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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 11.1 MILLION

(US\$15 MILLION EQUIVALENT)

TO THE

INDEPENDENT STATE OF PAPUA NEW GUINEA

FOR AN

EMERGENCY TUBERCULOSIS PROJECT

May 16, 2017

Health, Nutrition and Population  
**East Asia and Pacific Region**

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**CURRENCY EQUIVALENTS**  
(Exchange Rate Effective October 23, 2016)

Currency Unit = Papua New Guinea  
Kina (PGK)

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PGK 1 = US\$0.31

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US\$1 = PGK 3.18

**FISCAL YEAR**  
January 1 - December 31

Regional Vice President: Victoria Kwakwa  
Country Director: Michel Kerf  
Senior Global Practice Director: Timothy Grant Evans  
Practice Manager: Toomas Palu  
Task Team Leader(s): Xiaohui Hou



## ABBREVIATIONS AND ACRONYMS

ACF	Active Case Finding
ACSM	Advocacy, Communication, and Social Mobilization
ADB	Asian Development Bank
BMU	Basic Management Unit
COEP	Code of Environmental Practice
CPS	Country Partnership Strategy
CPHL	Central Public Health Laboratory
DA	Designated Account
DALY	Disability Adjusted Life Year
DART	Daru Accelerated Response to Tuberculosis
DCSD	Disease Control and Surveillance Department
DFAT	Australian Department of Foreign Affairs and Trade
DOT	Directly Observed Treatment
DP	Development Partner
DR	Drug-resistant
DS	Drug-susceptible
DST	Drug Susceptibility Testing
ERT	Emergency Response Team
FM	Financial Management
GDP	Gross Domestic Product
GoPNG	Government of Papua New Guinea
GRS	Grievance Redress Service
HIV	Human Immunodeficiency Virus
HEIS	Hands-on-Expanded Implementation Support
ICR	Implementation Completion and Results Report
IFR	Interim Financial Report
IP	Indigenous Peoples
IPF	Investment Project Financing
IPP	Indigenous Peoples Plan
LMIC	Lower-middle-income Country
LPA	Line Probe Assay
LY	Life Year
MAD	Multi-sectoral Alliance of Daru
MDG	Millennium Development Goal
MDR	Multidrug-resistant
M&E	Monitoring and Evaluation
MTB/Rif	Mycobacterium tuberculosis/rifampicin
MSF	Doctors without Borders ( <i>Médecins Sans Frontières</i> )



NCD	National Capital District
NDOH	National Department of Health
NGO	Nongovernmental Organization
NHIS	National Health Information System
NHSS	National Health Services Standards
NSP	National Tuberculosis Strategic Plan
NTP	National Tuberculosis Programme
OPCS	Operations Policy and Country Services
PDO	Project Development Objective
PMDT	Programmatic Management of Drug-Resistant Tuberculosis
PMU	Project Management Unit
PNG	Papua New Guinea
POM	Project Operational Manual
QALY	Quality-adjusted Life Year
rGLC	Regional Green Light Commission
TB	Tuberculosis
UHC	Universal Health Coverage
UN	United Nations
UNOPS	United Nations Office for Project Services
USAID	U.S. Agency for International Development
WHO	World Health Organization
XDR	Extensively Drug-Resistant



**BASIC INFORMATION**

Is this a regionally tagged project? No	Country(ies)	Financing Instrument Investment Project Financing
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Situations of Urgent Need of Assistance or Capacity Constraints

Financial Intermediaries

Series of Projects

Approval Date 31-May-2017	Closing Date 30-Jun-2022	Environmental Assessment Category B - Partial Assessment
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Bank/IFC Collaboration No
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**Proposed Development Objective(s)**

To Improve the quality and expand the coverage and utilization of health services to control the spread of tuberculosis in targeted areas of Papua New Guinea by strengthening programmatic management of tuberculosis.

**Components**

Component Name	Cost (US\$, millions)
Early detection of active tuberculosis patients	3.55
Effective treatment of drug-susceptible and drug-resistant tuberculosis patients	7.70
Strengthening government systems for managing its health services delivery and tuberculosis response	3.75

**Organizations**

Borrower :	Department of Treasury
Implementing Agency :	National Department of Health



**Safeguards Deferral**

Will the review of safeguards be deferred?

Yes  No

**PROJECT FINANCING DATA (IN USD MILLION)**

<input type="checkbox"/> Counterpart Funding	<input type="checkbox"/> IBRD	<input checked="" type="checkbox"/> IDA Credit	<input type="checkbox"/> IDA Grant	<input type="checkbox"/> Trust Funds	<input type="checkbox"/> Parallel Financing
		<input type="checkbox"/> Crisis Response Window	<input type="checkbox"/> Crisis Response Window		
		<input type="checkbox"/> Regional Projects Window	<input type="checkbox"/> Regional Projects Window		

Total Project Cost:  
15.00

Total Financing:  
15.00

Financing Gap:  
0.00

Of Which Bank Financing (IBRD/IDA):  
15.00

**Financing (in US\$, millions)**

Financing Source	Amount
International Development Association (IDA)	15.00
<b>Total</b>	<b>15.00</b>

**Expected Disbursements (in US\$, millions)**

Fiscal Year	2018	2019	2020	2021	2022
Annual	5.20	4.20	3.40	1.40	0.80
Cumulative	5.20	9.40	12.80	14.20	15.00



**INSTITUTIONAL DATA**

**Practice Area (Lead)**

Health, Nutrition & Population

**Contributing Practice Areas**

**Climate Change and Disaster Screening**

This operation has been screened for short and long-term climate change and disaster risks

**Gender Tag**

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

No

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

**SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)**

**Risk Category**

**Rating**

1. Political and Governance

● High

2. Macroeconomic

● Substantial

3. Sector Strategies and Policies

● Substantial

4. Technical Design of Project or Program

● Low

5. Institutional Capacity for Implementation and Sustainability

● High

6. Fiduciary

● High

7. Environment and Social

● Low

8. Stakeholders

● Substantial

9. Other



10. Overall

● High

**COMPLIANCE**

**Policy**

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

**Safeguard Policies Triggered by the Project**

Yes

No

Environmental Assessment OP/BP 4.01

✓

Natural Habitats OP/BP 4.04

✓

Forests OP/BP 4.36

✓

Pest Management OP 4.09

✓

Physical Cultural Resources OP/BP 4.11

✓

Indigenous Peoples OP/BP 4.10

✓

Involuntary Resettlement OP/BP 4.12

✓

Safety of Dams OP/BP 4.37

✓

Projects on International Waterways OP/BP 7.50

✓

Projects in Disputed Areas OP/BP 7.60

✓

**Legal Covenants**

**Sections and Description**

No later than three months after the effectiveness date, the Recipient shall establish and maintain a Project management unit within the National Health Services Standards Section of NDOH which shall be maintained with terms of reference, composition and resources at all times satisfactory to the Association.

**Sections and Description**

No later than three months after the effective date, the Recipient shall prepare and adopt a Project Operational Manual, acceptable to the Association, giving details of guidelines and procedures agreed with the Association for implementation, supervision, and monitoring and evaluation of the Project.



**Sections and Description**

No later than two months after the effective date and November 30 of each year for every subsequent year during the implementation of the Project (or such later date as the Association may agree), the Recipient shall prepare and furnish to the Association for no-objection, an Annual Work Plan and Budget in accordance with the terms of the Financing Agreement.

