory services has been undertaken; thus, the funding requirement for the various levels of the laboratory network to perform their mandates effectively is not clear. There is no system for collecting laboratory financial data to guide budget preparation except in the GFATM assisted areas.[16] Information to guide budget preparation is therefore incomplete.

5. Diagnostic Technologies

Strengths and Opportunities

- Acid Fast Bacilli (AFB) sputum smear microscopy using the Ziehl-Neelsen (ZN) stain is the backbone of the NTP diagnostic services under DOTS. The TML is relatively easy to establish even in rural areas where infrastructure is limited. The procedure is easy to perform when done by trained health workers. Sputum microscopy is good enough to detect the highly infectious smear positive patients in settings where resources are limited but the prevalence of TB is high and HIV prevalence is low.

- Light emitting diode fluorescent microscopy (LED/FM) has been introduced in some areas (e.g., selected municipalities in Palawan under the KOFIH project) and will be introduced in a wider scale in the NTP particularly in high-volume laboratories.[34]

- Culture and DST using solid media has been made available to the program on a relatively wide scale to detect DRTB and for monitoring treatment response to second line drugs. Culture/DST has made the identification of drug-resistance patterns possible and allowed health care workers to provide more appropriate drug treatment for DRTB patients. The sensitivity of culture ranges from 80% to 93% with a specificity of 98%.[41]

- New diagnostic technologies, particularly NAATs such as LPA and the fully automated Xpert MTB/RIF, have been adopted to support the implementation of PMDT. These new technologies complement sputum microscopy, chest x-ray, clinical diagnosis, and culture/DST to improve diagnostic accuracy and reduce turnaround time. Annexes 1.4 and 1.5 show the locations and referral/zoning system established for culture/DST laboratories.

  Xpert MTB/RIF offers speed, minimal biosafety requirements, ease of use, and allows results to be obtained within two hours. Xpert MTB/RIF can detect mycobacterium TB (MTB) and Rifampicin (R) resistance among TB suspects. Xpert MTB/RIF has a sensitivity of 85% among smear negative patients, and 100% among smear positive patients.[43] Xpert MTB/RIF's sensitivity for extra-pulmonary specimens is around 81%.[43, 44]

  Xpert MTB/RIF units have been deployed in 2012 in 16 facilities throughout the country (Annex 1.3). PMDT managers observed a reduction of treatment turnaround time for of MDRTB patients with the adoption of Xpert MTB/RIF. This contributed to an increase by almost 6% in the number of laboratory confirmed

MDRTB cases that were enrolled into treatment under PMDT from 1,941 in 2011 to 2,052 in 2012.[42]

- Xpert MTB/RIF uses a universal cartridge design and instrument platform that can also be used to detect other organisms (e.g., HIV, polio, STDs, staphylococcus, etc.).[43] This provides the ability to facilitate the collaboration, integration, and standardization of laboratory services that can serve various infectious disease programs and contribute to the efficient use of limited resources especially in low-income settings where these diseases are prevalent.

Weaknesses and Threats

- Sputum microscopy is the primary diagnostic tool in the NTP. However, it requires at least 5,000 to 10,000 bacilli per millilitre of specimen to obtain a positive result. TB patients with minimal disease, or immune-compromised, are likely to test negative. The test sensitivity using expectorated sputum ranges from 34% to 80% and is highest in patients with cavitary disease, and lowest in patients with weak cough or less advanced disease.[41] These limitations render sputum microscopy relatively weak in detecting a potentially large number of active TB cases particularly those with paucibacillary disease including the immune-compromised, children, and elderly.

- The country's actual requirement for new technologies has not been clearly defined relative to country or program needs and priorities given the limited resources. The cost of adopting and sustaining new technologies is high, and basic microscopy services are at risk of being neglected in terms of funds and technical support. Moreover, the introduction of rapid tests, and the revision of policies for case finding, will generate a higher number of patients and at a faster pace than before these technologies were introduced. The "treatment" side of the program may not be able to keep pace with the increased demand for medicines and case holding requirements.

- At this time, there is still no country monitoring and evaluation framework to assess the impact of new diagnostic technologies to individual patients, the program, and the population. This is important so that the NTP can collect information based on experiences under program conditions that will inform strategies and policies.

- Infrastructure weaknesses, particularly the unstable supply of electricity in some areas, can affect the operation of specialized technologies. Unpredictable and severe weather conditions have been known to damage infrastructure and interrupt operations in the past but no clear contingency plans are in place.[34]

- Quality assurance systems for culture and other new technologies are not yet fully established.[34] In addition, gaps still exist in the implementation of the microscopy QAS in many parts of the country including inadequate infrastructure for EQA (see Annex 1.1), lack of logistical support for field supervision, and staff shortages.[31,34,37]

6. Service Delivery

Strengths and Opportunities

- A network of TMLs has been established within the public primary care services. The laboratory mapping exercise conducted by NTRL in 2012 showed that there are 2,565 TMLs in the country under the NTP laboratory network.[33] Of these, 85% belong to the public sector and 15% to the private sector. Table 1 shows the distribution of TMLs by region and the corresponding estimated population coverage per microscopy laboratory based on the 2010 population census.[49]

Table 1. Distribution of TB microscopy laboratories by region, Philippines 2012 (data adopted from NTRL laboratory mapping result)

Region	Public	Private	Total TML	Reg'l Pop. (2010)	Population coverage per laboratory
NCR	174	118	292	11,855,975	40,603
CAR	107	2	109	1,616,867	14,834
Ilocos Region (1)	148	10	158	4,748,372	30,053
Cagayan Valley (2)	100	3	103	3,229,163	31,351
Cen. Luzon (3)	206	29	235	10,137,737	43,139
CALABARZON (4A)	169	35	204	12,609,803	61,813
MIMAROPA (4B)	85	10	95	2,744,671	28,891
Bicol Region (5)	137	28	165	5,420,411	32,851
West. Visayas (6)	156	20	176	7,102,438	40,355
Cent. Visayas (7)	168	13	181	6,800,180	37,570
East. Visayas (8)	156	21	177	4,101,322	23,171
Zamboanga Region (9)	106	10	116	3,407,353	29,374
Northern Mindanao (10)	111	8	119	4,297,323	36,112
Davao Region (11)	87	47	134	4,468,563	33,347
SOCCSKSARGEN (12)	68	17	85	4,109,571	48,348
CARAGA	98	18	116	2,429,224	20,942
ARMM	97	3	100	3,256,140	32,561
Philippines	2,173	392	2,565	92,337,852	35,999

- Access and availability of diagnostic services have increased in underserved areas through the engagement of the private sector including NGOs, referral arrangements between laboratories and DOTS providers (e.g. jails/prisons, military facilities); and by implementing innovations in service delivery.

  An example of an innovative approach in laboratory service delivery is the establishment of RSS within existing barangay health stations or other suitable facilities in the remote communities using trained ILWs.[36]

This has so far shown promising results in improving access to diagnosis and contributing to the detection and treatment of TB cases in difficult to reach impoverished areas. Reported experiences in TB LINC supported areas showed that in Zamboanga City and Sibugay province, TMLs and RSS manned by trained ILWs contributed to increased case finding and treatment of smear positive cases. RSS in Zamboanga City and Sibugay Province contributed 5% and 4%, respectively, to the overall CDR of these localities.[37] The experience further shows that non-professional laboratory workers, with adequate training and supervision, can be utilized to perform some or all of the activities for sputum microscopy.[45]

A review of NTP accomplishments under DOTS showed that from 2003 to 2011, more than 4.6 million TB symptomatics were examined by sputum microscopy, and 800,533 highly infectious smear positive TB patients were diagnosed and treated (Table 2).[24] The average annual positivity rate for the period is 17%.

Table 2. Number of TB symptomatics examined and smear positive cases diagnosed and treated under NTP by year, the Philippines 2003-2011 (Source: NTP/DOH)

Year	No. TB symptomatics examined	Sm.+ cases diagnosed and treated		
		New	Prev. Treated	Total
2003	337,956	69,988	4,050	74,038
2004	514,070	76,505	3,423	79,928
2005	502,072	82,692	4,045	86,737
2006	549,775	85,740	4,435	90,175
2007	501,393	86,316	5,278	91,594
2008	533,927	85,025	4,683	89,708
2009	525,512	88,806	5,309	94,115
2010	558,836	89,198	5,672	94,870
2011	615,398	93,580	5,788	99,368
Total	**4,638,939**	**757,850**	**42,683**	**800,533**

- Specialized diagnostics including TB culture, DST, and Xpert MTB/RIF are also available to detect drug-resistant TB. Table 3 shows the distribution of culture laboratories under the NTP in the first quarter of 2013. Of the planned 29 culture laboratories, 27 has been established with 13 (48%) already serving the program. Xpert MTB/RIF are also deployed in culture laboratories (see Annex 1.4) and in four other laboratories attached to Treatment Centers (TCs).

  These technologies are distributed more or less equally among the regions (4% to 7%) except in NCR, where 19% of the laboratories are located based on the assumption that MDRTB prevalence is higher in this region.

Table 3. Distribution of culture laboratories by region, operational status, and population coverage, the Philippines 2013 (data source: NTRL)

Region	Operational labs		Non-operational labs		Total		Regional population 201049	Pop coverage per lab
	No.	%	No.	%	No.	%		
NCR	4	15%	1	4%	5	19%	11,855,975	2,371,195
CAR	0		1	4%	1	4%	1,616,867	1,616,867
Region 1	1	4%	1	4%	2	7%	4,748,372	2,374,186
Region 2	0		1	4%	1	4%	3,229,163	3,229,163
Region 3	0		1	4%	1	4%	10,137,737	10,137,737
Region 4A	2	7%	0		2	7%	12,609,803	6,304,902
Region 4B	0		1	4%	1	4%	2,744,671	2,744,671
Region 5	1	4%	0		1	4%	5,420,411	5,420,411
Region 6	0		2	7%	2	7%	7,102,438	3,551,219
Region 7	1	4%	0		1	4%	6,800,180	6,800,180
Region 8	0		1	4%	1	4%	4,101,322	4,101,322
Region 9	1	4%	1	4%	2	7%	3,407,353	1,703,677
Region 10	2	7%	0		2	7%	4,297,323	2,148,662
Region 11	1	4%	0		1	4%	4,468,563	4,468,563
Region 12	0		2	7%	2	7%	4,109,571	2,054,786
CARAGA	0		1	4%	1	4%	2,429,224	2,429,224
ARMM	0		1	4%	1	4%	3,256,140	3,256,140
Total	**13**	**48%**	**14**	**52%**	**27**	**100%**	**92,337,852**	**3,806,641**

Weaknesses and Threats

- The population coverage per microscopy laboratory at country level is almost 36,000, while at regional level it ranges from 14,000 in CAR, to more than 61,000 in CALABARZON (see Table 1). These figures may suggest adequate numbers of microscopy laboratories in the country. However, the situation is quite different at the local level especially in urban centers. For example, in Quezon City, a JICA study in 2005 showed that the population coverage of TMLs ranges from 84,000 to more than 260,000;46 other examples are Caloocan City where the average TML population coverage is 150,000; while in Marawi City, population coverage is 161,000.[47]

  The population coverage of culture laboratories ranges from 1.6 million to more than 10 million (see Table 3). The coverage in some of the highly populous regions is more than 5 million per laboratory including Central Luzon, with 10 million coverage; CALABARZON with 6.3 million; and Central Visayas with 6.8 million. The number and/or distribution of TMLs and culture laboratories may be inadequate to meet the demand in these highly populated urban centers. The situation limits access to diagnosis, and treatment, particularly for people living in urban poor settlements.

Rural communities in GIDAs such as in mountain or island barangays are also underserved due to the lack of accessible laboratories given the high cost, limited availability and poor quality of transportation in these areas.

The number, distribution, and productivity of TB laboratories using microscopy and new technologies need further analysis to identify underserved areas and ensure equitable provision of services. Planning for laboratory expansion needs more information based on a comprehensive review and consensus on the epidemiologic basis of program targets.[40] Infrastructure, including power supply and availability of transport, in the areas for scale up needs to be considered as well. Evaluation of innovative approaches (e.g. RSS) that have shown benefits is needed to inform scale-up.

- The cost of transporting specimens and retrieval of results for microscopy is borne by either patients or field health workers. The cost ranges from about 80 pesos per trip in NCR (e.g., Parola area in district 1 of Manila), to more than 300 pesos per trip in the provinces (e.g. Sibugay). These are prohibitive costs that add to patients' out-of-pocket expenses and sometimes lead to patients defaulting from diagnostic examinations. Currently, the cost of transporting specimens and transmittal of results for Xpert and/or culture/DST is supported by GFATM.

- The laboratory networking and referral system (ad hoc in some places) is still weak and needs to be formally organized to improve patients' access to services given the country's limited resources and difficult geographic setting. The inter-relationship between public and private sector laboratories and clinics is still weak or non-existent in some areas of the country. Coordination of laboratory services needs improvement for complementation of services and efficiency.

- Delayed operations of newly established culture laboratories have affected accomplishment of targets workloads in functional culture labs. As of March 2013, 14 (52%) of the 27 established culture centers are not yet operational. These delays are attributed to a mix of long bureaucratic processes, and gaps in the laboratory systems including the lack of human resources.

- Turnaround time for both new and conventional technologies (i.e., AFB microscopy) needs improvement in many areas. The long diagnostic delay contributes to patients being lost even before a diagnosis is made or before treatment is started. Turnaround time for TB microscopy results ranges from five to seven days (Quezon City) to as long as four to six weeks (in remote areas of Compostela Valley). Turnaround time for Xpert MTB/RIF ranges from four hours to two weeks under field conditions. Culture/DST results are obtained from a range of four to six months. In 2010, WHO reported that as much as 52% of diagnosed MDRTB patients in the Philippines were lost before treatment can be started.[48]

- Factors that contribute to delays in diagnosis and treatment continue to exist. Delays often occur in the following processes: referral and consultation of patients in health facilities; collection and submission of specimens for examination; examination of specimens; reporting of results to clinic staff; tracing of laboratory diagnosed patients for start of treatment; and initiation of treatment.

- Laboratory supplies management system needs improvement to ensure continuous delivery of services. A supply management system is in place at the national level for sputum microscopy but does not cover all required consumables. LGUs also procure laboratory supplies as the need arises but the procurement is not coordinated with national procurement. Ordering of supplies is often based on the approved budget rather than on actual needs; tracking and distribution of supplies are major weaknesses in the system.[16]

  Replenishment of supplies is often delayed at the intermediate and peripheral levels causing delays and interruption of services.[16,31] The lack of sputum containers in the past have caused health workers to reduce case finding activities affecting overall program results.[34]

- The support systems for equipment and facility maintenance and management are not yet well established.[34] The gaps in support systems have led to service interruptions. Intermediate level laboratories have experienced problems getting maintenance support and/o repair for its equipment. Similarly, microscopy laboratories at peripheral level have difficulty getting technical support for microscopes that need to be serviced or repaired.[31]

- In some areas, there is poor utilization of services by clients including patients and clinicians. Many clinicians still prefer to use X-rays and clinical approaches than bacteriologic tests for diagnosis of patients and monitoring of treatment response. These practices persist because of the lingering perception that laboratory tests are unreliable, inconvenient, and add to the delay and cost of treatment. Some patients prefer X-rays because of convenience and shorter turnaround time. This attitude is strongly influenced by physicians' preferences and practices, and more importantly, by the quality, and convenience in availing of these services.

- Gaps in biosafety practices among health workers providing the services were observed especially at the peripheral level even in those instances where infrastructure is adequate. This is due to a lack of knowledge and understanding of biosafety and infection control by clinical and laboratory staff. Standard operating procedures have not been developed for the various levels of labs in the NTP.[16]

IV. LABORATORY NETWORK STRATEGIC PLAN

The LNSP draws its framework from the PhilPACT and adapts its stated vision-mission-goals. The laboratory network added a qualitative goal, specifically in driving the network towards national standards. It also formulated a set of core values as guiding principles. The LNSP defined its objectives, strategies and activities in a way that it deems to significantly contribute to the aim of the PhilPACT. These are outlined in this section.

Vision
A TB-free Philippines through a cohesive and collaborative network of laboratories for TB diagnosis

Mission
Provide quality TB laboratory services by improving the capabilities of all laboratories in technology, training, research, competencies and motivation of staff

Goals
Reduce prevalence of all forms of TB from 799 per 100,000 in 1990 to less than 400 per 100,000 in 2016 (PhilPACT)

Reduce TB mortality from 87 per 100,000 in 1990 to less than 44 per 100,000 in 2016 (PhilPACT)

Efficiently and effectively managed laboratory network providing quality TB diagnostic services based on national standards by 2016.

Values
As a network and as a team, we value integrity, honesty, trust, mutual respect and teamwork. We are committed to provide quality laboratory services to our clients, partners and patients with utmost compassion and confidentiality. We have a passion for innovation and strive for the highest quality.