**Conditions****PROJECT TEAM****Bank Staff**

<b>Name</b>	<b>Role</b>	<b>Specialization</b>	<b>Unit</b>
Xiaohui Hou	Team Leader(ADM Responsible)	Economist	GHN02
Eric Leonard Blackburn	Procurement Specialist(ADM Responsible)	Procurement Specialist	GGO08
David Bruce Whitehead	Financial Management Specialist	Financial Management Specialist	GGO20
Amanda Charlotte Sookun	Team Member	Team Assistant	EACNF
Carmenhu D. Austriaco	Team Member	Finance Officer	WFALN
Daniela Pena De Lima	Team Member	Operations Officer	GHN04
Duangrat Laohapakakul	Team Member	Senior Counsel	LEGES
Ethan John Wilson Burton-Mckenzie	Team Member	Consultant - Economist	GHNDR
Hope C. Phillips Volker	Team Member	Operations	GHN02
Jaime Nicolas Bayona Garcia	Team Member	TB Specialist	GHNGE
Katie Barker	Team Member	Consultant on Health	GSU02
Loren Jayne Atkins	Team Member	Associate Counsel	LEGES
Rachel Elizabeth Mason Nunn	Safeguards Specialist	Environment and Social Safeguard Specialist	GSURR
Siti Gadih Rantih	Team Member	Program Assistant	EACNF
Tasha Sinai	Team Member	Program Assistant	GHN02



Toufiq Ahmed	Team Member	Operations	EACNF
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Venkatesh Sundararaman	Team Member	Program Leader	EACNF
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**Extended Team**

<b>Name</b>	<b>Title</b>	<b>Organization</b>	<b>Location</b>
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PAPUA NEW GUINEA  
EMERGENCY TUBERCULOSIS PROJECT

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## I. STRATEGIC CONTEXT

### A. Country Context

1. The Independent State of Papua New Guinea (PNG)<sup>1</sup> is a resource-rich country of approximately 7.7 million (2015).<sup>2</sup> PNG's population is characterized by a diverse number of social groups with over 800 distinct languages, with strong local and clan-based affinities and allegiances; 87 percent of the country's population lives in rural areas. PNG is rich in natural resources, but is subject to extreme weather events and natural disasters. The economy is dominated by agriculture, fishery, and the oil/minerals sectors.

2. Economic growth from 2002 to 2014 was impressive, averaging approximately 5.7 percent per year.<sup>3</sup> Growth rates have subsequently slowed, in the face of subdued global commodity prices, a major drought and weak non resource sector growth, and are estimated to average approximately 4 percent over the medium term. The government has undertaken prudent measures to manage the resulting fiscal pressures. Given the expected continuation of subdued commodity prices in 2017, domestic revenue generation and foreign currency inflows are expected to remain constrained in the near term.

3. Notwithstanding its positive economic performance over the past decade, PNG's human development indicators remain low. More than 40 percent of children under five years of age suffer from moderate to severe chronic malnutrition. Life expectancy at birth is 63 years; the infant mortality rate is 48 per thousand compared to a regional average of 26.5; and the maternal mortality rate is very high at 230 per 100,000 live births. Although significant progress has been made toward the Millennium Development Goals (MDGs), PNG has not yet met many of the MDG targets, such as: (4) reduce under-five child mortality by two-thirds; and (5) reduce the maternal mortality ratio by three-quarters. The Government of PNG recognizes the lack of infrastructure facilities and service delivery mechanisms as major constraints to economic development and delivery of basic services to the population.

### B. Sectoral and Institutional Context

4. As part of the Government's Medium Term Development Plan (2016-2017), the health sector is identified as a key development enabler. Nevertheless, the health sector faces numerous challenges. Tuberculosis (TB) has emerged as a serious public health issue and the leading cause of death in PNG. According to the World Health Organization (WHO) Global TB Report 2015, the estimated TB incidence rate was 417 per 100,000 population (31,000 cases) and the prevalence rate was 529 per 100,000 population (39,000 cases). The estimated mortality rate (excluding deaths associated with the human immunodeficiency virus [HIV]) was 40 per 100,000 (3,000 deaths). This high infection rate is in part due to persistent poverty and the associated poor nutrition and crowded housing/settlements with limited ventilation. The rise in TB rates is also due to weak health service delivery systems, which have resulted in delays in TB diagnosis and inadequate and ineffective TB treatment.

5. The rise of TB rates has now been compounded with the high incidence of multidrug-resistant

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<sup>1</sup> Also referred to as Papua New Guinea or PNG throughout the document.

<sup>2</sup> World Development Indicators.

<sup>3</sup> International Monetary Fund Country Report 2015.



(MDR) TB and extensively drug-resistant (XDR) TB.<sup>4</sup> Nationally, 890 new cases of MDR TB are reported per year. PNG has been identified by WHO as a high-burden country for TB due to the (a) TB burden; (b) coinfection of HIV and TB burden;<sup>5</sup> and (c) high MDR TB burden.<sup>6</sup> PNG is one of only 14 countries listed in all three categories and is the only country to be newly added to all three categories. In the early months of 2015, the Government of Papua New Guinea (GoPNG) acknowledged the seriousness of the TB situation across the country, and in particular, drug-resistant (DR) TB. An additional declaration noted the public health emergency relating to TB in Western Province, approved the Emergency TB Response Plan of the National Department of Health (NDOH), and sought facilitation for providing additional funding to this activity.

6. MDR and XDR TB have risen to unprecedented levels in hotspots across PNG, particularly in Western Province, Gulf Province, and the National Capital District (NCD). Western Province has the highest number of DR cases in PNG, in particular in Daru Island, where an unprecedented outbreak of MDR TB is occurring with a prevalence of nearly 1 percent. All three districts in Western Province—South Fly (which includes Daru), North Fly, and Middle Fly—have experienced a doubling of TB notification rates since 2011. The NCD has been declared as the most important TB hotspot with five times the national TB case notification average and 25 percent of PNG’s total TB caseload.<sup>7</sup> A study<sup>8</sup> also found that 45 percent of the MDR TB cases had not been previously exposed to TB medication, meaning that a significant portion of MDR TB was the result of person-to-person transfer, known as primary transmission. It is now understood that around the world TB kills more women every year than the number of women who die from all other causes of maternal mortality combined<sup>9</sup>. Studies from around the world have also shown that even though men may have a higher prevalence rate of TB infection, disease prevalence rates are the same or even higher for women, suggesting that women are more likely to go from being infected to having the disease. The reasons for this seem to be both due to physiological/biological factors – studies have found that women tend to have a higher prevalence of extra-pulmonary TB which is more difficult to detect and due to the status of women in society. The likelihood of differential and disproportionate impacts of TB on women in the context of PNG is high given both the role played by women under customary and traditional systems, and their status in society as this perhaps severely curtails access to screening and treatment protocols as noted above. Differential and disproportionate impacts on children are also likely due to similar reasons. Pediatric cases are said to account for over a quarter of the identified TB cases in PNG<sup>10</sup>.

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<sup>4</sup> MDR TB is a form of TB that demonstrates resistance to two of the most powerful anti-TB drugs in use—isoniazid and rifampicin. Strains of TB demonstrate resistance to these drugs as well as to any member of the quinolone family of antibiotics and at least one of four second-line injectable anti-TB drugs.

<sup>5</sup> It is estimated that the rate of coinfection of HIV and TB is 64 per 100,000.

<sup>6</sup> WHO. Use of high burden country lists for TB by the WHO in the post-2015 era.

[http://www.who.int/tb/publications/global\\_report/high\\_tb\\_burden\\_country\\_lists\\_2016-2020.pdf?ua=1](http://www.who.int/tb/publications/global_report/high_tb_burden_country_lists_2016-2020.pdf?ua=1)

<sup>7</sup> NDOH (National Department of Health). 2015. *MDR/XDR-TB Emergency Response Team Annual Report*. Papua New Guinea.

<sup>8</sup> Aia, P., Kal, M., Lavu, E., John, L., Johson, K., Coulter, C., Ershova, J., Tosas, O., Zignol, M., Ahmadova, S., Islam, T., et al. 2016. “The Burden of Drug Resistant Tuberculosis in Papua New Guinea: Results of a Large Population Based Survey.” *PLoS ONE* 11 (3).

<sup>9</sup> Marais, Ben J, Amita Gupta, Jeffrey R. Starke and Asma El Sony (2010). “Tuberculosis in women and children.” *The Lancet*. Volume 375, No. 9731, p2057–2059, 12 June 2010.

<sup>10</sup> Chandler, Jo (2016). “Tuberculosis: The cruel scourge for children in Papua New Guinea”. Childfund Australia.



7. The TB crisis in PNG requires an emergent and scaled-up response. If there is no additional intervention, TB transmission will continue, cases will increase, and the cost of the response will continue to increase. Mathematical modeling of hypothetical scenarios for TB responses in Western Province predict that the rate of DR TB could almost double in the two-year period from 2015–2017. Any adverse macro economic shocks may worsen the current situation. However, maintaining the status quo is a significant risk, where TB transmission is not only a risk to health security, but also has human costs and negative social and economic impacts. The economic costs of MDR TB in PNG are significant, since the greatest number of infectious cases of MDR TB occur in the most economically active group (15–45 years), which could potentially result in high productivity loss. Of the reported MDR TB cases, 70 percent are in urban settings. Thus, an immediate, accelerated, effective response is needed to prevent escalation of the epidemic and increased costs of more cases.

8. The NDOH is the lead agency responsible for the strategic development and execution of the National Tuberculosis Programme (NTP), which is guided by the National Tuberculosis Strategic Plan (NSP) 2015–2020. The NSP is based on the post-2015 Global TB Strategy and guided by PNG’s Vision 2050, as well as by the PNG National Health Plan 2011–2020, and informed through comprehensive consultation.<sup>11</sup> The NDOH established four key objectives in the NSP: (a) improve the quality of diagnostic and treatment services by recognizing the importance of local ownership and support for TB interventions; (b) improve the diagnosis of DR TB; (c) increase the coverage of HIV testing of TB patients; and (d) improve the TB control program in the NCD. Under the NSP umbrella, hotspot provinces are in various stages of developing their respective TB strategies. Western Province’s health authority has developed the Province TB Emergency Response Plan to respond to high rates of MDR TB. The NCD TB Strategic Plan has been finalized and endorsed. Gulf Province is still in the process of developing its TB plan. In recognition of the seriousness of DR TB in PNG, the NDOH, in coordination with all partners active in supporting TB, established an Emergency Response Team (ERT), led by the Deputy Secretary of Health, to carry out high-level advocacy, resource mobilization, as well as planning and monitoring of implementation of the national response of DR TB.

9. Despite commitment from the NDOH with the assistance of development partners (DPs) to control TB, there are a number of bottlenecks to the implementation of the NSP and provincial TB strategy plans. The first is funding, with government allocations being significantly lower than required. Human resources, in both management and health service delivery, are insufficient and not easily overcome, as PNG is facing a health worker shortage that could worsen in the medium to long term. Due to resource constraints (both fiscal and human capital): (a) active case finding (ACF) has not been a priority; (b) laboratory services are unable to meet the current demands, influencing treatment plans, and are therefore unable to increase their testing capacity to respond to any improvements in ACF; and (c) delay in adopting innovations, including new diagnostic methods, new treatment protocol, and electronic recording and reporting system.<sup>12</sup>

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<sup>11</sup> Consultation included a series of meetings and workshops, which discussed past successes and future strategies. More than 200 representatives coming from 22 provinces participated in these meetings and workshops; they included treatment supporters and patients (NSP 2015–2020).

<sup>12</sup> *The Regional Green Light Committee Mission for Papua New Guinea*. August 2016. Report.



### C. Higher Level Objectives to which the Project Contributes

10. The World Bank Group’s Country Partnership Strategy (CPS) 2013–2016, extended to 30 June, 2018 (Report #71440-PG), discussed by the Board of Executive Directors on November 8, 2012, emphasized the need to improve service delivery across a range of sectors and clearly recognized the importance of improving service delivery in the health sector. The CPS recognized PNG’s challenges to meet MDGs, which provides further justification for this operation and emphasizes its alignment with the current CPS. The TB epidemic, in particular the emergence of DR strains, poses a direct threat to all the gains that PNG has made in the last 15 years, including those programs supported under the current CPS. Furthermore, the TB crisis has reached levels that could potentially threaten other countries in the region.

11. The proposed project will contribute directly to the World Bank’s twin goals of (a) ending extreme poverty—reducing the share of the global population living in extreme poverty to 3 percent by the year 2030, and (b) promoting shared prosperity—increasing the income of the bottom 40 percent of the population in each country. The poor have higher susceptibility to TB due to environmental-risk factors associated with poverty. The project, featuring early diagnosis and effective treatment of TB patients, will help the affected population return to the labor market and reduce the risk of falling into poverty due to illness. The project will also contribute to health, nutrition, and population goals of Universal Health Coverage (UHC). While the TB bacteria do not discriminate between economic classes, the poor have higher susceptibility to TB due to environmental risk factors associated with poverty. The project, featuring early diagnosis and effective treatment of TB patients, will help the affected population return to the labor market and reduce the risk of falling into poverty due to illness.

12. The GoPNG is committed to fighting the TB epidemic. It has demonstrated this commitment through a series of policies and programs that have helped expand the coverage of TB programs. In particular, NDOH, recognizing the need to expand their outreach capacities, has forged strong partnerships with a range of stakeholders in an effort to combat TB. At the same time, the NDOH and the GoPNG recognize that there is still much that needs to be done. Recent external reviews of the NTP have helped to identify some key gaps including, among other things: (a) the TB epidemic is not well-controlled and transmission levels remain unacceptably high; (b) the quality of TB/MDR TB services at the provincial and district levels needs to improve through expanded local ownership and greater accountability for these programs; (c) laboratory and treatment services must be strengthened to provide accurate diagnosis and reduce attrition rates of patients from treatment programs; and (d) program monitoring needs to be strengthened. The proposed project will support all these areas and contribute to the strengthening of the anti-TB response in PNG. The proposed project will have a dual approach: (a) focus on achieving tangible results in PNG hotspots in the short term; and (b) simultaneously strengthening the NTP in the medium term to be better equipped to handle this issue in the future.

## II. PROJECT DEVELOPMENT OBJECTIVES

### A. PDO

13. To improve the quality and expand the coverage and utilization of health services to control the spread of tuberculosis in targeted areas of Papua New Guinea by strengthening programmatic management of tuberculosis.





## B. Project Beneficiaries

14. Project beneficiaries include the entire population of Daru Island, and patients of Western Province and the NCD<sup>13</sup> who have been notified and enrolled in treatment programs. Direct beneficiaries also include human resources for health at both the central level and targeted areas. Indirect beneficiaries include household and community members who may benefit from better infection control and reduced spread of the disease and from not having to shoulder the economic burden of caring for a TB patient. As the project focuses on the above referenced areas of PNG and, to a lesser extent, Gulf Province and other potential hotspots, the project also indirectly benefits residents of these areas. The in- and out-migration from the NCD poses special concerns for the spread of TB. With a strong focus on the NCD, the project helps control the spread of the disease to other parts of the country and beyond to the broader Pacific region.

## C. PDO-Level Results Indicators

15. To monitor progress toward the project development objective (PDO), a core set of indicators has been identified and will be employed in the targeted areas of the country where the project will be implemented:

- Number of people receiving TB treatment in accordance with National TB Guidelines
- Proportion of TB patients who have received drug-susceptible (DS) TB testing
- TB treatment success rate for DS TB
- TB treatment success rate for DR TB
- Number of Basic Management Units (BMUs) where all clinical staff have been trained/retrained on TB and MDR TB.:

## III. PROJECT DESCRIPTION

### A. Project Components

16. The support envisaged through the IDA financing takes into consideration the strategies developed for addressing DS TB and DR TB in PNG, findings from the Regional Green Light Commission (rGLC), and ongoing support provided by other DPs. The financing will focus on target areas and aim to scale up/replicate existing successful programs, and support areas deemed critical for which current financing is unavailable. The project includes three components listed below (see details in Annex 1).

#### **Component 1: Early Detection of Active Tuberculosis Patients (US\$3.55 million - IDA Financing)**

17. The IDA Credit will finance the implementation of ACF strategies, which have been developed for Western Province and are also included in the NCD TB plan. Financing will be provided for procurement of diagnostic medical devices and consumables, technical assistance, and other eligible expenditures deemed necessary for the early detection of active TB patients.

*Subcomponent 1.1: Supporting Population-based TB Screening in Daru Island (US\$0.13 million - IDA*

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<sup>13</sup> The population has been categorized as indigenous peoples (IP).



*Financing)*

18. The project will implement activities designed to support population screening for TB in Daru Island. Based on the high prevalence of MDR TB cases and the evidence that many MDR TB cases were contracted through primary contact rather than failed treatments, the 2016 rGLC recommended “urgent and phased population screenings with adequate preparation” for Daru Island. Implementing population-based screening requires the use of a mobile van equipped with digital X-ray and other diagnostic equipment to carry out ACF. A mobile clinic was procured with GoPNG funding; two GeneXpert machines and 2,000 cartridges have been donated by the U.S. Agency for International Development (USAID). But financing and technical assistance gaps remain. The IDA Credit will complement the population-based screening in Daru by financing the technical assistance, manpower, training, and operational costs to implement the population-based screening.