Final Objectives
Increase in rapid detection of bacteriologically confirmed pan susceptible TB from 75% in 2011 to 90% in 2016

Increase in rapid detection of bacteriologically confirmed multi-drug resistant TB from 3,546 in 2011 to 15,406 in 2016

Intermediate Objectives
The objectives of the NTP laboratory network strategic plan addresses the four key gaps identified in the situational analysis, namely: limited access to TB diagnostic services, insufficient laboratory network management systems, inadequate funding for the laboratory network and weak leadership and management of the laboratory network.

Objective 1: Improve accessibility and quality TB diagnostic services
Objective 2: Improve the TB laboratory network management systems
Objective 3: Ensure adequate and sustainable financing for the TB laboratory network
Objective 4: Strengthen leadership and management of the TB laboratory network

2013 – 2016 NTP LABORATORY NETWORK STRATEGIC PLAN FRAMEWORK

The desired results of the laboratory network strategic plan are depicted in the logical framework (Figure 2). It illustrates how the results are interrelated from reform outputs to intermediate outcomes until impact measures (goal) and, eventually the vision. The reform outputs are classified according to the elements of the Universal Health Care (UHC) agenda of the Department of Health.

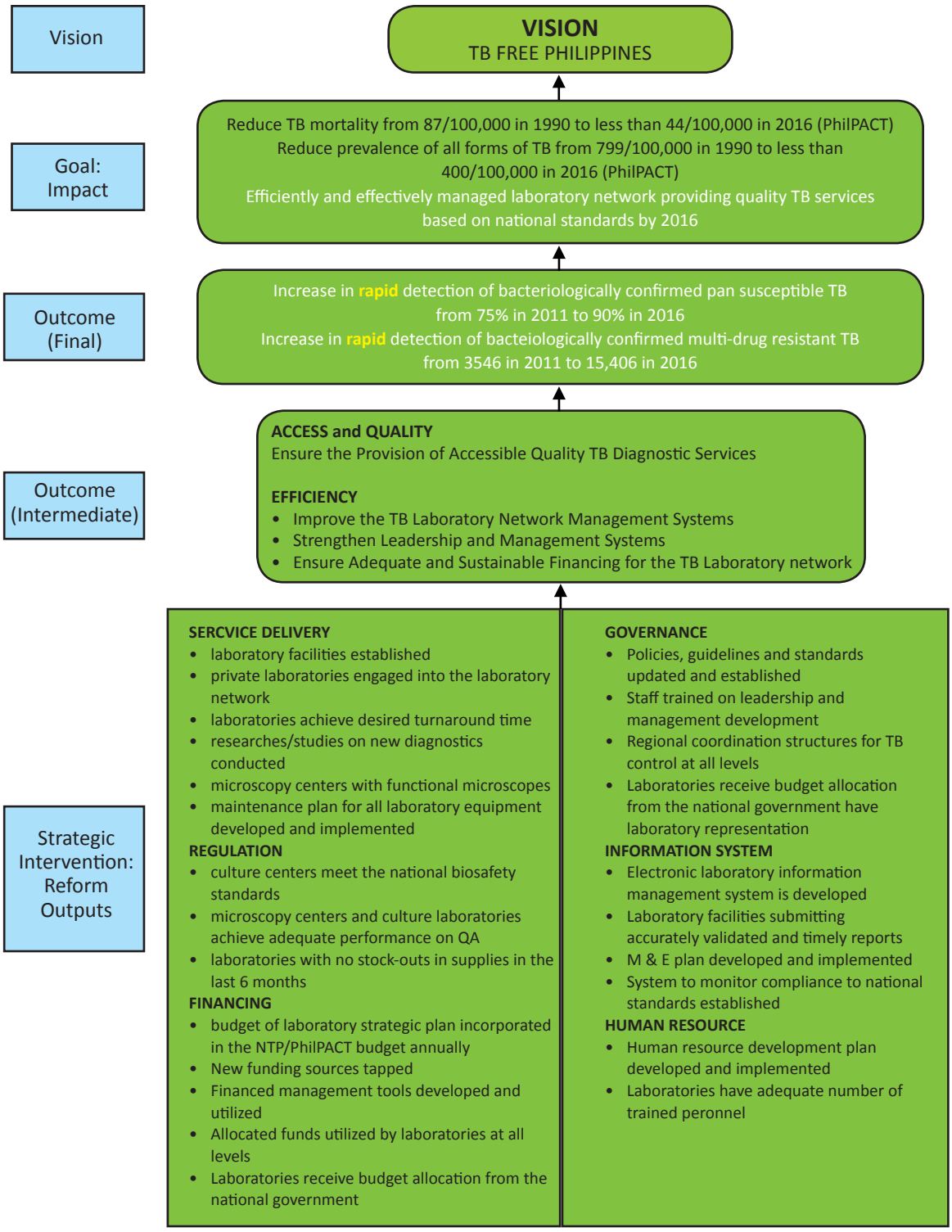

Figure 2. 2013 – 2016 NTP LNSP Logical Framework

The implementation of the NTP laboratory strategic plan will lead to the development of a responsive, reliable, effective, and sustainable TB laboratory services. The framework of a fully functional TB diagnostic service is shown in Figure 3. The framework consists of a robust policy, governance and regulatory system that guide the provision of quality inputs and essential management systems and processes. These must all be present, and efficiently and effectively managed, to ensure the sustained provision of reliable TB laboratory services that produce measurable outputs, and contribute to public health outcomes that will impact on the quality of TB care, and ultimately, to TB control in the country.

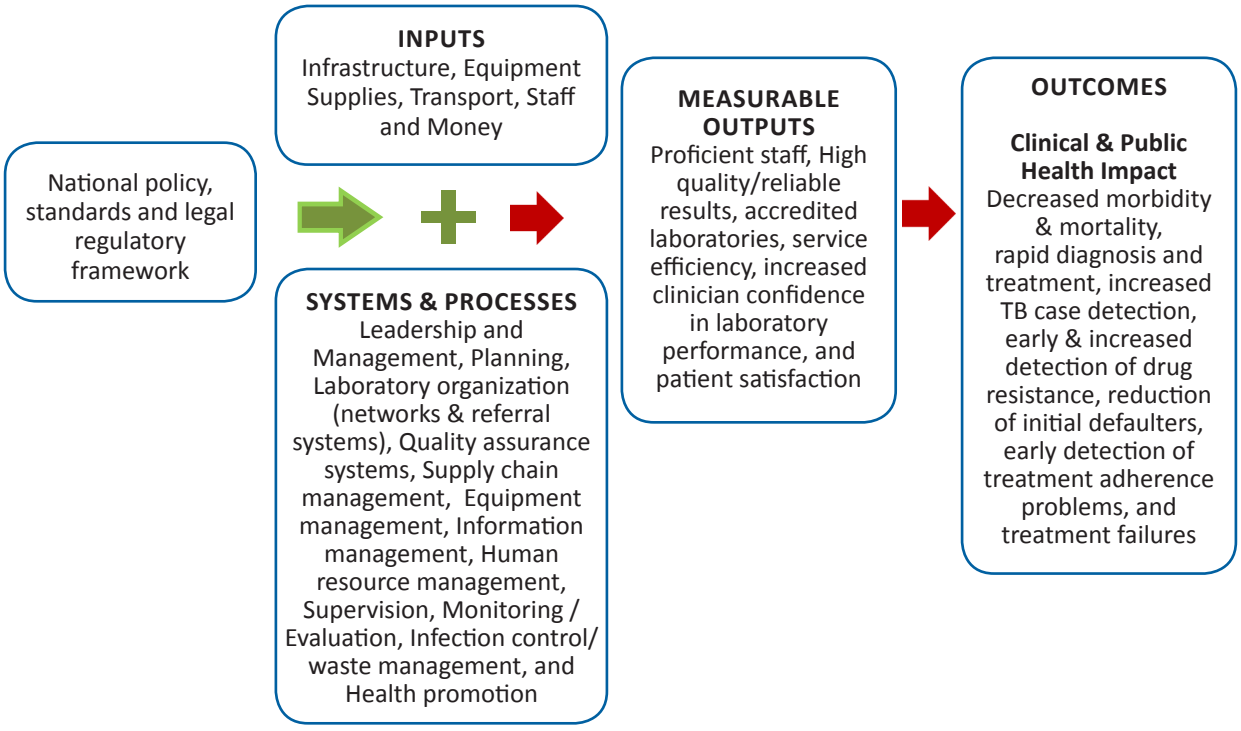

Figure 3. Framework of the fully functional TB diagnostic services for the Philippines (developed by the participants of the NTP Laboratory Services Leadership and Management Development Program, Philippines, 2011; USAID Strengthening Pharmaceutical Systems, Management Sciences for Health).

STRATEGIES, PERFORMANCE TARGETS AND ACTIVITIES

This section enumerates and describes the different strategies intended to reach the desired objectives as well as the set of activities under each strategy. The performance target for each strategy is also cited. In summary, there are 12 strategies and 25 performance targets. The activities, strategies and objectives are numbered in such a way as to illustrate a logical relationship between them (i.e., objective 1, strategy 1.1, activity 1.1.1). Table 6 presents in tabular form the summary, which are discussed in detail in the following sections.

OBJECTIVE 1. Improve accessibility and quality TB diagnostic services

This objective aims to ensure that all TB clients will have access to quality TB diagnostic services that are provided in a sustainable manner. The strategies will focus on the following key result areas:

1. Policy environment enhanced to address supply side barriers to access
2. Availability of TB laboratory services increased to improve accessibility
3. Quality of laboratory services improved
4. Service delivery improved and sustained by applying new knowledge generated from operations researches

Strategy 1.1. Strengthen the regulatory framework to facilitate delivery of TB diagnostic services

Activities under this strategy include the review and/or updating of current policies, guidelines, standards and protocols governing laboratory services. New policies, guidelines or standards will be developed, if necessary, to fill remaining gaps. The new issuances will then be disseminated throughout the health services for implementation. Monitoring and evaluation of the policies and guidelines as they are implemented will be done.

Performance target: Laboratory policies, guidelines and standards updated or developed

Activity 1.1.1 Review existing policies and guidelines

An inventory and thorough review of all relevant policies, guidelines, and protocols will be undertaken by a technical committee or working group to identify factors that serve as barriers to the effective, efficient, and sustainable delivery of quality services that are accessible, acceptable, and affordable to most clients (see Annex 3).

The policy review will focus on critical technical areas that either promote or act as barriers to better laboratory management, service delivery, and access. These technical areas include: diagnostic technologies used in the NTP; financing of laboratory service; multi-sectoral participation; management systems for human resources, facilities, equipment, and supplies; laboratory information system; referral systems including the collection and transport of specimens, and transmittal of results to the clinics; training on laboratory procedures and management; supervision; and monitoring and evaluation.

Activity 1.1.2 Update existing, or develop new policies and guidelines

A technical committee or working group led by NTP and NTRL will update existing policies to ensure that the policies and regulations in the technical areas described above will support the strategic directions of the NTP as described in the PhilPACT. These should lead to the sustainable and effective delivery of services, and to the removal or reduction of factors that serve as barriers to access. New policies will be developed to address policy gaps identified in the review.

Activity 1.1.3 Implement, monitor and evaluate new policies and guidelines

NTRL and NTP will lead the dissemination of all new or updated policies to the relevant offices of the health services. Monitoring and evaluation of these policies will be done as they are implemented.

Strategy 1.2. Expand the TB laboratory network and upgrade laboratories at all levels

The activities under this strategy focus on increasing the availability of laboratory facilities for all types of diagnostic technologies employed in the NTP. The aim is to improve accessibility in underserved areas and for the vulnerable population groups.

Performance Target

1. 100% of targeted laboratory facilities established;
2. 65% of private laboratories engaged in the NTP laboratory network

Activity 1.2.1 Establish additional TB diagnostic facilities across the country

A technical group led by NTP and NTRL will assess the laboratory needs of the various geographic divisions of the country to guide the scale-up of TB diagnostics especially the new technologies. Key considerations to guide the scaling up of laboratories include the local TB epidemiology, infrastructure, availability of resources (e.g., human resources), and expected productivity. Table 4 shows the planned expansion of TB laboratories with reference to Annex 4.

Table 4. Target number of laboratories according to TB diagnostic procedures performed, Philippines, 2013-2016

Type of Laboratory	Laboratory Procedures Performed	Baseline (2012)	Target (cumulative)			
			2013	2014	2015	2016
PERIPHERAL LEVEL						
RSS	Specimen collection, smear preparation, transport of slides for DSSM	128*	600	1,200	1,200	
Microscopy Center	• DSSM • DSSM plus FM and LED-FM	2,565 3	2,570 3	2,670 203	2,770 403	
INTERMEDIATE LEVEL						
QA Center	• Blind rechecking of slides; on site supervision and feedback • QA centers performing DSSM	90 10	105 10	105 10	105 10	105 10
TC-attached labs (PMDT)	Xpert MTB/RIF	4	42	89	114	138
Culture Centers	• SM; solid culture • SM; solid culture; Xpert	4 7	4 7	15 7	15 7	15 7

Type of Laboratory	Laboratory Procedures Performed	Baseline (2012)	Target (cumulative)			
			2013	2014	2015	2016
Culture/DST Centers	• SM; solid culture; Xpert; DST (FLD)	1	1	1	1	1
	• SM; culture (solid, MGIT); Xpert; DST (FLD)	3	3	3	3	3
	• SM; culture (solid, MGIT); LPA; DST (FLD)**	1	1	1	1	1
	• SM; culture (solid, MGIT); LPA; DST (FLD), XpertMTB/RIF**	1	1	1	1	1
CENTRAL LEVEL						
Culture/DST (FLD/SLD) Center***	• SM; culture (solid, MGIT); Xpert MTB/RIF; LPA; DST (FLD and SLD)	1	1	1	1	1

*From TB LINC reports
**Regional reference laboratories (Cebu, CDO)
*** NTRL

Activity 1.2.2 Engage the private sector for laboratory services and management
About 15% of TMLs and several culture laboratories in the NTP network are from the private sector and are contributing to the NTP case finding effort. The NTP will engage private sector laboratories into the NTP laboratory network to improve accessibility and availability of the TB diagnostic services.

In addition, private sector engagement will include participation in the area of management systems. Some examples are in training, technical support to the quality assurance program and laboratory maintenance programs, and in the conduct of monitoring, evaluation and research.

The terms of private sector participation will be defined in the policies to be developed (under strategy 1.1). In general, the process of engagement will include advocacy and orientation meetings, training of laboratory staff (service provision), monitoring of performance, reporting to the NTP laboratory information system, and participation in the quality assurance program.

Strategy 1.3 Ensure quality of TB laboratory services at all levels of the network

The activities under this strategy will focus on enhancing the current policies and guidelines on quality assurance (i.e., EQA for TB sputum microscopy), establishing a quality assurance program for the other technologies adopted by the NTP, and strengthening the implementation of these programs. The parameters for quality laboratory services will be expanded including turnaround time, among others.

Performance target:

1. 95% of microscopy centers/culture laboratories achieved adequate performance in quality assurance;
2. 95% of microscopy centers, culture laboratories, and GeneXpert laboratories achieved desired turn-around time

Activity 1.3.1 Develop and implement a quality assurance program for diagnostic technologies other than sputum smear microscopy

Guided by the policies and guidelines for quality management (under strategy 1.1), a QA program for the other technologies (e.g., culture, DST, Xpert MTB/RIF, and fluorescence microscopy) will be developed based on international recommendations and standards. Mechanisms for certification and accreditation of laboratories will also be developed. Plans and budgets will also be prepared by the relevant offices for the implementation of QA programs including organizing and training of EQA teams, monitoring, and evaluation under the leadership of NTRL.

Activity 1.3.2 Review and update guidelines for quality assurance program for TB sputum microscopy

The EQA program for sputum smear microscopy has been in place since the adoption of DOTS by the NTP consisting of the validation of 100% smear positive slides and 10% of the negative slides. It was revised in 2004 with the adoption of the lot quality assurance system (LQAS) to reduce the workload of controllers (or validators). The revised program also emphasized the conduct of internal quality control, EQA of reading proficiency and smear quality, and on-site feedback and supervision for quality improvement in the guidelines issued in 2007 (DOH A0 2007-0019). Processes and guidelines will be updated to cover LED/FMs, RSS, and proficiency of QA and culture centers.

Turnaround time will also be added as a measure of laboratory performance. Laboratory turnaround time (L-TAT) starts from the time of specimen collection to the time when laboratory results are released to the clinic. On the other hand, Program TAT (P-TAT) starts from time of specimen collection to the time when treatment is started. Shortening TATs is not just the responsibility of the laboratory staff and laboratory managers alone but includes the medical and/or nurse program managers and other field staff.