*Subcomponent 1.2: Supporting Systematic Screening for TB in Other Targeted Areas (US\$0.30 million - IDA Financing)*

19. The project will finance activities, including technical assistance and operational costs, designed to support systematic screening and ACF for TB in targeted areas other than Daru Island. The project will initially focus on the NCD, utilizing the method of screening proposed in ‘TB Free NCD: strategic plan to reduce the burden of TB in the National Capital District, 2016–2020’. The project will finance the procurement and operation of two mobile clinics, equipped with x-ray and other diagnostic equipment, and staffed with at least a community health worker, health educator, and driver. The mobile clinics will focus on TB case finding and detection and provide support to BMUs and the Treatment Support Program.<sup>14</sup>

*Subcomponent 1.3: Strengthen the Health System Diagnostic Capacity (US\$3.12 million - IDA Financing)*

20. The project will finance activities designed to strengthen the diagnostic capacity of the Central Public Health Laboratory (CPHL) and BMUs in the NCDs and Western Province. This subcomponent will include the purchase of a container laboratory for culture and molecular analyses (line probe assay [LPA]), 12 GeneXperts, and 8 microscopes for BMUs in targeted areas. This subcomponent aims to expand the DS and DR TB diagnostic capacity to provide more accessible and faster diagnosis (including the use of rapid technology). This will enable the enrollment of active TB patients as early as possible and improve treatment outcomes, as well as reduce the time TB patients remain infectious in the community.

**Component 2: Effective Treatment of Drug-susceptible and Drug-resistant Tuberculosis Patients (US\$7.70 million - IDA Financing)**

21. The project will support the effective treatment of both DS and DR TB patients, including the new short regimen for DR TB patients, through two subcomponents.

*Subcomponent 2.1: Improving Clinical Management of DS TB and DR TB (US\$3.76 million - IDA Financing)*

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<sup>14</sup> The Treatment Support Program is part of the NCD TB Strategic Plan 2016–2020 and aims at implementing Directly Observed Treatment (DOT) at the BMU and community level through the hiring of treatment supporters and implementation of the nutrition program.



22. The project will implement activities designed to improve the clinical management of DS and DR TB by strengthening the treatment capacity of BMUs in Western Province and the NCD, including, among other things, through developing and implementing processes and operating procedures and health staff training. The complexity of MDR TB diagnosis and treatment requires increased human resources, as well as necessary training of health staff at both the BMU and central levels. Processes and operating procedures informed by existing implementation experience will be developed. The project will provide the funding for technical assistance and health worker training on diagnoses and effective treatment of TB patients, particularly the implementation of a shorter regimen to treat MDR TB patients. The project could, if a gap exists, finance the procurement of the TB medicines for the shorter DR TB regimen.

*Subcomponent 2.2: Strengthening the Directly Observed Treatment Implementation and Reduce the Loss of Follow up of Patients in the BMUs (US\$3.90 million - IDA Financing)*

23. The project will finance a program of activities designed to strengthen the implementation of and patient adherence to DOT for DS and DR TB patients including, among other things, provision of treatment support to patients. The provision of treatment support, including nutrition support, is one of the strategies being used to increase patients' adherence to the TB treatment. DOT and nutritional support will be provided at the community level along with regular follow-up and monitoring from the BMUs. In addition, capacity at the local health level will be bolstered to improve TB control measures and improve the treatment follow-up rates.

24. The project will provide additional financial resources for the operation and expansion of the five existing Daru Accelerated Response to Tuberculosis (DART) sites and expansion of the DART as a result of the increased demand from the TB ACF. The project will also finance similar programs in the rest of Western Province to implement DOT and set up and implement the Treatment Support Posts in the NCD.

*Subcomponent 2.3: Supporting Social Mobilization in Targeted Areas (US\$0.04 million - IDA Financing)*

25. The project will support the Multi-sectoral Alliance of Daru (MAD) for TB and the social mobilization advocacy activities proposed in the NCD TB strategy. Community-level disease prevention efforts attempt to increase community awareness about TB, TB prevention measures, and TB treatment options. The MAD for TB includes stakeholders from communities, churches, schools, business houses, nongovernmental organizations (NGOs), and public offices. Most of their activities have been geared toward TB awareness within their spheres. In the Middle and North Fly Districts, the advocacy, communication, and social mobilization (ACSM) activities continue to reach communities and villages by educating and mobilizing them to support the implementation of the TB strategy. Since ACSM will be a major part of the activities of these community-based groups, training in TB will be provided to help them disseminate accurate information during health patrols and community events conducted at provincial, district, or community levels. ACSM activities, proposed in the NCD TB strategy, will also be supported by the project.

**Component 3: Strengthen the Recipient's Systems for Managing its Health Services Delivery and Tuberculosis Response (US\$3.75 million - IDA Financing)**



*Subcomponent 3.1: Strengthen the Government's Systems for Managing its Health Services Delivery and Tuberculosis Response at NTP and Decentralized Levels (US\$1.02 million - IDA Financing)*

26. The project will finance analytical work and studies to help identify where the Government should focus efforts and resources to obtain maximum returns of improved health services delivery and inform potential follow-on investments.

27. The project will also implement activities designed to strengthen the capacity of the NTP to execute the NSP including, among other things, supporting management activities for NTP, training and development of NTP staff, providing technical assistance to NTP, and coordinating TB response activities with DP financing and program implementation. The project will provide technical assistance and staff training for Western Province and the NCD to implement their respective strategies. The overall capacity of the NTP urgently needs to be strengthened; of the five positions in the NTP, currently only two are filled. The financing will strengthen the NTP management, including technical support for developing strategies as well as fulfilling management functions and operational costs. Areas that require strengthening include: (a) advocacy at the central level; (b) donor support coordination and partnership collaboration; (c) policy formulation and guideline development; (d) monitoring and evaluation (M&E); (e) mentoring and training health workers for clinical diagnosis and laboratory work; and (f) NTP's capacity to coordinate and monitor procurement and financial management (FM) and implement safeguards. The project will finance the recruitment of qualified consultants with the following skills: strategy formulation and review, information technology, M&E, and quality assurance. In addition, the project will finance capacity building at the provincial and district levels through the provision of technical staff and TB emergency response training.

*Subcomponent 3.2: Build and Strengthen the Electronic TB Information System (US\$1.06 million - IDA Financing)*

28. The project will finance the establishment and maintenance of an electronic registry system of TB data to facilitate analysis and evidence-based policy making. It is imperative to have an electronic TB registry system in place that is compatible with the National Health Information System (NHIS). The IDA Credit will finance the development and piloting of an electronic registration and case management system in the targeted areas; once successful, it will then be rolled out nationally. Financing will also be available to assist the NTP central-level management of the database. The information collected will be used for analysis and evidence-based policy making. This will require the procurement of necessary goods (tablets and computers), technical assistance, as well as the training of health workers on the use and implementation of the electronic information system.

*Subcomponent 3.3: Support to Project Management (US\$1.67 million - IDA Financing)*

29. The project will carry out a program of activities designed to support management of the project, including technical coordination, M&E, operational research, and reporting. Operational research and stand-alone evaluations of the various strategies will provide lessons from the implementation, which will be shared. The subcomponent will also finance the preparation of the necessary and required reporting documents from project implementation and the operational (including contracted PMU fiduciary staff) and recurrent costs for project implementation and monitoring (including external audits) that would not be incurred in the absence of the project.



**B. Project Cost and Financing**

30. The project will contribute to the Government’s efforts articulated in the NSP (2015–2020), and strategies developed by Western Province (2016–2020) and the NCD (2016–2020), as well as recommendations from the 2016 rGLC review. The project’s financing will mainly support activities at the decentralized level by contributing to Western Province’s plan (estimated at PGK 175 million or approximately US\$56 million), and the NCD’s plan (estimated at PGK 62.3 million or approximately US\$19.7 million). Given the uncertainties surrounding the future financing of activities by DPs, and the existing gap, work plans covering at least World Bank support will be reviewed annually.

31. The project will be financed using the Investment Project Financing (IPF) instrument through a US\$15 million equivalent IDA Credit, expected to be disbursed over five years. Given the need to accelerate the response to the TB epidemic, retroactive financing, up to 40 percent, will be available to support eligible activities financed by the Government. Recognizing that there are significant financing gaps for implementing the strategies, and the ACF may result in a greater need than currently envisaged, if the GoPNG demonstrates good execution of the project, the World Bank could consider additional financing if available. The estimated project costs and financing by component and subcomponent are provided in the following table.

Project Components	Project cost (US\$, millions)	IDA Financing (US\$, millions)	% IDA Financing
Component 1: Early Detection of Active Tuberculosis Patients	3.55	3.55	100
Component 2: Effective Treatment of Drug-susceptible and Drug-resistant Tuberculosis Patients	7.70	7.70	100
Component 3: Strengthen the Government Systems for Managing its Health Services Delivery and Tuberculosis Response	3.75	3.75	100
<b>Total Costs</b>	15.00	15.00	100

**C. Lessons Learned and Reflected in the Project Design**

32. The lessons learned and reflected in the project design are twofold: technical and operational. The only NDOH World Bank-financed project, the Population and Family Planning Project,<sup>15</sup> was implemented from 1993 to 2002. Although it has been 15 years since loan closing, some lessons are still relevant. Operational research and analytics have recognized the risks posed by the TB crisis and have adopted measures to understand the scale and nature of the problem.<sup>16</sup> The key lessons learned and reflected in the project design are described below.

<sup>15</sup> Staff Appraisal Report No. 11264-PNG, dated March 12, 1993.

<sup>16</sup> Urban Youth Employment Program, P114042; IDA Credit to the Republic of India for Accelerating Universal Access to Early and Effective Tuberculosis Care (P148604); Ebola Emergency Response Project (P152359).



33. Strengthening basic health systems is critical to controlling the TB epidemic. The project design has incorporated lessons learned in Peru<sup>17</sup> and South Africa<sup>18</sup> by fostering the GoPNG's capacity to conduct early diagnosis in high-burden areas, as well as implementing LPA to enable the detection of XDR TB cases. The improvements in case findings will only succeed if an effective treatment program is concurrently in place. As discussed above, the proposed project recognizes this reality and will support the introduction of ACFs in the targeted areas, while also increasing the number of treatment sites (or mobile facilities) and bolstering BMUs' capacity to treat patients.

34. Project design should be simple and consider implementation capacity and constraints. While the design recognizes the need to strengthen the central capacity to manage the health system, it also considers the local implementation capacity and constraints to execute the expected interventions. The project includes direct contracting with United Nations (UN) agencies to provide technical assistance and delivery of agreed inputs. Such an arrangement was included as part of the implementation arrangements in the Ebola Emergency Response Project (P152359) in Guinea, Liberia and Sierra Leone. The UN agencies will be responsible for procurement, technical assistance, and training and will rely on UN's procedures within the standard contract. The project will use direct payment to contractors, suppliers, UN agencies, service providers, and consultants in an effort to reduce the high FM and disbursement risks within the country setting; and limit the designated account (DA) with a low ceiling and require review of all withdrawal applications to further mitigate fiduciary risks.

## IV. IMPLEMENTATION

### A. Institutional and Implementation Arrangements

35. The oversight responsibility for project activities and results will rest with the deputy secretary of the National Health Services Standards (NHSS) section of the NDOH, where the Disease Control and Surveillance Department (DCSD) is located. The NTP is the unit under the DCSD responsible for implementing the 2015–2020 NSP, coordinating TB efforts, liaising with DPs supporting those efforts, and monitoring implementation of the NSP. Guidance and support for fiduciary oversight within NDOH rests with the Corporate Services and National Health Planning and Policy section, which has not managed a World Bank project in more than 10 years and, for that reason, the project will count on specific arrangements to be implemented, as detailed in Annex 2 and summarized in the following paragraphs.

36. This project supports the GoPNG's strategies to control the TB epidemic in the country. Although it is an IDA-specific financing, it shall not be seen as an isolated project, but as part of an overarching government program that counts on the collaboration of several DPs. The ERT will be the main instrument for stakeholder coordination to implement the TB response in PNG. The ERT was established in August 2014 due to the urgency placed by both the Government and DPs on mounting a coordinated response to maximize efficiency and the attendant interaction necessary from both a technical and operational perspective to implement the TB response. The ERT is cochaired by the deputy

<sup>17</sup>Ministerio de Salud. 2013. *Normal Técnica de salud para la atención integral de salud de las personas afectadas por tuberculosis*. Ministerio de Salud.

<sup>18</sup>Meyer-Rath, G., Schnippel, K., Long, L., MacLeod, W., Sanne, I., Stevens, W., Pillay, S., Pillay, Y., Rosen, S., et al. 2012. "The Impact and Cost of Scaling Up GeneXpert MTB/RIF in South Africa." *PLoS ONE* 7 (5); e36966.





secretary of the NHSS and WHO's representative and is charged with deliberating on and monitoring TB activities throughout the country, with a focus on the three identified 'hotspots'—Western Province (including Daru), Gulf Province, and the NCD. It initially met on a monthly or as needed basis, and meetings are now held every two months.

37. During the start-up period, the project will finance consultants to fill key existing technical vacancies at the NTP. These consultants will provide advisory services, including on formulation of policy and development guidelines, M&E, and TB clinical issues; and promote in-house capacity, so that NTP staff can later replace such technical positions. A Project Management Unit (PMU), with the responsibility of ensuring implementation of the project under the guidance of the project director (the deputy secretary of the NHSS), will be established. Initially, the PMU will require hiring of (a) a procurement specialist to work with staff within the NDOH, with a view of carrying out necessary procurement (in particular contracting of necessary agencies/firms) to kick-start implementation of activities; (b) a project coordinator; (c) accountant; (d) finance officer; and (e) a part-time FM specialist. The key roles of the PMU are included in Annex 2.

38. At least two UN agencies have been identified to support project implementation of aspects of Components 1, 2, and 3: WHO and the United Nations Office for Project Services (UNOPS). If necessary, other UN agencies may be identified during project life and brought on board to support implementation. Contracting of UN agencies will be done directly by the NDOH. A description of their activities and costs will be detailed in terms of reference and in a legal Standard Agreement for World Bank-financed projects for each participating UN agency. Direct selection of firms/organizations to implement decentralized activities under Components 2 and 3 will also be supported. This includes DOT activities in Daru, the rest of Western Province, and in the NCD, and community and social mobilization. Such firms/organizations could also subcontract portions of the implementation to organizations currently implementing successful interventions on the ground to scale up or replicate in other areas.

39. Given the fragile situation of PNG, Hands-on-Expanded Implementation Support (HEIS) was included in the project design mainly to support the NDOH's hiring of consultants and contracting of UN agencies. The use of a management firm to support the NDOH in project implementation may be a possibility if project implementation through a PMU does not produce the expected results.

## **B. Results Monitoring and Evaluation**

40. The NTP will be responsible for M&E of the project outcomes against agreed indicators as presented in the Results Framework and Monitoring section. The NTP supports provincial and district TB programs to collect and monitor data through training and follow-up supervision/management and collate the data into national figures. The NTP is also responsible for synthesizing operational research and for cross-fertilizing the lessons learned from each province. The reliability of health data in PNG is negatively impacted by inconsistent approaches across provinces/facilities and incompleteness. However, in the project-targeted areas (the NCD and Western Province) TB data is perceived by stakeholders, such as WHO, as being reliable. This is due to strong supervision/management of TB programs in these areas by provincial coordinators and international NGOs and frequent reporting requirements of the ERT. Data quality will be further improved once an electronic recording and reporting system (financed by the project under subcomponent 3.2), which will be developed as part of the E-Health integrated system led by the NDOH, is in place.



41. The Results Framework includes one World Bank core indicator and TB indicators that are already being monitored by the NDOH, provincial TB programs, and DPs. Disaggregated data, while not reported on, is available. Additional indicators were included to capture the performance of activities being financed under Component 3, the gender dimension, and citizen engagement. The project will share lessons learned throughout project implementation to be included in required reports.
42. This Project is part of the overall efforts to support Government to implement the National and Provincial TB strategies, and partially attribute to the overall TB outputs and outcomes achieved.