Achieving the desired TATs requires interventions that address underlying problems that go beyond the confines of the laboratory. Table 5 shows the proposed turnaround times for laboratory results and turnaround time to start of treatment (program TAT).

Table 5. Proposed turnaround times according to type of laboratory procedures, Philippines 2013

Laboratory Procedures	Laboratory Turnaround Time (TAT)	Program Turn-around time (P-TAT)
AFB sputum smear microscopy	• Within 3 days for DSSM (ZN) • Within 2 days (FM)	• - Within 5 days (for smear positive cases)
Xpert MTB/RIF	• Within 2 days	- Within 4 days (for Mtb positive cases who are R-susceptible)

Activity 1.3.3 Strengthen implementation of laboratory QAS program

The implementation of the QA program for sputum microscopy faced numerous difficulties due to various factors including management issues, HR shortages, logistical, and technical capacity issues. An added factor is wide geographic coverage of some provinces that makes it difficult for provincial QA teams to conduct on-site feedback and supervision especially in areas where travel is difficult due to limited and costly transport services, difficult terrain, and security concerns (e.g., Mindanao). Key features of this activity include a thorough review and analysis of QA implementation in different parts of the country, and planning the strategic interventions.

Strategy 1.4 Generate and utilize new knowledge to improve services

The NTP laboratory services will take a proactive approach in improving its performance and services. New knowledge and insights from program reviews, monitoring reports, and operations researches will be utilized to improve policies and guidelines, management, and services.

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Performance Target: At least one research conducted per year

Activity 1.4.1 Conduct researches in TB diagnostics based on laboratory research agenda

A research agenda will be developed based on the priority areas for improvement in the NTP laboratory services. NTP and NTRL will lead the agenda development process in collaboration with DOST's Philippine Council for Health Research and Development (PCHRD), academe, and other key stakeholders. Mechanisms for providing financial and/or technical support for the conduct of operational researches will be established.

Activity 1.4.2 Adoption of research findings in service delivery mechanisms

Completed researches will be submitted for publication and disseminated within the NTP network to reach a broader audience (e.g., NTP information system). Knowledge and insights gained from the operations research, particularly impact assessment of new technologies, will be used to guide policies, guidelines, standards, and strategies to improve services particularly on the scale-up of new technologies.

OBJECTIVE 2. Improve the TB laboratory network management systems

Activities under this objective aim to strengthen the management systems in the NTP laboratory services to ensure the sustainable delivery of quality and accessible laboratory services. The key result areas include:

1. Laboratory human resource management is improved
2. Facilities and equipment maintenance and management is improved
3. Supply management system for laboratories is enhanced
4. Laboratory information system organized and strengthened
5. Monitoring and evaluation of laboratory services conducted regularly

Strategy 2.1 Improve human resource management at all levels

This strategy aims to ensure that laboratories are adequately staffed by trained and competent laboratory workers to sustain the delivery of quality services and management of the laboratory network.

Performance target:
1. Human resource development plan developed and implemented at national, regional and local levels by 2016;
2. 80% of laboratories have adequate number of trained personnel

Activity 2.1.1 Develop a laboratory human resource management plan

A human resource (HR) management plan will be developed for each type of laboratory in the NTP network to address HR issues such as staff shortages, recruitment, retention, training, staff development, compensation, and benefits. The development of the HR plan will be guided by an analysis of the human resource requirements based on the facilities' functions, workload, and expected productivity. Development of the laboratory HR plan shall be anchored on the health human resources master plan of the DOH.

Activity 2.1.2 Enhance existing training program for laboratory staff

Current training programs will be enhanced to provide the personnel with skills in both laboratory techniques and in leadership and management for both public and private laboratories. Training courses will be developed or enhanced based on an analysis of training needs of the different cadres of laboratory staff in accordance with policies and guidelines governing training in the laboratory services (under strategy 1.1).

The development, testing, and implementation of "integrated training programs" that will serve several disease programs (e.g., malaria, TB, paragonimiasis, etc.) will be pursued in the interest of higher training efficiency and effectiveness given limited resources. The integrated training program will be applied in areas where the specific diseases under consideration are endemic.

The use of the TB core curriculum on Sputum Microscopy for Philippine Medical Technology Schools which is based on NTRL standards and developed in collaboration with the Philippine Association of Schools of Medical Technology and Public Health (PASMETH) will be scaled up and inclusion of TB laboratory training for other new diagnostics in the curriculum will be considered.

Activity 2.1.3 Implement the human resource development plan

NTP and NTRL will lead the provision of technical assistance to all levels of the laboratory network to ensure the implementation of the HR development plans. This technical assistance will include advocacy to LGUs to provide the political and financial resources, and in mobilizing and aligning domestic and foreign resources to support the implementation of HR plans.

Strategy 2.2: Improve facility and equipment management system

Activities under this strategy aim to organize the support systems for laboratory facilities and equipment at all levels and build their capacity to provide continuous services while ensuring a safe working environment for laboratory staff.

Performance Target:

1. All TB laboratories in the NTP network are implementing a facility and equipment maintenance plan;
2. 90% of culture and DST centers meet the national biosafety standards;
3. 95% of TB laboratories (i.e., culture/DST laboratories, Xpert MTB/RIF laboratories and microscopy centers) have less than 5 days down time in one year

Activity 2.2.1 Develop maintenance plan and budget for all laboratory facilities and equipment

All TB laboratories in the NTP laboratory network will develop a facility and equipment maintenance plan and budget in accordance to policies and guidelines for laboratory maintenance (under strategy 1.1). The maintenance plan will define how, when, and who will perform maintenance activities including calibration and certification procedures.

Provision of technical assistance to this activity will be led by NTRL in collaboration with BHFS/DOH and partners in the public and private sector. A laboratory maintenance team within central and regional DOH and at provincial level will be organized, mandated, trained, and provided with adequate resources to perform maintenance tasks.

Activity 2.2.2 Implement the maintenance plan

The NTP teams at regional and provincial levels will ensure that the maintenance plans described above are provided with adequate funds and other necessary resources for its implementation. Provision of technical support for implementing maintenance plans will be led by NTRL in collaboration with partners in the private sector and from foreign assisted projects.

Strategy 2.3 Improve supply management system

The aim of this strategy is to strengthen and build the capacity of the laboratory supply management system to ensure the continuous availability of TB laboratory commodities at all levels of laboratories.

Performance target: 90% of laboratories at all levels have no stock-outs of laboratory supplies in the last 6 months.

Activity 2.3.1 Assessment of existing supply management system

NTP/NTRL will assess the TB laboratory supply management system with technical assistance from technical partners in the design and implementation of the assessment. The assessment will look into the components of the supply management system50 including selection, procurement, distribution, use, management support systems, and policies, laws and regulation, to identify gaps in the system. The findings will be used to inform planning interventions to improve the capacity and effectiveness of the system.

Activity 2.3.2 Develop intervention plan

Based on the assessment results, an intervention plan will be developed and budgeted to enable its implementation.

Activity 2.3.3 Implement intervention plan

The implementation of the intervention plan will be led by NTRL with NTP oversight including monitoring and evaluation.

In the implementation of this intervention plan, it will be the responsibility of the DOH to ensure a steady uninterrupted supply of laboratory commodities to all public laboratory facilities in the network.

Strategy 2.4: Enhance Laboratory Information System (LIS)

This strategy aims to build the capacity of the laboratory information system in all its components to improve its effectiveness in supporting the management and provision of laboratory services.

Performance Target:
1. An electronic laboratory information system is utilized at all levels;
2. 90% of laboratories submitting accurate reports on time;
3. NTRL consolidates, analyses and submits timely reports to NTP

Activity 2.4.1 Develop and implement an electronic laboratory information system

NTRL will develop an online data management system which will serve the entire NTP laboratory network to help improve collection of data and reporting of laboratory performance, quality assurance results, laboratory management systems (e.g., human resources, finances, supplies, etc.) and surveillance. Development will be done in collaboration with the IMS/DOH and will be integrated into the ITIS.

Activity 2.4.2 Enhance existing laboratory information system

This activity involves an analysis of the gaps in the different components of the health information system including inputs (resources), processes (indicators, data sources and data management) and outputs (information products, dissemination, and use) 51. A laboratory information system enhancement plan and budget will be developed and implemented. One of the essential features of the laboratory information system plan will be to ensure its linkage to the overall NTP information system.

Activity 2.4.3 Enhance capacity for data analysis and use of information

The implementation of the laboratory information system enhancement plan will improve capacity for data management and generation of information products. Human capacity building will be conducted to improve laboratory staff and managers' ability to analyze and interpret laboratory information. This will also improve abilities to generate reports and other information products (e.g., data summaries, dashboard reports, advisories, etc.) for laboratory workers, program managers, decision makers and policy makers, and other stakeholders.

Strategy 2.5 Enhance laboratory network monitoring and evaluation

A monitoring and evaluation system will ensure that activities are being carried out by the laboratories according to standards at all levels, and that these are contributing to the attainment of the objectives and goals of the network.

Performance Target:

1. Laboratory M and E plans at all levels developed;
2. 90% of CHDs/provinces/cities are implementing the M and E plan;
3. System to monitor compliance to national standards developed

Activity 2.5.1 Develop and implement a laboratory network M and E plan and budget

A monitoring and evaluation plan and budget will be developed by the national, regional and local government laboratory managers in accordance with the policies and guidelines for M&E (under strategy 1.1). The M&E plan will describe details of coverage, standard indicators, methods, processes, accountable and responsible managers, frequency, and reporting. This will be supported by a standard M&E tool.

Activity 2.5.2 Build capacity of laboratory managers in M & E

The implementation of the M&E plans at all levels will be the joint responsibility of the laboratory and NTP program managers. The required funds and administrative and logistical support will be made available by the concerned program managers. Laboratory managers' capacity to monitor and evaluate the laboratory services will be enhanced.

OBJECTIVE 3 Ensure adequate and sustainable financing for the laboratory network

This objective aims to establish adequate financing mechanisms by mobilizing funds and resources from government and non-government sources.

The financial management system will be strengthened to ensure that available funds are utilized efficiently. The key result areas are:

1. Financing of the laboratory services improved and sustained
2. Laboratory financial management system improved

Strategy 3.1: Develop sustainable financing strategies

This strategy aims to develop sustainable financing strategies and mechanisms to support the implementation of the NTP laboratory network strategic plan utilizing public and private financing. The government resources include the national government budget, local government budget, PhilHealth and other government organizations (e.g. PCSO); non-government sources include foreign and local development partners, donors, NGOs, private corporations and civil society organizations.

Performance target:

1. Budget of annual laboratory operational plan incorporated in the national and local government annual budget;
2. All regional laboratories receive budget allocations from the national government;
3. New funding sources identified and mobilized for laboratory services

Activity 3.1.1 Institutionalize financing mechanisms for the laboratory network

The budget allocated to NTRL and the laboatory network by the national government is inadequate to support its operations. Major external funding support from GFATM will end by 2016. A sustained and distinct annual financial allocation mechanism for the NTP laboratory services should be institutionalized in the NTP annual budget.

The NTRL and the CHD-run regional laboratories (i.e., culture/DST centers) will develop an annual operational plan to be submitted for fund allocation by NTP through GAA. Likewise, NTRL shall work with RITM to develop a mechanism that will ensure a specific budget line item for NTRL in the RITM GAA.

For LGU-run intermediate and peripheral laboratories (TMLs and QA centers), allocation from the LGUs will be institutionalized through their PIPH/CIPH and AOPs. The CHDs will provide technical guidance to the provincial/city laboratories on how to integrate TB laboratory services in their respective PIPH/CIPH and AOPs.

Activity 3.1.2 Develop mechanisms to tap other fund sources

Other than government financing, the laboratory network has traditionally been supported by external sources especially the development partners. These include the foreign assisted projects that have invested heavily in TB laboratory strengthening. A mechanism to align this resource for the laboratory services will be developed and implemented by NTP and NTRL.

In addition to foreign donors, funding from local donors (e.g. PCSO, PAGCOR) will be explored. Research grants will also be tapped to fund the researches and studies within the laboratory network.

Activity 3.1.3 Collaborate with PhilHealth for the integration of TB laboratory services on the TB benefit package.

Mechanisms will be explored so that part of the PhilHealth TB-OPB DOTS benefit package is allocated for laboratory services. In addition, NTP and NTRL will work closely with PHIC to try to develop a financing scheme for the diagnosis of drug-resistant TB.

Activity 3.1.4 Explore other income-generating activities

Alternative means of generating revenues that capitalize on the laboratories' core competencies will be explored to finance the laboratory services.
These may include basic or advanced continuing laboratory education packages or trainings that will be offered to schools, professional organizations, laboratory workers and managers for a fee. An example is to develop NTRL's capacity to certify or accredit private laboratories to generate revenues.

Strategy 3.2 Strengthen laboratory financial management system

This strategy aims to provide a system to monitor and access the available resources for the NTP Laboratory Network Strategic Plan. This includes the development of financial management tools and their dissemination for use by the laboratory network managers and providers.

Performance target:
1. Financial tracking tools enhanced and utilized (i.e. COSFIT) annually;
2. At least 90% utilization of budget by regional laboratories

Activity 3.2.1 Review and enhance existing financial management tools

The costing and financing tool (COSFIT) used for the NTP Laboratory Network Strategic Plan can be converted into a costing and financing tool that can be utilized by the laboratory managers for routine management tasks. These tools will be evaluated and enhanced to include tracking of fund utilization in addition to its current use in estimating costs and budgets, and will allow different types of users at the central, regional and LGU levels. An information technology (IT) enabled application can likewise be developed to facilitate information exchange and monitoring processes.

Activity 3.2.2 Training of TB managers in financial management

Short courses on basic financial management skills (including the use of financial management tools) for NTP program managers will be developed and implemented.

Activity 3.2.3 Utilization of laboratory financial information in support of budgeting

Relevant laboratory financial data and information will be collected through the routine laboratory information system. This information will be used by laboratory managers when developing plans and budgets.

OBJECTIVE 4. Strengthening leadership and management of the TB laboratory network

The laboratory network is an integral part of the NTP. At the national level, the NTP and NTRL take overall leadership and managerial responsibility for the laboratory services. Hence, leadership and management of the laboratory services at the sub-national level is the responsibility of the entire NTP management team that includes the medical, nurse, and medical technologist coordinators.

Management capacity relies on supportive institutional policies and systems that foster good management practices, and on the capability of individuals as leaders and managers. Both of these shall be addressed under this objective. Key result areas include:

1. NTP management structures strengthened and include laboratory representation
2. Decision making processes have increased transparency and accountability
3. Laboratory managers' leadership and management skills improved

Strategy 4.1: Build leadership and managerial capacity of the TB laboratory network

The activities under this strategy aim to build capacities at the institutional and individual level. The policies and systems developed (under objectives 1 and 2) help build the overall leadership and management framework that will support the sustained delivery of quality and accessible laboratory services.

Performance target:
1. NTP coordinating structures at all levels have laboratory representation;
2. Laboratory managers trained on leadership and management

Activity 4.1.1 Improve leadership and management skills of laboratory managers

The laboratory managers (medical, nurse, and medical technologists) at all levels will be provided the appropriate training to build individual and team capacities. The approach will be on non-degree training courses that will provide practical skills on leadership and management. Alternative training methodologies will be utilized to minimize the time that workers spend away from their work assignments while on training.

Activity 4.1.2 Strengthen institutional capacity for leadership and management

The institutional managerial capacity of the NTP laboratory services will be enhanced to improve laboratory performance. The development or strengthening of management systems described in the sections above will contribute to managerial capacity building.

NTP structures and processes for coordination, collaboration and communication at the national, regional and provincial/city level will be strengthened based on policies and guidelines (under strategy 1.1). Transparent and consensus-based decision making processes, which are supported by evidence from the laboratory information system, will be promoted.