### **C. Sustainability**

43. The immediate concern of the proposed project is to establish measures that can halt the spread of the TB epidemic in PNG. However, sustainability is considered by strengthening of basic health services and institutional arrangements under the project to establish a foundation for continued improvements.
44. Sustainability concerns are brought to the forefront through the proposed project by ensuring that it is fully aligned with the GoPNG's NSP (2015–2020) and TB strategies in Western Province and the NCD. Furthermore, the project will support the GoPNG to strengthen domestic capacities to handle this crisis in the medium to long term. In the short term, external partners will not only be needed to support and finance TB programs, they will also be needed to boost frontline service delivery using external and international partners. Systematic screening of TB patients and enrolling them in treatment regimens will require capacity building at the grassroots level for screening, diagnosis, notification, and treatment. Given the highly algorithmic nature of TB treatment, capacities built will support program sustainability.
45. The project will also contribute to improving the financial sustainability of the NTP. First, the project will finance capacity building of laboratory capabilities in PNG across various levels of health facilities, including the CPHL. The strengthened laboratory network will also improve the diagnoses and treatment of other diseases. Second, GoPNG has adopted the treatment of DR TB to a shorter regimen, which will reduce treatment time for DR TB patients from 18–24 months to 9–12 months and cost less. This will have a significant impact on the per patient treatment costs and hence contribute toward the financial sustainability of TB treatment in PNG.

### **D. Role of Partners**

46. In addition to the GoPNG's response to stop TB and the support from various church-affiliated health service providers, a number of DPs also support these efforts either as financiers, implementers, or technical assistance providers. These include, among others, WHO, Australian Department of Foreign Affairs and Trade (DFAT), the Global Fund, Burnet Institute, World Vision, Doctors without Borders (*Médecins Sans Frontières*, MSF), Oil Search Foundation, USAID, and FHI 360. See Annex 3 for details of their roles. In recognition of the seriousness of DR TB in PNG, the NDOH has, in coordination with all partners active in supporting TB, established an ERT. This group carries out high-level advocacy, resource mobilization, as well as planning and monitoring of implementation of the national response to DR TB.





## V. KEY RISKS

### A. Overall Risk Rating and Explanation of Key Risks

47. **The overall risk rating, using the Systematic Operations Risk Rating Tool evaluation, for the project is High.** The team noted, in particular, the following risks: (a) macroeconomic risks associated with low commodity prices and the subsequent fiscal pressures; (b) political risks—elections are scheduled for mid-2017 and it is not clear that policy continuity is guaranteed and this raises the risks levels of this project; (c) fiduciary risks are very high across the spectrum and service delivery is threatened by this factor; and (d) weak capacities for service delivery and poor coordination across the national, provincial, district, and local levels. The design took each of these issues into consideration in an effort to mitigate the risks to the extent possible.

48. **Political and Governance Risks - High.** The main concern with regard to political risks is that elections are slated for mid-2017 and this could detract the GoPNG from the commitment to TB currently in PNG, and slow down the project implementation. Governance risks are high in PNG; while there may be political commitment to combat TB, governance remains a major and significant concern.

49. **Macroeconomic Risks - Substantial.** The fall in commodity prices has hit the PNG economy, which is heavily dependent on the oil and natural gas sector and the mining sectors. This has increased fiscal pressures and led to deep cuts in program budgets for the health sector. These deep cuts will have direct impacts on the spread of DR TB in the near and medium term in PNG, as budget cuts limit the Government's ability to procure drugs and support frontline services.

50. **Sector Strategies and Policies Risks - Substantial.** The GoPNG has a relatively well-developed strategy to address the TB epidemic in the country. Western Province has relatively well-defined implementation strategies and guidelines for managing the crisis. However, the overall implementation of sector strategies is weak. The engagement with and the capacity of the provincial, district, and local government authorities remain weak.

51. **Technical Design of Project - Low.** The technical design of the project is derived from the WHO guidelines on identifying and treating DS TB and DR TB patients and represents the global cutting edge of anti-TB programs. These are in line with international standards and best practice, including the globally endorsed Stop TB Strategy and Programmatic Management of Drug-Resistant Tuberculosis (PMDT).

52. **Institutional Capacity for Implementation and Sustainability - High.** In Western Province's Daru General Hospital, a center of excellence was established; both center-based treatment programs and community outreach programs are well-developed. There is the needed institutional capacity to run the program for Daru and South Fly District. However, implementation capacities do not extend to other parts of Western Province and will need to be significantly strengthened if screening, diagnosis, and treatment outcomes are to improve. The situation in other hotspots, the Gulf Province and the NCD, are far from satisfactory. While on paper the programs are reasonably well-developed, implementation capacities will need to be strengthened if the GoPNG hopes to control the spread of DR TB through early detection and successfully treating patients.



53. **Fiduciary Risks - High.** The governance risks noted above are closely tied to high fiduciary risks. Although public FM systems in PNG are adequate, compliance with the systems, especially by the NDOH, is weak and procurement processes need considerable strengthening. Discussions with the NDOH, supported by findings in internal and external audit reports, along with the Mid-Year Economic and Fiscal Outlook and Final Budget Outcomes, identify a number of FM problems in budget releases, fund flows, tracking expenditures, acquittals, record keeping, ensuring value for money, and using funds for intended projects and programs.

54. **Environment and Social - Low.** The project is unlikely to cause any adverse social and environmental impacts. It is highly unlikely that IP, as the primary beneficiary, could be negatively affected as a result of the project. The project will involve minor site works for placement of container laboratories at existing health facilities and will produce potentially hazardous medical wastes in the form of syringes, cotton swabs and so on, which will be mitigated through application of measures provided in the Code of Environmental Practice (COEP).

55. **Stakeholders - Substantial.** Stakeholders in the fight against TB from the country include the central-level departments as well as decentralized levels. There are also a variety of stakeholders in the form of both funding and implementing DPs active in this area. Having a united approach, agreeing on priorities, and harmonizing support to take advantage of the various agencies' comparative advantage will become increasingly important; such an endeavor will require sustained support. While fora for this approach exists, the continued level of commitment by the participants will be necessary. In the event a harmonizing mechanism is not available, then the risk to stakeholders could be substantial.

## VI. APPRAISAL SUMMARY

### A. Economic and Financial (if applicable) Analysis

56. **Development impact.** Treating TB is highly cost-effective. The economic analysis shows high benefits relative to costs. The benefit-cost ratio is estimated at 14.29:1, which implies that for every US\$1 invested through the project, there is a yield of US\$14.29. The project will contribute to saving health care costs related to treating TB by focusing on controlling the spread of DS and DR TB. The project will also contribute to the reduction of morbidity and mortality by scaling up and improving access to and utilization of TB control services. This includes addressing service utilization barriers, such as non-direct costs (for example, transport), geographical/access constraints, and quality concerns, through mobile clinics and improved services at BMUs. The project will contribute to PNG's TB control program meeting global target success rates, 85 percent success rate for DS TB<sup>19</sup> and 75 percent success rate for DR TB.<sup>20</sup> The project will also improve the financial protection to families that are affected by TB and improve the labor force participation and productivity of TB patients (see Annex 4 for the economic analysis). Overall, this pro-poor project will promote equity and shared prosperity by targeting geographic areas with high burdens of TB in PNG and addresses service utilization barriers, which have traditionally hindered TB prevention and treatment outcomes. The project will facilitate improvements in technical and allocative efficiency by rolling out a harmonized package of services for TB prevention, control, and treatment.

<sup>19</sup> It is the same as the global TB target success rate for DS TB.

<sup>20</sup> World Health Organization. Global TB Report, 2015.



57. **Public sector provision and financing.** There are a number of broad rationales for government provision of TB services.

- (a) Public sector plays an essential role in both health financing and health services delivery in PNG.
- (b) The development objective of improving TB patient health outcomes and financial protection is consistent with government objectives and strategies.
- (c) There is large positive externality to control a potentially fatal infectious disease such as TB through government intervention.
- (d) Achieving progress toward equity objectives by reducing the health and financial burdens of TB on the poor requires government intervention and resources.
- (e) The Government will need to align TB prevention with other national priorities.

## **B. Technical**

58. The technical design of the project is derived from the WHO guidelines on identifying and treating DS TB and DR TB patients and represents the global cutting edge of TB programs. These are in line with international standards and best practices, including the globally endorsed Stop TB Strategy and PMDT. The strategies also follow the new WHO guideline for treatment of DR TB patients, which recommends a shorter treatment regime for DR patients which reduces treatment duration from 18–24 months to 9–12 months.

59. The proposed project is aimed at TB hotspots in PNG, which are the epicenter of DS and DR TB. The targeted approach and prioritization of the hotspots are important to control the further spread of DR TB cases from the epicenter. The strategies aimed at increasing the number of patients receiving effective diagnosis and treatment, are appropriate. The activities will be focused on ACF and effective treatment. The project will support the implementation of DOT, an essential element for the successful treatment of TB patients, which requires the provision of incentives and nutrition support for patients, such as nutrition and food vouchers.

60. There is a sound rationale for supporting the BMUs to tackle TB while strengthening critical dimensions of health systems. The interventions on improving the laboratory capacity and staff training are important since advances in disease control and health systems strengthening are complementary. The engagement with WHO, Global Fund, and DFAT, and working closely with other DPs will be fundamental to improving the coordination of the TB response program. Strengthening the information system to monitor TB is essential to further build up the NHIS. The complementary TB modules will be the main source of data for M&E of the TB program. In addition, the knowledge of using this system will also improve data recording and submission in all health areas.

## **C. Financial Management**

61. The FM assessment was carried out in accordance with the World Bank Directive 'Financial Management Manual for World Bank-Financed Investment Project Financing Operations' issued by the



Vice President, Operations Policy and Country Services (OPCS) on February 4, 2015 and as further elaborated on in the World Bank Guidance 'Financial Management in World Bank-Financed Investment Operations' issued by the Director, Operations Risk Management, OPCS on February 24, 2015, and the 'Principles Based Financial Management Practice Manual', issued by the Board on March 1, 2010. Under the World Bank's OP/BP 10.00 with respect to projects financed by the World Bank, the borrower and the project implementing agencies are required to maintain FM systems—including accounting, financial reporting, and auditing systems—adequate to ensure they can provide the World Bank with accurate and timely information regarding the project resources and expenditures. The proposed FM arrangements satisfy the FM requirement as stipulated in OP/BP 10.00. The assessed FM risk of the project is considered High (see Annex 2 for details of the FM).

#### **D. Procurement**

62. The IDA Credit will finance the costs of diagnostic equipment and consumables, non-consulting services to implement population-based screening, ACF, and DOT in the targeted areas, and individual and firm consultants for technical assistance, service delivery, and training. Procurement for the project will be carried out in accordance with the World Bank Procurement Regulations for IPF borrowers (Borrowers Regulations), July 2016, as well as the provisions stipulated in the Financing Agreement.

63. A procurement risk assessment of the NDOH has been completed. The NDOH has no recent experience working with the World Bank and applying related policies and procedures. In addition, this will be the first project to be implemented in PNG under the World Bank's New Procurement Framework. There is risk due to the complex and lengthy GoPNG procurement processes that need to be navigated. The overall capacity of the NDOH to implement a World Bank-financed operation needs to be improved. Every endeavor is being made to ensure the procurement activities are packaged and prepared in such a way that they expedite implementation. Even so, for larger procurements that exceed PGK 10 million (currently US\$3.16 million equivalent), the GoPNG time frame to approve will likely exceed 12 months.

64. One of the proposed ways to mitigate the risk of lengthy delays to project implementation is to include the Direct Selection of UN Agencies in the Procurement Plan. This will also ensure that organizations that are uniquely qualified are able to be engaged in an efficient manner.

65. A draft Procurement Plan for the first 18 months of project implementation was prepared. Given the fluid situation on the ground, the Procurement Plan will be updated by NDOH on an annual or as needed basis to reflect actual project implementation needs (see Annex 2 for more detail on procurement).

#### **E. Social (including Safeguards)**

66. The proposed project will generate positive social impacts by identifying and bringing under treatment individuals with DS TB or DR TB. OP 4.10 (Indigenous Peoples) is triggered for the project since all of the project beneficiaries are Indigenous Peoples (IP). Due to the nature of the project, it is highly unlikely that IP could be negatively affected because of the project, aside from being excluded or unable to benefit from its activities. The intended beneficiaries of this project number in excess of 400,000 and therefore consultation will occur at the time of medical screening. As the relevant elements



of an Indigenous Peoples Plan (IPP) will be integrated into project design and the COEP, a stand-alone IPP has not been prepared.

67. The primary safeguard instrument is the COEP, which has been prepared by the NDOH. The COEP was disclosed on the NDOH website on October 14, 2016 and disclosed on the World Bank external website on October 24, 2016. The COEP includes a section on project communications, specifically outlining how the NDOH will ensure project information is effectively conveyed to all people in the project locations, including IP, to ensure equal access to project activities. The COEP also includes a Consultation Plan to document the required consultations with relevant stakeholders, including the Port Moresby General Hospital, the Daru General Hospital, and the BMUs in each province.

68. The project will involve minor physical works for placement of container laboratories for medical analysis at existing health facilities. These laboratories will be placed on government land only, in keeping with the requirements of PNG National Law and land acquisition or resettlement is not expected. The COEP will also address the health and safety of workers, including those involved in minor physical works, and the specialists involved in the implementation of the project. Due to the minimal nature of construction work on the project, it is unlikely that any serious risks will be posed to construction workers.

#### **F. Environment (including Safeguards)**

69. The project is unlikely to cause any adverse environmental impacts and has been categorized as Category B under OP 4.01 (Environmental Assessment). The COEP will be the safeguard instrument used to address all potential environmental impacts.

70. The project will produce potentially hazardous medical wastes, in the form of syringes, cotton swabs, and so on. These wastes could pose a risk to implementation teams, health workers, and communities if not handled or disposed of properly. This has been addressed in the COEP. Similarly, the project may involve chemicals or forms of medication for patients that could have adverse environmental impacts if not stored or disposed of correctly.

71. PNG has various laws in relation to the management of hazardous wastes and the current protocol involves incinerating medical waste in private incineration facilities near the Port Moresby General Hospital. The COEP outlines these procedures and include how waste will be transferred to the facility; the safeguards specialist on the project will work with the NDOH to ensure these procedures meet national regulations and World Bank requirements.

72. The installation of container laboratories will involve minor physical works, which cause negligible impact. Temporary, site-specific environmental impacts (soil erosion, dust, and noise) will be mitigated through application of the COEP.

#### **G. Other Safeguard Policies:**

73. No other safeguard policies are triggered for the project.

#### **H. World Bank Grievance Redress**



74. Communities and individuals who believe that they are adversely affected by a WB-supported Project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the WB Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org).



**VII. RESULTS FRAMEWORK AND MONITORING**

**Results Framework**

**COUNTRY : Papua New Guinea  
Emergency Tuberculosis Project**

**Project Development Objectives**

To Improve the quality and expand the coverage and utilization of health services to control the spread of tuberculosis in targeted areas of Papua New Guinea by strengthening programmatic management of tuberculosis.

**Project Development Objective Indicators**

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
<b>Name:</b> Number of people receiving tuberculosis treatment in accordance with the national guidelines (NCD)		Number	6169.00	7100.00	Annual	Baseline: 2014 Annual Report.  Ongoing: NTP recording tools, including Health Information System (HIS), and reports.	NTP
<b>Description:</b> Number of TB cases registered annually and receiving treatment in accordance with the national guidelines in NCD. (core indicator).							