Table 6: Summary of Objectives, Strategies, Performance Targets and Activities

OBJECTIVES	STRATEGIES	Performance Targets	Activities	2013	2014	2015	2016
1. Improve accessibility and quality TB diagnostic services	1.1 Strengthen regulatory framework to facilitate delivery of TB diagnostic services	Policies, guidelines and standards updated and established	1.1.1 Review existing policies and guidelines				
			1.1.2 Update existing or develop new policies and guidelines				
			1.1.3 Implement, monitor and evaluate new policies and guidelines				
	1.2 Expand the TB laboratory network and upgrade laboratories at all levels	100% of targeted laboratory facilities established (refer to Table 4) 65% of private laboratories engaged in the NTP laboratory network	1.2.1 Establish additional TB diagnostic facilities across the country				
			1.2.2 Engage private sector for laboratory services and management				
	1.1 Ensure quality of TB laboratory services at all levels of the network	95% of microscopy centers/ culture laboratories achieved adequate performance in quality assurance	1.3.1 Develop and implement a quality assurance program for other diagnostic technologies				
		95% of microscopy centers/ culture laboratories/ Xpert MTB/RIF Site achieved desired turnaround time	1.3.2 Review and update guidelines for Quality Assurance program for TB sputum microscopy				
			1.3.3 Strengthen implementation of laboratory QA program				

OBJECTIVES	STRATEGIES	Performance Targets	Activities	2013	2014	2015	2016
	1.4 Generate and utilize new knowledge to improve services	researches/ studies conducted (at least 1 per year)	1.4.1 Conduct researches in TB diagnostics based on laboratory research agenda				
			1.4.2 Adoption of research findings in service delivery mechanism				
2. Improve the TB laboratory network management systems	2.1 Improve human resource management at all levels	Human resource development plan developed at the national, regional and local levels by 2016 80% of laboratories have adequate number of trained personnel	2.1.1 Develop a laboratory Human Resource Management Plan				
			2.1.2 Enhance existing training program laboratory staff				
			2.1.3 Implement the human resource development plan				

OBJECTIVES	STRATEGIES	Performance Targets	Activities	2013	2014	2015	2016
	2.2 Improve facility and equipment management system	Maintenance plan for all laboratory equipment developed and implemented 90% of culture and DST centers meet the national biosafety standards by 2016 95% of TB laboratories (i.e., culture/ DST laboratories, Xpert MTB/ RIF laboratories and microscopy centers) have less than 5 days down time in one year	2.2.1 Develop maintenance plan and budget for all laboratory facilities and equipment.				
			2.2.2 Implement maintenance plan				
	2.3 Improve supply management system	90% of laboratories with no stock-outs of quality laboratory supplies in the last 6 months	2.3.1 Assessment of existing supply management system				
			2.3.2 Develop intervention plan				
			2.3.3 Implement intervention plan				

OBJECTIVES	STRATEGIES	Performance Targets	Activities	2013	2014	2015	2016
	2.4 Enhance laboratory information system (LIS)	An electronic laboratory information system is developed 90% of laboratory facilities submitting accurate, validated and timely reports NTRL consolidates, analyses and submits timely reports to NTP	2.4.1 Develop and implement an electronic laboratory information system				
			2.4.2 Enhance existing laboratory information system				
			2.4.3 Enhance capacity for data analysis and use of information				
	2.5 Enhance Laboratory network Monitoring and Evaluation	M and E plan developed 90% of CHDs/ Provinces/ Cities are implementing the M and E plan System to monitor compliance to national standards developed	2.5.1 Develop and implement a laboratory network M and E plan and budget				
			2.5.2 Build capacity of laboratory managers in M and E				

OBJECTIVES	STRATEGIES	Performance Targets	Activities	2013	2014	2015	2016
3. Ensure adequate and sustainable financing for the Laboratory Network	3.1 Develop sustainable financing strategies	Budget of annual laboratory operational plan incorporated in the national and local government annual budget 100% of regional laboratories received budget allocations from the national government New funding sources tapped	3.1.1 Institutionalize financing mechanism for the laboratory network				
			3.1.2 Develop mechanisms to tap other fund sources				
			3.1.3 Collaborate with PhilHealth for the integration of TB laboratory services on the TB benefit package				
			3.1.4 Explore other income-generating activities				
	3.2 Strengthen laboratory financial management system	Financial tracking tools enhanced and utilized annually At least 90% utilization of budget by regional laboratories	3.2.1 Review and enhance existing financial management tools				
			3.2.2 Training of TB managers in financial management				
			3.2.3 Utilization of laboratory financial information in support of budgeting				
4. Strengthen leadership and management of the TB laboratory network	4.1 Build leadership and managerial capacity of the TB laboratory network	Laboratory staff trained on leadership and management Regional coordination structures with Laboratory representation	4.1.1 Improve leadership and management skills of Laboratory managers				
			4.1.2 Strengthen institutional capacity for leadership and management				

V. FINANCING REQUIREMENTS

The availability of funds for TB control is a key ingredient to the success of the NTP. To estimate the financing requirements of the NTP Laboratory Network Strategic Plan, a financing and costing model was developed. The model followed the PhilPACT framework and delineated the laboratory network- related elements of the public and private health care delivery systems. Program management costs were likewise added in the estimates. Funding sources were brought to bear on these costing requirements: from the National Government (NG), Foreign Assisted Projects (FAPS), Local Government Units (LGUs), Out of Pocket (OOP) sources and Philippine Health Insurance Corporation (PHIC).

Costing Methodology

The financing requirements for the NTP LNSP was estimated using a costing tool developed specifically for the plan. The NTP LNSP Costing Tool was developed using Microsoft Excel program to estimate the cost requirements from 2013 to 2016. With similar features as the PhilPACT, PIPH/ CIPH, and WHO costing templates, this costing tool calculates the cost items per activity under each objective and strategy.

To develop the NTP LNSP Costing Tool, secondary data review and key informant interviews were conducted. The data collected became part of the database of laboratory network and cost assumptions used in the estimation of the financing requirements.. The estimated costs were based on the final set of objectives, strategies, and activities of the NTP LNSP .

Because of limitations on available data both from national and local sources for the NTP laboratory network, some cost items used the ideal scenario or average assumptions to come up with an estimate. To address this limitation, the costing tool was designed with a structure that allows revisions per activity as needed because each activity estimates has its own worksheet linked to the database of assumptions and the summary table worksheets. The link allows the automatic computation of the total costing requirements and the funding gaps. As such, the LNSP costing tool can generate several financing scenarios based on the available data.

Further, the calculations involved costing of some enabling and administrative related activities like production and dissemination of policies/guidelines as well as the orientation of the CHDs, provinces/cities, and private sector for the review/ revision of policies and guidelines. The timeline of activities follows the phasing described in the plan and considers the status of some of the activities currently implemented by NTRL.

Summary of Financing Requirements and Funding Gaps

The estimated financing requirements to implement the NTP LNSP strategies and activities for the period 2013-2016 amount to PhP 6,540,266,884. Strategy 2.3 on strengthening the supply management system has the highest percentage share per strategy with an estimated financing requirement of PhP 2,599,544,928. This includes the costing for laboratory supplies and commodities.

Financing requirement is highest in year 2016 with an estimated amount of PhP 1,837,466,496. Table 7 and Figure 4 present the breakdown by strategy and year. These are graphically configured by objective, strategy, and stakeholder in Figures 5, 6 and 7, respectively.

Table 7. Estimated Financing Requirements by Strategy and Year in Philippine Pesos

		2013	2014	2015	2016	TOTAL
1.1	Strengthen the regulatory framework to facilitate delivery of TB diagnostic services	1,224,000	10,637,400	12,136,800	4,082,000	28,080,200
1.2	Expand the TB laboratory network and upgrade laboratories at all levels	490,085,786	698,401,227	681,104,203	729,953,711	2,599,544,928
1.3	Ensure quality of TB laboratory services at all levels of the network	67,121,019	78,167,451	86,277,981	90,498,507	322,064,958
1.4	Generate and utilize new knowledge to improve services	2,255,200	3,928,600	3,739,000	3,738,800	13,661,600
2.1	Improve human resource management at all levels	2,525,200	21,522,400	13,536,100	12,014,600	49,598,300
2.2	Improve facility and equipment management system	125,074,469	163,958,080	167,458,715	183,311,418	639,802,682
2.3	Improve supply management system	480,310,463	563,622,659	626,380,634	669,645,759	2,339,959,516
2.4	Enhance laboratory information system	52,639,000	157,050,100	157,767,100	131,405,600	498,861,800

		2013	2014	2015	2016	TOTAL
2.5	Enhance laboratory network monitoring and evaluation	292,000	1,948,000	2,225,600	2,225,600	6,691,200
3.1	Develop sustainable financing strategies	1,521,000	10,178,500	7,774,500	7,774,500	27,248,500
3.2	Strengthen financial management system	185,000	7,513,800	1,980,000	1,980,000	11,658,800
4.1	Build leadership and managerial capacity of the TB laboratory network	146,400	1,276,000	836,000	836,000	3,094,400
Total		**1,223,379,538**	**1,718,204,217**	**1,761,216,634**	**1,837,466,496**	**6,540,266,884**

The NTP LNSP costing tool estimates funds available from different stakeholders as mentioned above. Based on available data for the financing commitment of these stakeholders for the TB laboratory network, the calculation is presented only by year and was not disaggregated further per strategy. Thus, this calculation was matched with the costing of all the activities to be implemented per year to identify the possible funding gap.

The NTP LNSP costing tool in Annex 5 provides the detailed calculations of the financing requirements by year, by strategy, and by stakeholder/source as well as the complete list of unit costs and assumptions used in the calculations.

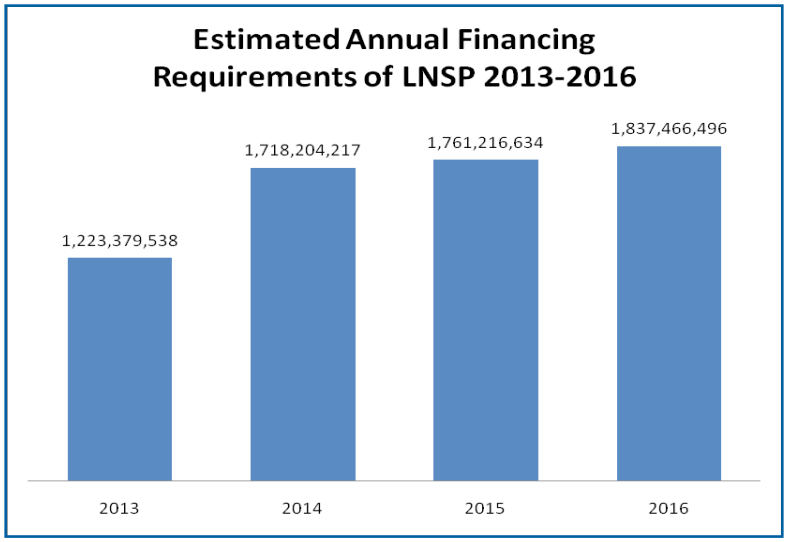


Figure 4. Estimated NTP LNSP Annual Financing Requirements from 2013-2016 in Philippine Pesos

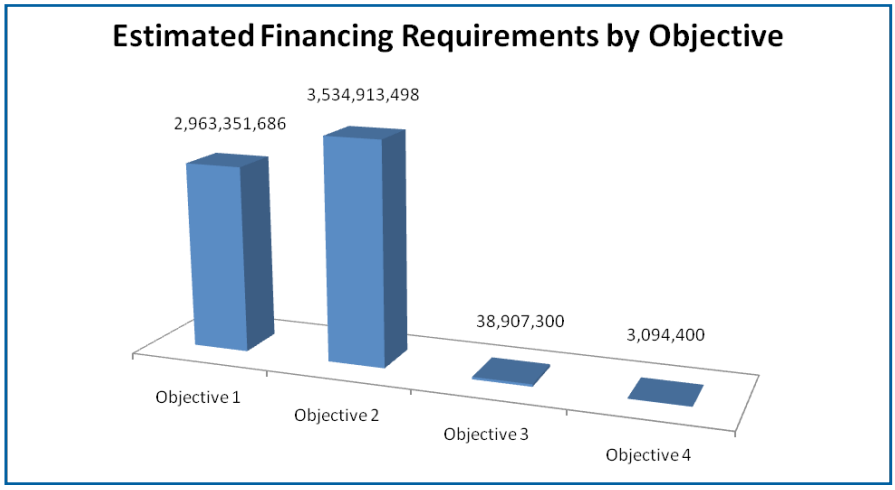


Figure 5. Distribution of Estimated Financing Requirements by Objective

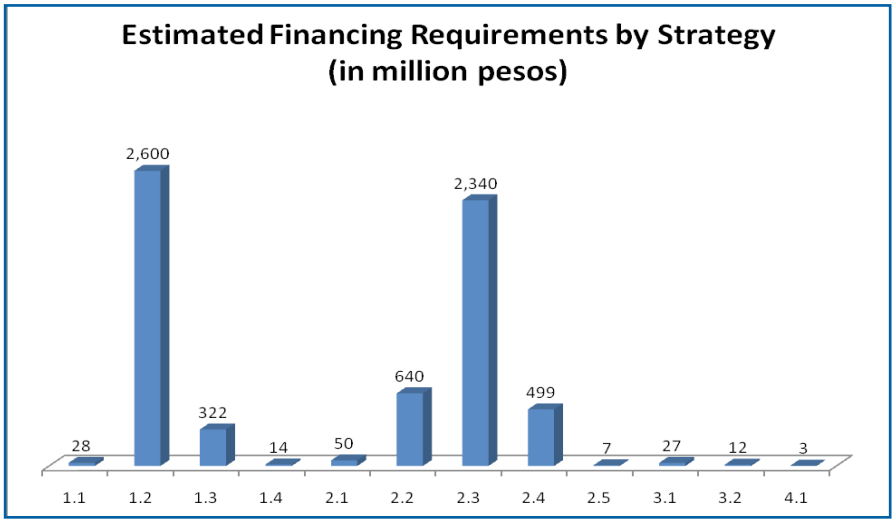


Figure 6. Distribution of Estimated Financing Requirements by Strategy

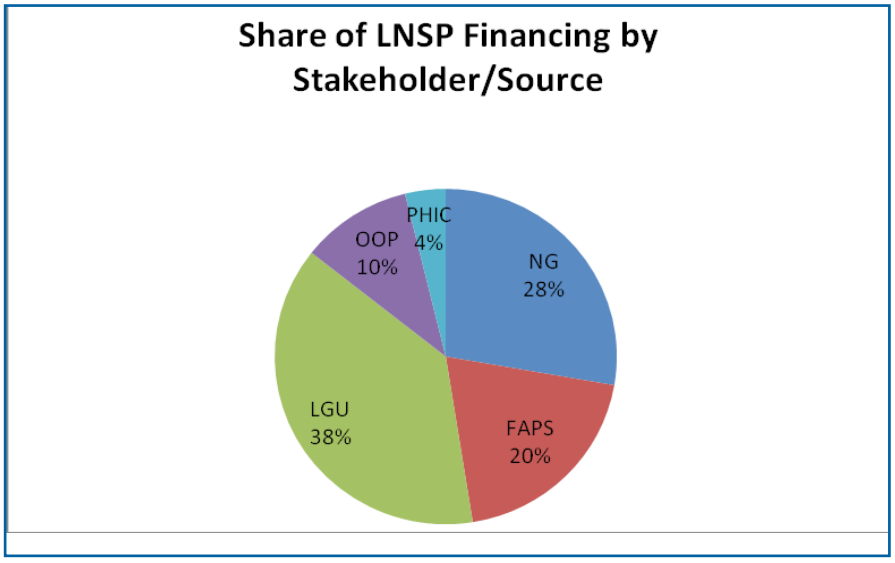
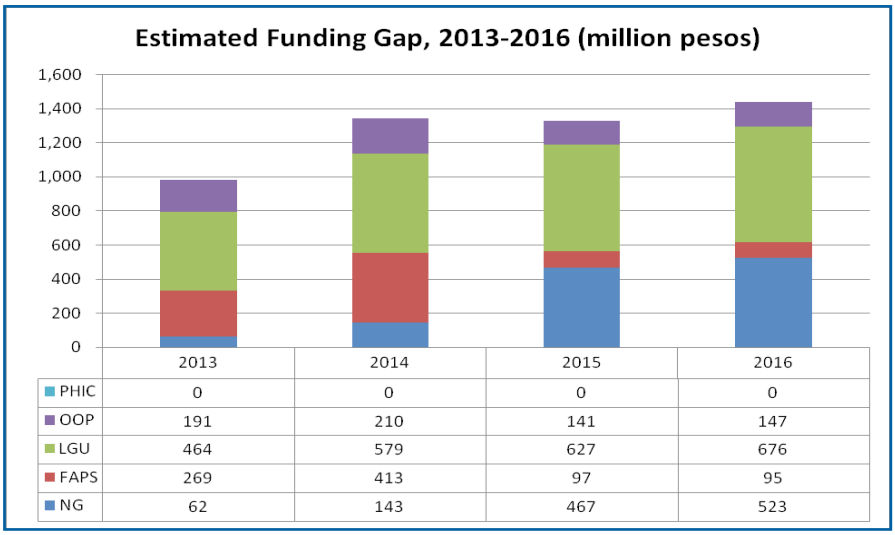


Figure 7. Sharing of Estimated Financing Requirements by Stakeholder/Source

The funding gap is computed as financing requirements less financing commitments. The total funding gap is estimated to be PhP 5,104,527,023. Figure 8 presents the funding gap per year for the period 2013-2016, shown across years in Figure 9.



	2013	2014	2015	2016
PHIC	0	0	0	0
OOP	191	210	141	147
LGU	464	579	627	676
FAPS	269	413	97	95
NG	62	143	467	523

Figure 8. Estimated Funding Gap, 2013-2016, in Million Pesos

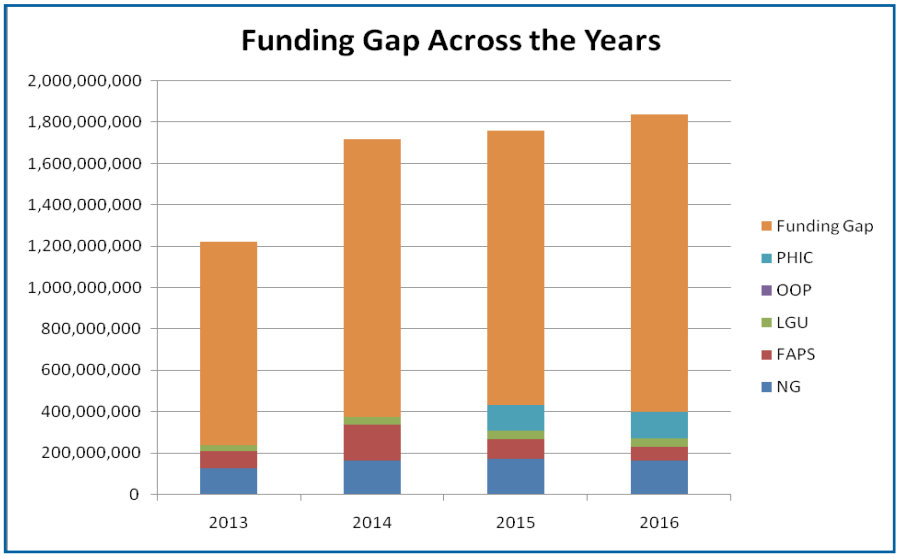


Figure 9. Estimated Funding Gap across Years, 2013-2016, in Million Pesos

VI. MONITORING AND EVALUATION

Target performances were designed to complement and run parallel the target performances indicated in the PhilPACT. The M&E Plan (Annex 6) maps the goal, 3 final and 4 intermediate objectives, 12 strategies and 25 performance targets and corresponding activities. It enters these with their corresponding indicator, calculation, source of information for both numerator and denominator; the value at baseline and target in 2016; who is responsible for the data; level of collection and frequency of reporting. The plan will assess and measure the impact, outcome, output and process indicators for the goal, objective, strategic intervention and activity respectively.

The impact indicators on reduction of prevalence and mortality to measure the goal is in harmony with the goal of PhilPACT. An additional goal specific to the laboratory network is added focusing on measuring laboratory efficiency and effectiveness. The outcome indicators for the final objectives measures increase in rapid detection of bacteriologically confirmed pan susceptible TB from 75% in 2011 to 90% in 2016 and MDR TB from 3,546 in 2011 to 15,406 in 2016. The component of evaluation for rapid detection is incorporated in the improved laboratory and program turn-around time in the quality improvement in Objective 1 under quality assurance.

The target performances that should be monitored and evaluated for the laboratory network organized per major objectives (see Table 6) are:

Objective 1: Improve accessibility and quality TB diagnostic services

- Policies, guidelines and standards updated and established
- 100% of targeted laboratory facilities established
- 65% of private laboratories engaged into the NTP laboratory network
- 95% of microscopy/ culture laboratories achieved adequate performance in quality assurance
- 95% of microscopy centers/ culture laboratories/Xpert MTB/RIF site achieved desired turnaround time
- Researches and studies conducted (at least 1 per year)

Objective 2: Improve the laboratory network management systems

- Human resource development plan developed at national, regional and local levels by 2016
- 80% of laboratories have adequate number of trained personnel
- Maintenance plan for all laboratory equipment developed and implemented
- 90% of culture and DST centers meet the national biosafety standards by 2016
- 95% of TB laboratories (i.e., culture/DST laboratories, Xpert/MTB-RIF laboratories and microscopy centers) have less than 5 days down time in one year
- 90% of laboratories with no stock-outs of quality laboratory supplies in the last 6 months
- An electronic laboratory information system is developed
- 90% of laboratory facilities submitting accurate, validated and timely reports
- NTRL consolidates, analyses and submits timely reports to NTP
- M &E plan developed
- 90% of CHDs/provinces/cities are implementing the M & E plan
- System to monitor compliance to national standards developed

Objective 3: Ensure adequate and sustainable financing for the Laboratory Network

- Budget of annual laboratory operational plan incorporated in the national and local government annual budget
- 100% of regional laboratories received budget allocations from the national government
- New funding sources tapped
- Financial tracking tools enhanced and utilized
- At least 90% utilization of budget by regional laboratories

Objective 4: Strengthen leadership and management of laboratory network

- Laboratory staff trained on leadership and management
- Regional coordination structures with laboratory representation

A complete listing and description of the impact, outcome, output and process indicators is seen in Annex 6.

VII. IMPLEMENTING ARRANGEMENTS

The NTP LNSP as a sub-plan of PhilPACT was crafted in support of the UHC/KP strategy of the DOH. It was likewise prepared within the context of decentralized governance of the health sector in the Philippines. The strategic thrusts of PhilPACT and consequently that of NTP LNSP help prepare the country's local health systems to integrate specific disease programs such as the TB program into a comprehensive health and development plan. The LGU Investment Plans for Health developed in support of the health sector reform initiatives ensure that the TB program including TB laboratory services is included and funded in the LGU programs for the next five years.

The implementing levels and corresponding roles and functions for the NTP LNSP will be as follows:

1. National Level
   The NTP/NCDPC and NTRL-RITM will be responsible and accountable for the implementation of the NTP LNSP. It shall ensure that activities of various stakeholders are consistent with the strategic plan. It will coordinate with the IDO-NCDPC of the DOH, which is responsible for the overall development, monitoring and coordination of policies, mechanisms and guidelines for the NTP.

2. Regional level
   The CHD, led by the Regional Director, in coordination with the Regional Coordinating Committee for PhilPACT, the Regional Implementation and Coordination Team, and the Regional Development Council will be the main regional implementing body for NTP LNSP. The regional TB team composed of regional coordinators will be the technical secretariat. The CHDs shall ensure the development of their respective regional laboratory network strategic plan that is aligned with the NTP-LNSP and addresses their region's specific needs.

3. Provincial/City level

The Provincial/City Health Officer, under the Governor/City Mayor, will be responsible for the overall implementation of the NTP LNSP in the province or city. S/He will be supported by a multi-sectoral body composed of representatives from other government agencies, private sector including the NGOs, people's organization/ civil society and TB patient group. The PHO/CHO, with technical guidance from the CHDs, will ensure the development of their provincial/city laboratory strategic plan and operational plans. These plans will be aligned with the regional laboratory network strategic plan based on the identified gaps and needs of the province/city. The provincial/city laboratory strategic plan will be integrated into the PIPH/CIPH and the corresponding AOP will be the basis of the TB Program plans .

4. Municipal level

The Municipal / City Health Officer of the RHU/HC, under the municipal/city mayor will be the key implementing structure for NTP LNSP in the municipality. The MHO, with technical guidance from the PHO NTP coordinators, will develop their laboratory strategic plan that will address the needs of the municipality and are aligned with the provincial NTP-LNSP. The Municipal Investment Plans for Health (MIPH), PIPH and the corresponding AOP will be the basis of the TB Program plans including that for the NTP LNSP. The DOTS facilities that include RHUs/HCs, PPMDs, TB laboratories will be the service delivery points for PhilPACT

Initiatives and Activities for Implementation

The NTP LNSP is aligned with the health sector reform initiatives and focused on the achievement of the PhilPACT strategies and standards. In the implementation of the NTP LNSP, the following initiatives and activities will be conducted:

- Issuance of the DOH Administrative Order adopting and endorsing the NTP LNSP and its implementing arrangements.
- Formal establishment of an NTP LNSP Technical Working Group following the issuance of the DOH Administrative Order
- Regular presentations of the NTP LNSP status and updates to the National Coordinating Committee for TB, TB Technical Working Group, Annual Program Implementation Reviews (PIRs) and regional NTP consultations
- Reproduction , dissemination and orientation of the NTP LNSP to partners and stakeholders. Integration into the dissemination and orientation activities of the NTP LNSP theme " TB Laboratoryo Natin Sama-samang Paghusayin (LNSP)"
- Conduct of regular NTP LNSP monitoring and evaluation activities starting in 2013.

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Annex 1. LABORATORY NETWORK PROFILE

Annex 1.1. List of QA Centers by Region Assessed and Characterized According to NTRL's Classification, July 2012

CHD	Province / City	Assessed	Location of QAC	Classification		General Classification*
				Structure	Manpower	
1						
	Ilocos Norte	Yes	PHO	I	D	I-D
	Ilocos Sur	Yes	PHO	IV	A	IV-A
	La Union	Yes	PHO	I	A	I-A
	Pangasinan	Yes	No dedicated EQA Room	IV	A	IV-A
2						
	Nueva Vizcaya	Yes	PHO	II	A	II-A
	Quirino	Yes	None	IV	A	IV-A
	Isabela	Yes	Ilagan PHO	II	A	II-A
	Cagayan	Yes	Tuguega-rao CHO	II	A	II-A
	Batanes	No				
3						
	Angeles City	No	MC			
	Aurora	No				
	Bataan	Yes	PHO			
	Bulacan	Yes	PHO	I	A	I-A
	Nueva Ecija	Yes	PHO	I	A	I-A
	Pampanga	Yes	PHO	I	A	I-A
	Tarlac	No	PHO			
	Zambales	No	PHO			
4A						
	Cavite	Yes	PHO	I	A	I-A
	Laguna	Yes	PHO	I	B	I-B
	Batangas	No	PHO			
	Rizal	Yes	PHO	I	A	I-A
	Quezon	No	PHO			

CHD	Province / City	Assessed	Location of QAC	Classification		General Classification*
				Structure	Manpower	
4B						
	Mindoro Occ.	No				
	Mindoro Or.	No				
	Marinduque	No				
	Romblon	No				
	Palawan	No	PHO			
5						
	Albay	No	PHO	I	A	I-A
	Camarines Norte	Yes	PHO	I	A	I-A
	Camarines Sur	Yes	PHO	I	B	I-B
	Catanduanes	No	PHO			
	Masbate	No	PHO			
	Sorsogon	Yes	PHO	I	A	I-A
6						
	Aklan	Yes	PHO	I	A	I-A
	Antique	Yes	PHO	I	A	I-A
	Bacolod City	Yes	CHO			
	Guimaras	No	MC			
	Capiz	Yes	PHO	I	A	I-A
	Iloilo City	Yes	CHO	IV	B	IV-B
	Iloilo	Yes	PHO	I	A	I-A
	Passi City	Yes	CHO	I	A	I-A
	Negros Occ.	No	PHO			
7						
	Bohol	Yes	PHO	I	A	I-A
	Cebu City	Yes	CHO	I	A	I-A
	Cebu Prov.	Yes	PHO	I	A	I-A
	Lapu-lapu City	Yes	CHO	I	A	I-A
	Mandaue City	Yes	CHO	II	A	II-A
	Negros Or.	Yes	PHO	II	A	II-A
	Siquijor	Yes	PHO	II	A	II-A

CHD	Province / City	Assessed	Location of QAC	Classification		General Classification*
				Structure	Manpower	
8						
	Biliran	Yes	Biliran Provincial Hospital	I	A	I-A
	Calbayog City	No	CHO			
	Tacloban City	Yes	Tacloban Social Hygiene Bldg	III	A	III-A
	Ormoc City	Yes	CHO	III	B	III-B
	Eastern Samar	No	PHO			
	Northern Samar	No	PHO			
	Northern Leyte	Yes	PHO	I	A	I-A
	Southern Leyte	Yes	PHO	I	A	I-A
	Western Samar	No	PHO			
9						
	Isabela City	No				
	Pagadian City	Yes	CHO main lab	I	A	I-A
	Zamboanga City	No	CHO main lab	II	A	II-A
	Zambo. del Norte	No				
	Zambo. Del Sur	Yes	PHO	I	A	I-A
	Zambo. Sibugay	No				
10						
	Bukidnon	No				
	CDO	Yes	CHO	II	A	II-A
	Camiguin	No			A	
	Iligan City	Yes	CHO	II	A	II-A
	Lanao del Norte	Yes	PHO	II	A	II-A
	Misamis Oc.	No				
	Misamis Or.	Yes	PHO	II	A	II-A
11						
	Compostela Valley	Yes	PHO	II	A	II-A
	Davao Del Norte	Yes	PHO	II	A	II-A
	Davao Del Sur	Yes	PHO	I	A	I-A
	Davao Oriental	No	PHO			
	Davao City	Yes	Davao Chest Center	II	A	II-A

CHD	Province / City	Assessed	Location of QAC	Classification		General Classification*
				Structure	Manpower	
12						
	North Cotabato	Yes	IPHO	II	A	II-A
	South Cotabato	Yes	PHO	II	A	II-A
	Saranggani	Yes	PHO	IV	A	IV-A
	General Santos	Yes	CHO	IV	A	IV-A
	Cotabato City	Yes	CHO	II	A	II-A
	Sultan Kudarat	Yes	PHO	II	A	II-A
CARA-GA						
	Agusan del Sur	No				
	Agusan Del Norte	Yes	PHO	II	A	II-A
	Bislig City	Yes	CHO	IV	A	IV-A
	Butuan City	Yes	CHO	II	A	II-A
	Surigao City	Yes	CHO	II	A	II-A
	Surigao Del sur	No				
	Surigao Del norte	No				
	Dinagat Island	No				
	Tandag City	Yes	CHO	I	C	I-C
ARMM						
	Magu-indandao	No	PHO			
	Marawi City	No				
	Lanao Del Sur	No				
	Sulu	No				
	TawiTawi	No				

CHD	Province / City	Assessed	Location of QAC	Classification		General Classification*
				Structure	Manpower	
CAR						
	Abra	Yes	PHO	IV	B	IV-B
	Apayao	No				
	Baguio City	Yes	CHO	II	A	II-A
	Benguet	Yes	PHO	II	A	II-A
	Ifugao	No	PHO			
	Kalinga	No				
	Mt. Province	Yes	PHO	IV	B	IV-B
NCR						
	Caloocan	Yes	CHO	II	A	II-A
	Las Pinas	Yes	CHO main lab	III	A	III-A
	Makati	Yes	Health Center	III	B	III-B
	Malabon	No	CHO			
	Mandaluyong	No	CHO			
	Manila	No				
	Marikina	No	CHO			
	Muntinlupa	Yes	CHO	I	A	I-A
	Navotas	No	CHO			
	Paranaque	Yes	Health Center	III	B	III-B
	Pasig	No	CHO			
	Pateros	No	CHO			
	Quezon City	Yes	Bagong-Pagasa Health Center	III	A	III-A
	San Juan	No	CHO			
	Pasay	Yes	Lagrosa Health Center	III	B	III-B
	Taguig	Yes	CHO	I	A	I-A
	Valenzuela	No	CHO			

Source: NTRL July 2012

* Interpretation of General Classification

Classification of QA Center (as to structure)		Classification of QA Center (as to manpower)	
Class I	with separate center/space/room, dedicated for QA activities, within the PHO/CHO compound/area/ building	Class A	both NTP Coordinator and Controller are present in QA Center
Class II	no separate/dedicated room/ space; for QA activities; QA center is incorporated within PHO/CHO main laboratory/office	Class B	NTP Controller is present in QAC, NTP Coordinator is not present/in other office
Class III	with separate center/space/room, dedicated for QA activities, QA center is in other area/place, not within PHO/CHO compound	Class C	NTP Coordinator is present in QAC, NTP Controller is not present/ in other facility
Class IV	no separate/dedicated room/space for QA activities; QA center is within the main lab. of the hospital or other facility (RHU-based)	Class D	neither NTP Coordinator nor Controller is present

ANNEX 1.2. CULTURE AND DST CENTERS IN THE PHILIPPINES (SOURCE: NTRL)

Culture Center	DST Center	Number of Med Techs Available
National Tuberculosis Reference Laboratory	National Tuberculosis Reference Laboratory	12 MT, 5 LA
Batangas Regional Hospital		1 MT, LA
De La Salle Health Sciences		2 MTs
CHD V		1 MT 1 LA
Lung Center of the Philippines	Lung Center of the Philippines	4 MT, 1 lA
CHD CARAGA		1 MT, 1 N, 1LA
CHD III		
Ospital ng Palawan		
Sorsogon Medical Mission Group of Hospitals		1 MT, 1 N
Philippine Tuberculosis Society, Inc.	Philippine Tuberculosis Society, Inc. (1 MT organic trained on DST	2 MT, 1 LT, 1LA
Philippine General Hospital		1 MT, 1LA
ARMM		
San Lazaro Hospital		
Ilocos Training and Regional Med. Center	Ilocos Training and Regional Medical Center	2 MT, 1 LA
Dagupan Doctors Villaflor Mem. Hospital		1 MT
CHD II		1 MT
Baguio Gen. Hospital and Medical Center		1 MT

Culture Center	DST Center	Number of Med Techs Available
Western Visayas Medical Center	Cebu TB Reference Laboratory	1 MT
Dr. Pablo O. Torre		1 MT
Cebu TB Reference Laboratory		3 MT, 2 LA
CHD VIII		1 MT
Zamboanga City Medical Center	Centers for Health Development X	2 MT, 1LA
Jamelarin Hospital		1 MT
CHD X		1 MT, 1 LA
CDO Polymedic Plaza		1 MT
CHD XI	Centers for Health Development XI	1 MT 1N 1 LA
Davao Regional Hospital		1 MT
Cotabato Regional Medical Center		
The Doctors Clinic and Hospital, Inc.		1 MT

Legend: MT – Medical Technologist; LA – Laboratory Aide; N - Nurse

ANNEX 1.3. GENEXPERT FACILITY LIST (AS OF APRIL 2013)

REGION	LOCATION/FACILITY NAME	FACILITY DESCRIPTION	NO. OF MACHINES	MODULE UNIT
I	Ilocos Training and Regional Medical Center	GOVERNMENT	1	4 placer
CAR	Baguio General Hospital and Medical Center	GOVERNMENT	1	4 placer
IV-A	Dela Salle Health Sciences Institute	PRIVATE	1	4 placer
V	Sorsogon Med. Mission Group Hospital and Health Services Cooperative	PRIVATE	1	4 placer
VI	Western Visayas Medical Center	GOVERNMENT	1	4 placer
VII	Cebu TB Reference Laboratory (CRTL)	GOVERNMENT	1	4 placer
IX	Zamboanga City Medical Center	GOVERNMENT	1	4 placer
X	Xavier University-Com. Health Care Ctr. (Committee of German Doctors)	PRIVATE	1	4 placer
XI	Davao TB Reference Laboratory	GOVERNMENT	1	4 placer
XII	Koronadal City Health Office	GOVERNMENT /LGU	1	4 placer
CARAGA	CARAGA Regional Hospital	GOVERNMENT	1	4 placer

REGION	LOCATION/FACILITY NAME	FACILITY DESCRIPTION	NO. OF MACHINES	MODULE UNIT
NCR	National Tuberculosis Reference Laboratory	GOVERNMENT	3	(2) 4 placer, (1) 16 placer
NCR	Lung Center of the Philippines	GOVERNMENT	2	4 placer
NCR	Philippine Tuberculosis Society Institute (PTSI) – QI	PRIVATE	2	4 placer
NCR	San Lazaro Hospital	GOVERNMENT	1	4 placer
NCR	Dr. Jose N. Rodriguez Memorial Hospital (TALA)	GOVERNMENT	1	4 placer
TOTAL GENEXPERT MACHINES			**20**	

ANNEX 1.4. ZONING OF SPECIMENS FOR CULTURE (SOURCE: NTRL; AS OF MARCH 2013)

Region	Treatment Center/ Satellite	GX Center	Culture Center	DST Center
I	Ilocos Training and Regional Medical Center	Ilocos Training and Regional Medical Center	Dagupan Doc Villaflor Memorial Hospital	National TB Reference Laboratory
	Region I Medical Center			
IVA	De La Salle Health Sciences Institute	De La Salle Health Sciences Institute	De La Salle Health Sciences Institute	
	Batangas Regional Hospital			
	Los Banos, Laguna			
	Gumaca, Quezon			
	Cainta Health Center	Lung Center of the Philippines	Lung Center of the Philippines	Lung Center of the Philippines
V	Sorsogon Medical Mission Group Hospital and Health Services Cooperative	Sorsogon Medical Mission Group Hospital and Health Services Cooperative	CHD - V TB Reference Laboratory	National TB Reference Laboratory
	Bicol Medical Center			

Region	Treatment Center/ Satellite	GX Center	Culture Center	DST Center
VI	Western Visayas Medical Center	Western Visayas Medical Center	Cebu TB Reference Laboratory	Cebu TB Reference Laboratory
	Dr. Pablo O. Torre Memorial Hospital			
	Roxas City Health Office			
VII	Eversly Child's Sanitarium	Cebu TB Reference Laboratory		
IX	Zamboanga City Medical Center	Zamboanga City Medical Center	Zamboanga City Medical Center	
	Dr. Jose Rizal Memorial Hospital			
X	Xavier University-Community Health Care Center (Committee of German Doctors)	Xavier University-Community Health Care Center (Committee of German Doctors)	CHD - X TB Reference Laboratory	National TB Reference Laboratory
	Iligan Society of Internist		CDO Polymedic Plaza	
XI	Southern Philippines Medical Center	CHD XI TB Reference Lab.	CHD XI TB Reference Lab.	
	Davao Regional Hospital			
XII	Cotabato Regional Medical Center	Koronadal City Health Office	National TB Reference Laboratory	
	Koronadal City Health Office			
CAR	Baguio General Hospital and Medical Center	Baguio General Hospital and Medical Center	Dagupan Doctors Villaflor Memorial Hospital	
CARAGA	CARAGA Regional Hospital	CARAGA Regional Culture Center	National TB Reference Laboratory	

Region	Treatment Center/ Satellite	GX Center	Culture Center	DST Center
NCR	Lung Center of the Philippines	Lung Center of the Philippines	Lung Center of the Philippines	Lung Center of the Philippines
	Super Batasan Health Center			
	Dr. Jose N. Rodriguez Memorial Hospital	Dr. Jose N. Rodriguez Memorial Hospital		
	KASAKA	PTSI- Quezon Institute	PTSI- Quezon Institute	National TB Reference Laboratory
	PTSI TAYUMAN			
	San Lazaro Hospital			
	Lagrosa Health Center			
	Gat. Andres Bonifacio Medical Center			
	Tondo Foreshore Health Center		UP-PGH Medical Research Lab.	
	Grace Park Health Center			
	Lacson Health Center			
	Moonwalk Health Center	National TB Reference Laboratory	National TB Reference Laboratory	

Annex 1.5. NUMBER OF MICROSCOPISTS AND RATIO TO MICROSCOPY LABORATORIES AND TO POPULATION BY PROJECT SITES, 2007 (TABLE ADOPTED FROM REFERENCE #31)

PROJECT SITE	Population	Total MLs	No. Micr	Micr. To ML ratio1	Micr. To Pop ratio
Pangasinan	2,780,808	81	81	1.0	34,331
Bulacan	2,925,620	39	25	1.6	117,025
Albay	1,203,290	22	17	1.3	70,782
Quezon City	2,446,041	23	15	1.5	163,069
Sub total Luzon	9,355,759	165	138	1.2	67,795
Aklan	505,624	19	12	1.6	42,135
Negros Occidental	2,733,082	34	32	1.1	85,409
Negros Oriental	1,265,617	30	30	1.0	42,187
Bohol	1,338,617	58	26	2.2	51,485
Sub total Visayas	5,842,940	141	100	1.4	58,429

Zamboanga Sur	932,898	21	18	1.2	51,828
ZamboangaSibugay	554,728	17	14	1.2	39,623
Zamboanga City	723,611	15	15	1.0	48,241
Bukidnon	1,224,433	22	22	1.0	55,656
Compostela Valley	661,651	15	15	1.0	44,110
SaranganiProv	469,856	12	12	1.0	39,155
Sub total Mindanao	4,567,177	102	96	1.1	47,575
Maguindanao	547,012	33	15	2.2	36,467
Sharif Kabunsuan	N/A	N/A	N/A	N/A	N/A
Lanao del Sur	962,254	11	10	1.1	96,225
Marawi City	156,523	1	2	0.5	78,262
Basilan	383,796	6	3	2.0	127,932
Sulu	737,152	22	26	0.8	28,352
TawiTawi	435,713	17	17	1.0	25,630
Sub total ARMM	3,222,450	90	73	1.2	44,143
Total project sites	22,988,326	498	402	1.2	57,185

Legend: ML - microscopy laboratory; Micr – microscopists, including Medical Technologists and other health workers (e.g. Midwives, Sanitary Inspectors); 1 Ratio is to total laboratories in local network.

ANNEX 1.6. NUMBER OF MICROSCOPISTS AND RATIO TO MICROSCOPY LABORATORIES AND TO POPULATION BY PROJECT SITES, 2009

Number of Microscopists and Ratio to Microscopy Laboratories And to Population By Project Sites (2009)					
PROJECT SITE	**Population**	**Total MLs**	**No. Micr.**	**Micr. To ML ratio1**	**Micr. To Pop ratio**
Valenzuela	588,084	6	12	1:2	1:49,007
Caloocan	1,355,593	7	7	1:1	1:193,656
Batangas	1,590,277	32	29	1:1	1:54,837
Laguna	2,417,600	30	31	1:1	1:77,987
Marawi City	161,319	5	12	1:2	1:13,443
Lanao del Sur	870,025	26	41	1:1	1:21,220
Maguindanao	1,048,500	31	13	1:3	1:80,654

Legend: ML - microscopy laboratory; Micr – microscopists, including Medical Technologists and other health workers (e.g. Midwives, Sanitary Inspectors); 1 Ratio is to total laboratories in local network.
(Source: TB LINC "Laboratory Network Strengthening and Expansion Workshop", February 2012)

ANNEX 1.7 LIST OF REMOTE SMEARING STATIONS ESTABLISHED (SOURCE: TBLINC REPORTS)

PROVINCE/ CITY	Year Established	Municipalities
Zamboanga Sibugay	2009	1. Olutanga 2. Mabuhay 3. Talusan
Compostela Valley	2007, 2009	4. Maco 5. Mabini 6. Pantukan 7. Mawab 8. Laak 9. Maragusan 10. Monkayo 11. Montevista 12. New Bataan 13. Compostela 14. Nabunturan
Zamboanga City	2007	15. Canelar 16. Sta. Maria 17. Sta. Catalina 18. Baliwasan 19. Campo Islam 20. Tetuan 21. Talon-Talon 22. Tumago 23. Ayala 24. Labuan 25. Mercedes 26. Manicahan 27. Sangali 28. Curuan 29. Vitali
Saranggani* *Barangays	2007, 2009	30. Baliton 31. DatalBukay 32. New Aklan 33. Batotoling 34. Panguan 35. Small Margos 36. Batulaki 37. E. Alegado 38. Rio del Pilar 39. Calpidong 40. Kaltuad 41. Sufatubo 42. Burias 43. Kapatan 44. San Jose

PROVINCE/ CITY	Year Established	Municipalities
Sulu	2011	45. Indanan 46. Parang 47. Padami 48. Lugus 49. Omar 50. PanglilmaTahil 51. K Caluang 52. Tapul 53. Pangutaran 54. Panamao 55. Tongkil 56. Patikul 57. Maimbung 58. Talipao
Zamboanga Del Sur	2011	59. Lakewood 60. Labangan 61. Kumalarang
Zamboanga Del Norte	2011	62. Baliguian 63. Siocon 64. Sibuco 65. Sirawa
Basilan	2012	66. Lamitan City 67. Maluso 68. Lantawan
Misamis Oriental	2012	69. Magsaysay 70. Claveria
Bukidnon	2012	71. San Fernando 72. Quezon
Batangas	2012	73. Lobo 74. Mabini 75. Tingloy 76. Lemery 77. Sto. Tomas 78. Rosario 79. Nasugbu 80. Calatagan 81. Lian 82. San Pascual 83. Taysan 84. Tanauan 85. Agoncillo 86. San Juan

PROVINCE/ CITY	Year Established	Municipalities
Pampanga	2012	87. Arayat 88. Bacolor 89. Candaba 90. Floridablanaca 91. Lubao 92. Magalang 93. Mabalacat 94. San Luiz 95. Mexico
Laguna	2012	96. Cabuyao 97. Bgy. Manaol 98. Bgy. Mojon 99. Kanluran 100. Batong Malake 101. Bgy 6 102. Bgy San Vicente 103. Bgy San Antonio
Samar	2012	104. Zumarraga 105. San Sebastian 106. Talalora 107. Sto Nino 108. Matuguinao 109. Catbalogan 110. Tarangnan 111. Pagsanghan 112. Calbiga 113. Daram 114. Tagapul-an 115. Almagro 116. Pinabacdao 117. Jiabong 118. San Jose de Buan 119. Villareal
Leyte	2012	120. Bislig, Tanauan 121. Sta Fe 122. Palo 123. Bgy Cabacungan 124. Alangalang 125. Dulag 126. Tolosa 127. Julita 128. Pastrana

ANNEX 2. SUMMARY OF LABORATORY NETWORK SITUATIONAL ANALYSIS (SWOT)

Key Elements	Strengths/ Opportunities	Weaknesses/ Threats
Leadership, Management and Governance	1. The NTP Laboratory network has been organized with a clear vision for the program and well defined mandates. 2. There is a high level of interest and financial support for laboratory services. Strengthening of the TB laboratory network is part of the overall strategic thrust of the country's TB control program and huge investments are being made to improve diagnostic capacity. 3. The existence of a TB laboratory network is supported by international program standards and is also aligned with DOH's initiative to develop the national health laboratory network 4. Strong political will at NTP and NTRL to improve the laboratory services through a systems' strengthening approach recognizing the laboratories' contribution to overall health systems improvement	1. Existing laboratory policies and guidelines are outdated relative to the new developments and priorities in the NTP. These include new functions and roles of laboratories in the network at all levels and policies on case finding and case holding. 2. Specific policies/guidelines are lacking. These pertain to the ff, among others: implementation of programs for laboratory bio-safety, adoption of new diagnostic technologies, quality assurance for new diagnostic technologies, and certification or accreditation of TB laboratories. 3. Flow of funds in the laboratory services are complex, and not in harmony with the agencies/bureaus (e.g. NCDPC, RITM, CHDs, BHFS, FDA) that NTRL and the laboratories need to interact with. 4. Processes and mechanisms of coordination and collaboration are not formally established resulting in overlaps and inefficient use of resources. 5. There is lack of operations research to inform program management and policy 6. M&E for laboratory performance is weak, focused only on quality assurance. 7. The management systems for laboratory supplies, finance, facility management and equipment maintenance, information, training, quality assurance, and human resources are fragmented. 8. Managerial capacity is weak (e.g. planning, budgeting, supply management). 9. Limited implementation of the EQA program. 10. There are no specific operational plans for TB laboratories at the sub-national level.

Key Elements	Strengths/ Opportunities	Weaknesses/ Threats
Human Resources (Laboratory Workforce)	1. There is high level of technical competence in a large percentage of professional laboratory workers 2. Laboratory manpower is augmented with GFATM support and province-paid medical technologies have been deployed in areas without microscopists. 3. Informal laboratory workers help improve TB case finding in far-flung and GIDA communities. 4. A laboratory training program for new diagnostic tools has been developed and implemented with a supervision structure.	1. The laboratory staffing pattern at all levels are usually not based on needs (e.g. type of services, workload) and official mandates; most staff do not have clear job descriptions and qualifications. 2. There is high potential for staff turnover for lack of security of tenure, particularly project-paid/ contractual staff. 3. There is expressed shortage of manpower (e.g. medical technologists, microspcopists) at all levels. 4. Current HR plans and policy are outdated and do not address HR issues (e.g. shortage, retention, career development. 5. Existing laboratory training and development programs and policies focus only on improving skills and practices in laboratory techniques; neglects development of laboratory leadership and management skills. 6. The current national laboratory training needs updating per new strategic thrusts of the NTP. 7. There is inadequate institutional and human capacity at the intermediate level to implement training effectively for all types of laboratory workers. 8. Laboratory supervisory programs have outdated plans and budgets, and lack adequate logistical, technical and administrative support. 9. Laboratory field monitoring and supervisory capacity is generally weak. There are no standardized laboratory supervisory checklists that supervisors can use in the field.

Key Elements	Strengths/ Opportunities	Weaknesses/ Threats
Laboratory Information System	1. A process has been established for the upward flow of reports starting at the peripheral level up to the central level. 2. A dedicated DOH unit (IMS) supports the development and enhancement of online laboratory data management systems including the Integrated TB Information System (ITIS).	1. The LIS has no clear coordination process, with outdated policies and procedures. 2. The physical and structural resources for the TB LIS is inadequate. 3. The capacity of laboratory managers for data management and utilization is inadequate. 4. Current laboratory data collection focuses only on laboratory performance data; neglects the collection of information related to program performance, service provision, and management of equipment, facilities, supplies and finances. 5. Information sharing processes are weak, vertically and horizontally, particularly in providing feedback to the peripheral laboratories.
Financing	1. Financing of the NTP laboratory network comes from various sources including DOH, CHDs, LGUs, foreign assistance, and the private sector. 2. Sputum microscopy services at the local level are largely financed by the national and local government. Private and NGO microscopy laboratories in the NTP network are funded by their mother organizations	1. There are no alternative financing strategies for the specialized TB laboratory services when donor assistance ends. 2. The capacity for financial management within the laboratory services is inadequate (e.g. costing of services, tracking of fund utilization and revenues, and budgeting). 3. Public sector financing of laboratory services are inadequate to sustain effective service delivery, management and maintenance of facilities and equipment, and retention of technical staff over the long term

Key Elements	Strengths/ Opportunities	Weaknesses/ Threats
Diagnostic Technologies	1. Acid Fast Bacilli (AFB) sputum smear microscopy using the Ziehl-Neelsen (ZN) stain is the backbone of the NTP diagnostic services; it is relatively easy to perform. 2. Light emitting diode fluorescent microscopy (LED/FM) has been introduced and will be scale-up in selected areas to address long turnaround times, low sensitivity, and high workload. 3. Culture and DST using solid media has been made available to the program on a relatively wide scale. 4. New diagnostic technologies, particularly NAAT such as LPA and the fully automated NAAT known as Xpert MTB/RIF, have been adopted to support the implementation of PMDT. Xpert MTB/RIF can also be used to detect other organisms (e.g., HIV, polio, STDs, staphylococcus, etc.).	1. The country's actual requirement for new technologies has not been clearly defined and the cost of adopting and sustaining new technologies is high. 2. There is still no country monitoring and evaluation framework to assess the impact of new diagnostic technologies to individual patients, the program, and the population. 3. Infrastructure weaknesses, particularly the unstable supply of electricity in some areas, affect the operation of specialized technologies. 4. Quality assurance systems for culture and other new technologies are not yet fully established.

Key Elements	Strengths/ Opportunities	Weaknesses/ Threats
Service Delivery	1. A network of TMLs has been established within the public primary care services; some 2,565 were mapped in 2012. 2. Access and availability of diagnostic services have increased in underserved areas through the engagement of the private sector and by implementing innovations in service delivery (e.g. RSS). 3. Specialized diagnostics including TB culture, DST, and Xpert MTB/RIF are also available to detect drug-resistant TB.	1. The population coverage per microscopy laboratory may suggest inadequate numbers of microscopy laboratories in the country. 2. Rural communities in GIDA areas are underserved due to the lack of easily accessible laboratories and limited availability and poor quality of transportation. The cost of transporting specimens and retrieval of results for microscopy is borne by either patients or field health workers. 3. The number, distribution, and productivity of TB laboratories using microscopy and new technologies need further analysis to identify underserved areas and ensure equitable provision of services. 4. The laboratory networking and referral system (ad hoc in some places) is still weak and needs to be formally organized. 5. Delayed operations of newly established culture laboratories have affected accomplishment of targets workloads in functional culture labs. 6. Delays in diagnosis and treatment remains unacceptably long and causes delays in treatment. 7. Laboratory supplies management system needs improvement to ensure continuous delivery of services. A supply management system is in place at the national level for sputum microscopy but does not cover all required consumables. 8. The support systems for equipment and facility maintenance and management are not yet well established.

Key Elements	Strengths/ Opportunities	Weaknesses/ Threats
		9. In some areas, there is poor utilization of services by clients including patients and clinicians. Many clinicians still prefer to use X-rays and clinical approaches than bacteriologic tests for diagnosis of patients and monitoring of treatment response. 10. Gaps in bio-safety practices among health workers providing the services were observed especially at the peripheral level even in those instances where infrastructure is adequate.

ANNEX 3. LIST OF EXISTING AND INTERIM POLICIES AND GUIDELINES FOR THE NTP LABORATORY NETWORK

Existing Guidelines

Administrative Order	Subject	Reference/Link
AO2000 – 0002	Implementation Arrangement for the Project Entitled Establishment of the National Tuberculosis Reference laboratory	http://www.doh.gov.ph
AO 2008 – 0018	Guidelines for the Programmatic Management of Drug Resistant TB (PMDT)	http://www.doh.gov.ph
AO 2007 – 0019	Guideline for the Implementation of the Quality Assurance System on DSSM	http://www.doh.gov.ph
AO 2008 – 0022	Policies and guidelines in the collaborative approach of TB and HIV prevention and control	http://www.doh.gov.ph
AO 2009 – 0003	Technical Guidelines for Implementing DOTS Strategy in Jails and Prisons	http://www.doh.gov.ph
AO 2010 – 0031	Adoption of the 2010 – 2016 Philippine Plan of Action to Control Tuberculosis (PhilPACT) and its implementing structure	http://www.doh.gov.ph

INTERIM GUIDELINES (UNDER DEVELOPMENT)

Protocols and Guidelines	Remarks/ Status
Memo on Diagnosis and Treatment Initiation for DR – TB using the Xpert MTB/RIF rapid test	Final
PMDT Training modules	Final
Interim Guidelines for QA of TB culture	Not Final
Training Manual on Culture and DST for MTB	Not Final
Remote Smearing Stations	Not Final
NTRL Bio-safety guidelines	Not Final
Laboratory Network Strategic Plan	Not Final
Guidelines on use of Rapid Diagnostic Tools	Not Final

ANNEX 4. BASIS FOR THE NUMBER OF DIAGNOSTIC LABORATORIES TO BE ESTABLISHED (2013-2016)

Type of Laboratory	Laboratory Procedures Performed	Baseline (2012)	Target by 2016	Remarks/ Status
RSS	Specimen collection, smear preparation	128	1,200	600 municipalities priority of NAPC as poorest of the poor (NAPC Memo circular 2011-001) Estimate of 2 RSS per poor municipality to be established

Type of Laboratory	Laboratory Procedures Performed	Baseline (2012)	Target by 2016	Remarks/ Status
Microscopy Center	• DSSM	2,565	2,870	• existing MCs based on TML mapping conducted by NTRL • 0 MCs per year (2014-2016) to be established in hospitals (both public and private)
	• including FM and LED-FM	3	604	• 200 LED-FM per year as replacement of conventional microscopes in high workload areas
QA Center	Blind rechecking of slides -QA centers performing DSSM	90 10	105 10	The DOH-AO on EQA mandates one EQA center per province/city. There are 80 provinces and 35 HUCs.
GeneXpert site (TC's)	Nucleic Acid Amplification Test (NAAT) (Xpert MTB/RIF)	4	155	Xpert to be used for: • MDR-TB screening • diagnosis of smear negative pulmonary and extrapulmonary TB Assumptions for establishment: • At least 1 Xpert per 500,000 population • number of diagnosed smear negative cases per • accessibility including public transport and road networks considered • equity considerations for low population but difficult to reach areas

Type of Laboratory	Laboratory Procedures Performed	Baseline (2012)	Target by 2016	Remarks/ Status
Culture Centers	• DSSM; solid culture • DSSM; solid culture; Xpert	4 7	15 7	Based on PhilPACT targets which considered facility to population ratios
Culture/ DST Centers	• DSSM; solid culture; Xpert; DST (FLD) • DSSM; culture (solid, MGIT); Xpert; DST (FLD) • DSSM; culture (solid, MGIT); NAAT(LPA); DST (FLD) • DSSM; culture (solid, MGIT); NAAT(LPA); DST (FLD), NAAT(XpertMTB/ RIF) • DSSM; culture (solid, MGIT); NAATs (Xpert MTB/ RIF and LPA), DST (FLD and SLD)	1 3 1 1 1	1 3 1 1 1	No new facilities to be established.

ANNEX 5. LNSP COSTING AND FINANCIAL ESTIMATES

ANNEX 5.1. FUNDING REQUIREMENTS BY SOURCE, LABORATORY NETWORK STRATEGIC PLAN 2013-2016

		%	NG	FAPS	LGU	OOP	PHIC	TOTAL
1.1	Strengthen the regulatory framework to facilitate delivery of TB diagnostic services	0.43	14,366, 600	13,713, 600	0	0	0	28,080,200
1.2	Expand the TB laboratory network and upgrade laboratories at all levels	39.75	257,541,272	485,250,320	1,608,687,455	248,065,880	0	2,599,544,928
1.3	Ensure quality of TB laboratory services at all levels of the network	4.92	3,804,000	31,186,753	65,242,263	221,831,942	0	322,064,958
1.4	Generate and utilize new knowledge to improve services	0.21	4,430,800	9,230,800	0	0	0	13,661,600
2.1	Improve human resource management at all levels	0.76	35,389,750	12,473,800	0	1,734,750	0	49,598,300
2.2	Improve facility and equipment management system	9.78	199,973,811	70,403,021	325,046,886	44,378,964	0	639,802,682
2.2	Improve facility and equipment management system	9.78	199,973,811	70,403,021	325,046,886	44,378,964	0	639,802,682
2.3	Improve supply management system	35.78	1,248,253,666	589,350,171	106,450,137	145,288,492	250,617,049	2,339,959,516
2.4	Enhance laboratory information system	7.63	8,309,000	72,910,000	389,886,800	27,756,000	0	498,861,800

		%	NG	FAPS	LGU	OOP	PHIC	TOTAL
2.5	Enhance laboratory network monitoring and evaluation	0.10	4,831,200	1,860,000	0	0	0	6,691,200
3.1	Develop sustainable financing strategies	0.42	24,848,500	2,400,000	0	0	0	27,248,500
3.2	Strengthen financial management system	0.18	10,372,400	1,286,400	0	0	0	11,658,800
4.1	Build leadership and managerial capacity of the TB laboratory network	0.05	1,690,600	1,403,800	0	0	0	3,094,400
		%	NG	FAPS	LGU	OOP	PHIC	TOTAL
Total		100.0	1,813,811,599	1,291,468,665	2,495,313,541	689,056,029	250,617,049	6,540,266,884
%		100.0	27.7	19.7	38.2	10.5	3.8	100.0

Note: NG-National Government, FAPS- Foreign-Assisted Projects, LGU- Local Government Unit; OOP- Out-of-pocket; PHIC- Philhealth

ANNEX 5.2. TARGETS USED IN COST ESTIMATION, LNSP 2013-2016

	%	NG	FAPS	LGU	OOP
No. of TB symptomatics for DSSM (initial)	775,124	902,900	1,033,772	1,044,581	Number of presumptive TB based on computations done by Dr. Mantala and Dr. Garfin, May 2013, updated as of June 21, 2013
No. of TB patients for DSSM (follow-up)	214,451	219,276	224,845	235,031	Total number of all forms of TB cases to be detected annually as of June 21, 2013 new PhilPACT estimates
No. of MDR TB suspects for DSSM (initial)	59,240	60,262	61,489	63,824	Number to be screened during NFM period (100% retreatment + 20% new) as of June 21, 2013 PMDT sub-plan estimates
No. of MDR TB patients for DSSM (follow-up)	2,846	3,668	4,365	5,177	MDRTB to be detected and enrolled during NFM period (35%, 40%, 50%) as of June 21, 2013 PMDT sub-plan estimates
No. of MDR TB suspects for Culture	29,620	30,131	30,744	31,912	50% of total screened
No. of MDR TB suspects for DST	26,658	27,118	27,670	28,721	90% of total cultured
No. of TB suspects for LPA	14,810	15,066	15,372	15,956	50% of total cultured
No. of TB suspects for MGIT	14,810	15,066	15,372	15,956	50% of total cultured
No. of tests per Xpert machine	2,000	2,000	2,000	2,000	
Rate increase of tests per Xpert machine		0.0	0.0	0.0	

ANNEX 6. MONITORING AND EVALUATION MATRIX

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
GOAL → To assess IMPACT								
• Reduction in TB prevalence of all forms of TB from 1,000 per 100,000 in 1990 to 414 per 100,000 in 2016	Prevalence rate of all forms of TB	Number of all forms of TB per 100,000 population per year	WHO Global TB Report Numerator: NTP case notification Denominator: Demographic statistics	1,000 per 100,000 in 1990 and 484 per 100,000 in 2011	414 per 100,000 in 2016	NTP and WHO	National	Annual
• Reduction in TB mortality from 58 per 100,000 in 1990 to 24 per 100,000 in 2016.	Mortality rate	Number of deaths attributed to TB per 100,000 population per year	WHO Global TB Report Numerator--- vital statistics Denominator --- demographic statistics	58 per 100,000 in 1990 and 26 per 100,000 in 2011	24 per 100,000 in 2016	NTP and WHO	National	Annual
• Efficiently and effectively managed laboratory network providing quality TB diagnostic services based on national standards by 2016.	Qualitative and quantitative measure of efficiency and effectiveness based on national standards by 2016.	Computation of Qualitative and quantitative measurement	Report on national standards by 2016	National standards to be determined	TBD	NTRL	NATIONAL & Facility Level	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
FINAL OBJECTIVES → to assess FINAL OUTCOME								
Increase in rapid detection of bacteriologically confirmed pan susceptible TB from 76% in 2011 to 90% in 2016	CDR, All Forms and new smear (+) TB cases	Number of All Forms or new smear (+) TB cases among notified TB cases	WHO GLOBAL TB Report Numerator: NTP case notification Denominator: notified TB cases	CDR, All Forms and new smear (+) TB cases: 76% (2011)	CDR, All Forms and new smear (+) TB cases : 90% (2016)	NTP, NTRL, PMDT and WHO	National	Annual
Increase in rapid detection of bacteriologically confirmed multi-drug resistant TB from 3,591 in 2012 to 12,942 in 2016	No. of MDR cases	No. of MDR cases	Numerator: No. of MDR cases	3,591 MDR cases (2012)	12,942 MDRTB cases (2016)	NTP, NTRL, PMDT and WHO	National	Annual
INTERMEDIATE OBJECTIVES →To assess INTERMEDIATE OUTCOME which provides the CONTEXT AND DIRECTION measured in the FINAL OUTCOME								
1. Improve accessibility and quality TB diagnostic services	Number of various types of DOTS facilities providing quality TB services	Number of various types of DOTS facilities providing quality TB services	Quarterly Report submitted to NTRL Numerator: National QA Report	2,500 various types of DOTS facilities providing quality TB services	4000 various types of DOTS facilities providing quality TB services	NTRL	National	Annual
2. Improve the laboratory network management system	Management system improved quantitatively and qualitatively	Management system improved quantitatively and qualitatively	Technical Assistance Report	2 management systems improved (HR & finance)	7 management systems improved	NTRL	National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
STRATEGIC INTERVENTIONS → To assess OUTPUT & ACTIVITIES → To assess PROCESS								
4. Strengthen leadership and management of the laboratory network	Leadership and management strengthened quantitatively and qualitatively	Number of facilities strengthened for leadership and management	Technical Assistance Report	4 facilities (NTRL, LCP, MANILA CHO, QC CHO)	17 regional facilities	NTRL	National	Annual
OBJECTIVE 1. Ensure the provision of accessible quality TB diagnostic services								
Strategy 1.1. Strengthen regulatory framework to facilitate delivery of TB diagnostic services	No. of policies, guidelines and standards updated and established	No. of policies, guidelines and standards updated and established	Health Policy Development and Planning Bureau approval list and DOH website	2 policies (EQA, PMDT) 1 guidelines (MOP) 2 standards (IC, Biosafety)	11 policies (New diagnostics: LED FM, GX,LPA, MGIT, 7 SYSTEMS) 4guidelines (Training, MSE, private lab, certification) 12 guidelines (MOP, new diagnostics, management systems, QA, proficiency testing) 3 standards (Facility, Equipment, & Supplies)	NTRL	National	Annual
Activity 1.1.1 Review existing policies and guidelines	No. of policies and guidelines reviewed	No. of policies and guidelines reviewed	Ad hoc Committee report	2 policies (EQA, PMDT) 1 guidelines 2 standards	5 policies, guidelines, standards	NTRL	National	On ad hoc basis

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
1.1.2 Revise/develop policies and guidelines for all laboratories involved in TB diagnostics.	No. of policies, guidelines revised/ developed	No. of policies, guidelines revised/ developed	Ad hoc Committee report	2 policies (EQA, PMDT) 1 guidelines 2 standards	11 policies (New diagnostics: LED FM, GX,LPA, MGIT) 12 guidelines, 3 standards	NTRL	National	On ad hoc basis
1.1.3 Implement policies and guidelines	No. of policies and guidelines implemented	No. of policies and guidelines implemented	Ad hoc Committee report	2 policies (EQA, PMDT) 1 guidelines 2 standards	11 policies (New diagnostics: LED FM, GX,LPA, MGIT) 12 guidelines 3 standards	NTRL	National	On ad hoc basis
Strategy 1.2. Expand the TB laboratory network and upgrade laboratories at all levels	Proportion (100%) of targeted laboratory facilities established (refer to Table 4)	Number of laboratories established over the total target laboratories	NCHFD/PBSP/NTRL/ Engineering Reports	128 RSS (TB LINC reports) 1986 MC 13 Culture centers 3 DST ctrs. 1 LPA center 1 MGIT ctr. 16 GX ctrs.	100% 1,200 RSS 2,870 (2,565 MC mapped) 29 Culture centers 7 DST centers +PRIVATE 3 LPA centers 5 MGIT ctrs. +PRIVATE 155 GX ctrs.	NTRL	National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
	Proportion (65%) of private laboratories that are participating in the NTP Lab network	Number of private laboratories participating in the NTP Lab network over Total private lab	Numerator: NCHFD/ PBSP/NTRL/ Engineering Reports Denominator: Bureau of Licensing list of labs	25% private laboratories	65% private laboratories	NTRL	National	Annual
Activity 1.2.1 Establish additional TB diagnostic facilities across the country	Proportion (100%) of targeted laboratory facilities established (refer to table on laboratories)	Number of laboratories established over the total target laboratories	NCHFD/PBSP/NTRL/ Engineering Reports	128 RSS (TB LINC reports) 1986 MC 13 Culture centers 3 DST ctrs. 1 LPA center 1 MGIT ctr. 16 GX ctrs.	100% 1,200 RSS 2,870 MC 29 Culture centers + private 7 DST ctrs. 3 LPA centers 5 MGIT centers + private 155 GX ctrs.	NTRL	National	Annual
1.2.2 Engage private laboratories	Number of private laboratories are participating in the NTP Lab network	Number of private laboratories participating in the NTP Lab network	NCHFD/PBSP/NTRL/ Engineering Reports	25% private laboratories	65 % private laboratories	NTRL	National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPON-SIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUEN-CY/ DATE OF REPORT-ING
Strategy 1.3. Ensure quality of laboratory services at all levels of the network	Proportion (95%) of microscopy, culture, and Xpert MTB/RIF laboratories achieved adequate performance	Number of microscopy, culture, and Xpert MTB/RIF laboratories that achieved adequate performance over total no of specifc labora-tories	NTRLDSSM & PMDT Laboratory reports	75% Laboratories with adequate performance as of 2007 75% (MC Culture centers DST centers LPA center MGIT center GX centers)	95% Laboratories with adequate performance 95% (MC Culture ctrs. DST centers LPA centers MGIT centersGX centers)	Province/ City QA centers/ CHD/NTRL	Province/City QA centers/ CHD/NTRL	Quarterly
	Proportion (95%) of microscopy centers/ culture laboratories/ Xpert MTB/RIF Site achieved desired turnaround time (Table 5)	Number of microscopy centers/ culture laboratories/ Xpert MTB/ RIF Site that achieved desired turnaround time over total no. of specific laboratories	NTRL DSSM & PMDT Laboratory reports	% labora-tories with desired turnaround time 1,986 MC 13 Culture centers 3 DST ctrs.PA center 1 MGIT ctr. 16 GX ctrs.	95% laboratories with desired turnaround time 2,870 MC 29 Culture centers 7 DST ctrs. 3 LPA centers 5 MGIT ctrs. 155 GX ctrs.	Province/ City QA centers/ CHD/NTRL	Province/City QA centers/ CHD/NTRL	Quarterly

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
Activity 1.3.1 Develop and implement a quality assurance program for the laboratory service	Set of QA program tools developed and implemented	One set each for specific laboratory	NTRL DSSM & PMDT Laboratory reports	1 set for QA DSSM Zero for QA Culture & QA DST centers Zero for QA LPA center & MGIT center 1 for QA GX centers	Additional 1 set for QA Culture & QA DST centers 1 set for QA LPA center & MGIT center	NTRL	National	Annual
1.3.2 Review and revise QA guidelines	No. of QA guidelines reviewed and revised	No. of QA guidelines reviewed and revised	Ad hoc Committee report	2 set of QA guidelines	2 sets of QA guidelines (DSSM, PMDT)	NTRL	National	On ad hoc basis
1.3.3 Strengthen implementation of QA activities	No of PIR/ Workshops conducted	No of PIR/ Workshops conducted	Activity Report	1 PIR/workshop per year	4 PIR/workshop per year	NTRL	National	Annual
1.3.4 Develop a Monitoring, Supervision and Evaluation plan for the laboratory services	MSE plan developed	An MSE plan developed	Activity Report	0 plan	1 plan	NTRL	National	Annual
Strategy 1.4 Generate and utilize new knowledge to improve services	No. of researches/ studies conducted	No. of researches/ studies conducted per year	Research/Study Report	1 research / study	2 researches/ studies per year	NTRL	National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPON-SIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUEN-CY/ DATE OF REPORT-ING
Activity 1.4.1. Conduct studies or researches in TB diagnostics	No. of researches/ studies conducted	No. of researches/ studies conducted per year	Research/Study Report	1research / study	2 research-es/ studies per year	NTRL	National	Annual
1.4.2.Adoption of re-search findings in service delivery mechanism	No. of researches/ studies adopted	No. of researches/ studies adopted per year	Research/Study Report	1 research / study	2 research-es/ studies per year	NTRL	National	Annual
Objective 2. Improve the laboratory network management system								
Strategy 2.1. Improve Hu-man Resource Manage-ment at all levels	Human resource development plan developed at the national, regional and local levels	A human resource development plan developed at the national, regional and local levels	Technical Assistance Report	2 facilities (NTRL, LCP)	17 regional facilities, government and private laboratorial	NTP/ NTRL/CHD	Regional and National	Annual
	Proportion (80%) of laboratories have adequate number of trained personnel (source of 80% - KP NOH)	80% of laboratories have adequate number of trained personnel (source of 80% - KP NOH)	Technical Asistance Report	11 % (2 facilities NTRL, LCP)	80% 17 regional facilities, government and private laboratories	NTP/ NTRL/CHD	Regional and National	Annual
Activity 2.1.1 Develop a Human Resource Devel-opment Plan	Human resource development plan developed	A human resource development plan developed	Technical Assistance Report	Zero plan	1 plan	NTP/ NTRL/CHD	Regional and National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
2.1.2 Enhance existing training program for laboratory staff	Training program for laboratory staff Reviewed & revised	A training program for laboratory staff Reviewed & revised	Technical Assistance Report	Zero reviewed and revised	1 for RSS centers 1 for MC 1 for Culture center 1 for DST center 1 for LPA center 1for MGIT center 1for GX center	NTRL	National	Annual
2.1.3 Implement the human resource development plan	Number of facilities with human resource development plan implemented	Number of facilities with human resource development plan implemented	Technical Assistance Report	2 facilities (NTRL, LCP)	17 regional facilities, government and private laboratories	NTP/ NTRL/CHD	Regional and National	Annual
Strategy 2.2. Improve Facility and equipment management system	Maintenance plan for all laboratory equipment developed and implemented	A maintenance plan for all laboratory equipment developed and implemented	Technical Assistance Report	Zero maintenance plan	1 maintenance plan	NTP/ NTRL/CHD	Regional and National	Annual
	Proportion (90%) of culture centers meet the national biosafety standards by 2016	Number of culture centers that meet the national biosafety standards over total number of CC	Technical Assistance Report	44% (13 functional CC duly certified/29 facilities)	90% of culture centers meet the national biosafety standards by 2016	NTP/ NTRL/CHD	Regional and National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
	Proportion (95%) of microscopy centers have a functional microscope	Total number of of microscopy centers have a functional microscope	EQA Reports	75% (2565/3449 from Lab mapping report) of microscopy centers have a functional microscope	95% of microscopy centers have a functional microscope	NTP/ NTRL/CHD	Regional and National	Annual
Activity 2.2.1 Develop maintenance plan for all laboratory facilities and equipment.	Maintenance plan for all laboratory equipment developed	A maintenance plan for all laboratory equipment developed	Technical Assistance Report	Zero maintenance plan developed	1 maintenance plan developed	NTP/ NTRL/CHD	Regional and National	Annual
2.2.2 Implement maintenance plan	Maintenance plan for all laboratory equipment implemented	A maintenance plan for all laboratory equipment implemented	Technical Assistance Report	Zero maintenance plan implemented	1 maintenance plan implemented	NTP/ NTRL/CHD	Regional and National	Annual
Strategy 2.3. Improve the supplies management system	Proportion (90%) of laboratories with no stock-outs in the last 6 months	No. of laboratories with no stock-outs in the last 6 months over total no. of laboratories	M&E Report/SPMO report/Procurement Report	Zero report	90%	NTRL/CHD	Regional and National	Semi-Annual
2.3.1 Assessment of existing supply management system	Existing supply management system assessed	1 assessment report of existing supply management system	Technical assistance report	Zero report	1 assessment report	NTRL	Regional and National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPON-SIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUEN-CY/ DATE OF REPORT-ING
2.3.2 Develop interven-tion plan	Intervention plan developed	1 intervention plan developed	Technical assistance report	Zero plan	1 interven-tion plan	NTRL	Regional and National	Annual
2.3.3 Implement inter-vention plan	Intervention plan implemented	1 Intervention plan implemented	Technical assistance report	Zero plan	1 implemen-tation plan	NTRL	Regional and National	Annual
Strategy 2.4. Enhance laboratory management information system	Electronic laboratory information management system is developed	1 electronic laboratory information system developed	Technical assistance report	Zero	1 laboratory information system de-veloped	NTP/ NTRL/IMS	Regional and National	Annual
	90% of laboratory facilities submitting accurate, validated and timely reports	Number of laboratory facilities submitting accurate, validated and timely reports over total number of laboratories in percent	M&E Report Numerator: No of laboratories with validated report Denominator: Total No. of laboratories	21% (4/13 CC)	90%	NTRL/IMS	Regional and National	Annual
Activity 2.4.1 Develop and implement an elec-tronic laboratory infor-mation system	Electronic laboratory information system developed	An electronic laboratory information system developed	Technical assistance report	Zero	1 laboratory information system developed and imple-mented	NTP/ NTRL/IMS	Regional and National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
2.4.2 Enhance the existing laboratory information system	Existing Electronic laboratory information management system is enhanced	1 existing electronic laboratory information system enhanced	Technical assistance report	Zero	1 laboratory information system developed	NTP/ NTRL/IMS	Regional and National	Annual
	90% of laboratory facilities submitting accurate, validated and timely reports	Number of laboratory facilities submitting accurate, validated and timely reports over total number of laboratories in percent	M&E Report Numerator: No of laboratories with validated report Denominator: Total No. of laboratories	21% (4/13 CC)	90%	NTRL/IMS	Regional and National	Annual
2.4.3: Implement the laboratory information system		A laboratory information system implemented	Technical assistance report	Zero	1 laboratory information system implemented	NTP/ NTRL/IMS	Regional and National	Annual
Strategy 2.5. Establish Laboratory network Monitoring and Evaluation	M&E System to monitor compliance to national standards established	An M&E system to monitor compliance to national standards established	Technical assistance report	Zero established M&E system to monitor compliance to national standards	1 Established M&E system to monitor compliance to national standards	PBSP/NTP/ NTRL/CHD	Regional and National	Quarterly, semi annual, &annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
2.5.1. Develop a laboratory network M and E plan	Laboratory network M&E plan developed	A laboratory network M&E plan developed	PBSP/NTRL/CHD M&E Report	Zero developed	1 laboratory network M&E plan developed	PBSP/NTP/ NTRL/CHD	Regional and National	Quarterly, semi - annual, & annual
2.5.2.Capacitate laboratory managers in M and E	Proportion of trained Laboratory managers in M&E	Number of trained laboratory managers in M&E over total number of laboratory managers	Training report	Zero %. of trained laboratory managers in M &E	95% of trained laboratory managers in M&E	PBSP/NTP/ NTRL/CHD	Regional and National	Quarterly, semi annual, & annual
2.5.3. Implement the M and E plan (system)	M&E plan implemented	an M&E plan implemented	M&E Report	zero M& E plan	1 M& E plan	PBSP/NTP/ NTRL/CHD	Regional and National	Quarterly, semi annual, &annual
Objective 3. Ensure adequate and sustainable financing for the Laboratory Network								
Strategy 3.1: Develop sustainable financing strategies	Budget of the laboratory strategic plan is incorporated in the NTP/ PhilPACT budget annually	Budget of the laboratory strategic plan is incorporated in the NTP/ PhilPACT budget annually	Technical Assistance report	Zero Budget of Laboratory strategic plan is incorporated in the NTP/ PhilPACT budget annually	1 Budget of Laboratory strategic plan is incorporated in the NTP/ PhilPACT budget annually	NTP/ NTRL/CHD	Regional and National	Annual
	New funding sources tapped	New funding sources tapped	Technical Assistance report	New funding sources tapped	New funding sources tapped	NTP/ NTRL/CHD	Regional and National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPON-SIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUEN-CY/ DATE OF REPORT-ING
Activity 3.1.1 Establish financing mechanism for the laboratory network strategic plan	Financing mechanism established f or the laboratory network strategic plan	A financing mechanism established for the Laboratory network	Technical assistance report	Zero Es-tablished financing mechanism for the Labora-tory network strategic plan	1 Established financing mechanism for the Labora-tory network strategic plan	NTP/ NTRL/CHD	Regional and National	Annual
3.1.2 Advocate for a GOP ear-marked budget for the laboratory net-work	GOP ear-marked budget advocated for the laboratory network	1 GOP ear-marked budget advocated for the laboratory network	DBM report	Zero GOP ear-marked budget for the labora-tory network	1 GOP ear-marked budget for the labora-tory network	NTP/NTRL	National	Annual
3.1.3 Ensure that labora-tory services are included in the work and financial plan, PIPH/CIPH/AOP and budgeted.	Budgeted work and financial plan under PIPH/CIPH/AOP	1 budgeted work and financial plan under PIPH/ CIPH/AOP	PIPH/CIPH/AOP Report	Zero budg-eted work and financial plan under PIPH/CIPH/ AOP	1 budgeted work and financial plan under PIPH/ CIPH/AOP	NTP/NTRL	National	Annual
3.1.4 Collaborate with PhilHealth for the integra-tion of TB lab services on the TB benefit package	TB lab services integrated in the PhilHealth TB benefit package	TB lab services integrated in the PhilHealth TB benefit package	PhilHealth Report	Zero TB lab service inte-grated in the PhilHealth TB benefit package	1 TB lab service (PMDT) integrated in the PhilHealth TB benefit package	NTP/NTRL	National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPON-SIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUEN-CY/ DATE OF REPORT-ING
Strategy 3.2: Strengthen financial management system (how to access and monitor utilization of available funds)	Financial management system strengthened	Financial management system strengthened	Technical assistance report	Financial management system strengthened	Financial management system strengthened	MSH/NTP/ NTRL	National	Annual
Activity 3.2.1 Review, enhance and develop (if needed) financial management tools (including costing and budgeting)	Financial management tools reviewed, enhanced and developed	1 Financial management tool reviewed, enhanced and developed	Technical assistance report	Zero Financial management tools reviewed, enhanced and developed	1 Financial management tool reviewed, enhanced and developed	MSH, NTP, NTRL	National	Annual
3.2.2: Training of managers in financial management	Number of managers trained in financial management	Number of managers trained in financial management	Training Report	Zero Number of managers trained in financial management	20 managers trained in financial management	MSH, NTP, NTRL	National	Annual
3.2.3 Implementation of the financial management system	Financial management system implemented	Financial management system implemented	Technical Report	Financial management system implemented At least 90% utilization of allocated funds by laboratories at all levels No. of laboratories (central and regional) that received budget allocations from the national government	Financial management system implemented At least 90% utilization of allocated funds by laboratories at all levels No. of laboratories (central and regional) that received budget allocations from the national government	MSH, NTP, NTRL	National	Annual

GOAL, OBJECTIVE, STRATEGY & PERFORMANCE TARGET	INDICATOR	CALCULATION	SOURCE OF INFORMATION NUMERATOR/ DENOMINATOR	VALUES AT BASELINE	TARGET IN 2016	RESPONSIBLE FOR DATA	LEVEL OF DATA COLLECTION / COMPILATION	FREQUENCY/ DATE OF REPORTING
Objective 4: Strengthen leadership and management of laboratory network								
Strategy 4.1. Build leadership and managerial capacity of the laboratory network	Proportion of Laboratories capacitated with leadership and management program	Number of Laboratories capacitated with leadership and management program over 17 regions	Technical assistance report	5% (1/17) Number of Laboratories capacitated with leadership and management program over 17 regions	100% of Laboratories capacitated with leadership and management program over 17 regions	MSH, NTP, NTRL	National	Annual
Activity 4.1. 1 Capacity building for Laboratory managers (includes TNA, training)	No. of staff trained on leadership and management development	No. of staff trained on leadership and management development	Technical assistance report	No. of staff trained on leadership and management development	No. of staff trained on leadership and management development	MSH, NTP, NTRL	National	Annual
4.1.2 Strengthen institutional capacity (specify systems related to leadership and managerial function – e.g., coordination, networking, linkages, decision-making)	% of regional coordination structures with laboratory representation	Number of regional coordination structures with laboratory representation over 17 regions	Technical assistance report	Zero % of regional coordination structures with laboratory representation	85% of regional coordination structures with laboratory representation	MSH, NTP, NTRL	National	Annual