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
<b>Name:</b> Number of people receiving tuberculosis treatment in accordance with the national guidelines (Daru/South Fly District, Western Province)		Number	1659.00	1900.00	Annual	Baseline: 2014 Annual Report.  Ongoing: NTP recording tools, including HIS and reports.	NTP
Description: Number of TB cases registered annually and receiving treatment in accordance with the national guidelines in Western Province. (core indicator).							
<b>Name:</b> The proportion of TB patients who have received drug-sensitivity testing (DST) (NCD)		Percentage	20.00	80.00	Annual	Baseline: 2014 Annual Report.  Ongoing: NTP recording tools, including HIS and reports.	NTP
Description: Numerator: Number of sputum positive patients who have received DST in NCD. Denominator: Number of sputum positive patients who started TB treatment in NCD.							
<b>Name:</b> The proportion of TB patients who have received DST (Daru/South Fly		Percentage	41.00	80.00	Annual	Baseline: 2014 Annual Report.	NTP





Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
District, Western Province)						Ongoing: NTP recording tools, including HIS and reports.	
<p><b>Description:</b> Numerator: Number of sputum positive patients who have received DST in Western Province. Denominator: Number of sputum positive patients who started TB treatment in Western Province.</p>							
<b>Name:</b> TB treatment success rate for DS TB (NCD)		Percentage	56.00	85.00	Annual	Baseline: NCD TB Program.  Ongoing: NTP recording tools, including HIS and reports.	NTP
<p><b>Description:</b> Number of smear- positive pulmonary TB cases registered annually in NCD that were cured and/ or completed treatment successfully. <b>Denominator:</b> Total number of new smear-positive pulmonary TB cases registered in NCD annually.</p> <p>*Note: cured = smear negative at the end of the treatment; completed treatment successfully= those who took all the doses thus complete the treatment successfully but there may be no data about smear at the end of the treatment (no sample at all or delay in the lab report)</p>							
<b>Name:</b> TB treatment success rate for DS TB (Daru/South Fly District, Western Province)		Percentage	71.00	85.00	Annual	Baseline: Western Province TB Program.  Ongoing: NTP recording	NTP



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
						tools, including HIS and reports.	
<p><b>Description:</b> Numerator: Number of smear- positive pulmonary TB cases registered annually in Western Province that were cured and/ or completed treatment successfully.</p> <p>Denominator: Total number of new smear-positive pulmonary TB cases registered in Western Province annually.</p>							
<b>Name:</b> TB treatment success rate for DR TB (NCD)		Percentage	44.00	75.00	Annual	Baseline: 2014 Annual Report.  Ongoing: NTP recording tools, including HIS and reports.	NTP
<p><b>Description:</b> Numerator: Number of culture positive TB cases registered annually in NCD that were cured and/ or completed treatment.</p> <p>Denominator: Total number of culture positive TB cases registered annually in NCD.</p> <p>*Note: Cured = Culture negative at the end of the treatment; Completed = those who took all the doses thus complete the treatment but there is no data about culture at the end of the treatment (no sample at all or delay in the lab report).</p>							
<b>Name:</b> TB treatment success rate for DR TB (Daru/South)		Percentage	49.00	75.00	Annual	Baseline: 2014 Annual	NTP



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Fly District, Western Province)						Report.  Ongoing: NTP recording tools including HIS and reports.	
<p>Description: Numerator: Number of culture positive TB cases registered annually in Western Province that were cured and/ or completed treatment.</p> <p>Denominator: Total number of culture positive TB cases registered annually in Western Province.</p>							
<b>Name:</b> TB treatment success rate for DR TB for females (NCD)		Percentage	0.00	75.00	Annual	Baseline: Unknown.  Ongoing: NTP recording tools including HIS and reports.	NTP.
<p>Description: Numerator: Number of culture positive female TB cases registered annually in NCD that were cured and/ or completed treatment.</p> <p>Denominator: Total number of culture positive female TB cases registered annually in NCD.</p>							
<b>Name:</b> TB treatment success rate for DR TB for females (Daru/South Fly		Percentage	71.40	75.00	Annual	Baseline: Western Province TB Program.	NTP



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
District,Western Province)						Ongoing: NTP recording tools including HIS and reports.	
<p>Description: Numerator: Number of culture positive female TB cases registered annually in Western Province that were cured and/ or completed treatment.</p> <p>Denominator: Total number of culture positive female TB cases registered annually in Western Province.</p>							
<b>Name:</b> Number of BMUs where all clinical staff have been trained/ retrained on TB and DR TB (NCD & Western Province)		Number	0.00	20.00	Annual	Baseline: NCD - Unknown. Western Province - Western Province TB Program.  Ongoing: Provincial Reporting.	NTP
<p>Description: Number of BMUs where all clinical staff have been trained/ retrained on TB and DR TB in NCD.</p>							

**Intermediate Results Indicators**

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
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Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
<b>Name:</b> Population-based screening in Daru is complete		Yes/No	N	Y	Annual	Baseline: NTP  Ongoing: NTP.	NTP
<p><b>Description:</b> Population-based screening means screening of all the population (children and adults) living in the catchment area. All the persons participating in the population-based screening would have a diagnosis (TB or healthy) after the evaluation. Since diagnosis of TB is challenging in pediatric populations, the assessment of children will be done under close supervision by pediatric TB experts.</p>							
<b>Name:</b> Number of BMUs with functioning TB Smear microscopy (NCD & Western Province)		Number	12.00	20.00	Annual	Baseline: NCD & Western Province TB Programs.  Ongoing: Laboratory information system and support supervision reports.	NTP
<p><b>Description:</b> Number of BMUs with TB smear microscopy that are currently operational and in use and that have been serviced within the last 6 months.</p>							
<b>Name:</b> Number of BMUs with functioning Xpert MTB/Rif (NCD & Western Province)		Number	5.00	16.00	Annual	Baseline: NCD & Western Province TB Programs.  Ongoing: Laboratory Information System and support supervision reports.	NTP



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: Number of BMUs with functioning Xpert MTB/R.							
<b>Name:</b> Smear conversion rate among DS TB cases (by 2 months for new cases and 3 months for retreatment cases) (NCD)		Percentage	73.00	85.00	Annual	Baseline: NCD TB Program.  Ongoing: YR1 Provincial Data; YR2 onwards: HIS.	NTP
Description: Numerator: Number of smear positive TB cases registered annually in NCD who started DS TB treatment and are smear negative by 2 months for new cases and 3 months for retreatment cases (combined number).  Denominator: Number of smear positive TB cases registered annually in NCD who started DS TB treatment.							
<b>Name:</b> Smear conversion rate among DS TB cases (by 2 months for new cases and 3 months for retreatment cases) (Daru/South Fly District, Western Province)		Percentage	78.00	85.00	Annual	Baseline: Western Province TB Program.  Ongoing: YR1 Provincial Data; YR2 onwards: HIS.	NTP
Description: Numerator: Number of smear positive TB cases registered annually in Western Province who started DS TB treatment and are smear negative by 2 months for new cases and 3 months for retreatment cases (combined number).							



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Denominator: Number of smear positive TB cases registered annually in Western Province who started DS TB treatment.							
<b>Name:</b> Culture conversion rate among DR TB cases (At 6 months for normal course and 4 months for shorter course) (NCD)		Percentage	0.00	75.00	Annual	Baseline: Unknown.  Ongoing: YR1 Provincial Data; YR2 onwards: HIS.	NTP
<p><b>Description:</b> Numerator: Number of culture positive TB cases registered annually in NCD who started DR TB treatment and are culture negative at 6 months for normal course and 4 months for shorter course.</p> <p>Denominator: Number of culture positive TB cases registered annually in NCD who started DS TB treatment.</p>							
<b>Name:</b> Culture conversion rate among DR TB cases (At 6 months for normal course and 4 months for shorter course) (Daru/South Fly District,Western Province)		Percentage	65.00	75.00	Annual	Baseline: Western Province TB Program and WHO TB Unit.  Ongoing: YR1 Provincial Data; YR2 onwards: HIS.	NTP
<p><b>Description:</b> Numerator: Number of culture positive TB cases registered annually in Western Province who started DR TB treatment and are culture negative at 6 months for normal course and 4 months for shorter course.</p> <p>Denominator: Number of culture positive TB cases registered annually in Western Province who started DS TB treatment.</p>							



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
<b>Name:</b> A reduction in lost to follow up of DS TB patients (NCD)		Percentage	10.00	4.00	Annual	Baseline: NCD TB Program.  Ongoing: YR1 Provincial Data; YR2 onwards: HIS.	NTP
<p><b>Description:</b> Numerator: Number of DS TB patients on treatment who abandoned the treatment in NCD. Denominator: Number of DS TB patients who started treatment in NCD.</p>							
<b>Name:</b> A reduction in lost to follow up of DS TB patients (Daru/South Fly District, Western Province)		Percentage	15.00	6.00	Annual	Baseline: Western Province TB Program.  Ongoing: YR1 Provincial Data; YR2 onwards: HIS.	NTP
<p><b>Description:</b> Numerator: Number of DS TB patients on treatment who abandoned the treatment in Western Province. Denominator: Number of DS TB patients who started treatment in Western Province.</p>							
<b>Name:</b> A reduction in lost to follow up of DR TB patients (NCD)		Percentage	12.00	5.00	Annual	Baseline: NCD TB Program.  Ongoing: YR1 Provincial Data; YR2 onwards: HIS.	NTP





Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
<p>Description: Numerator: Number of DR TB patients on treatment who abandoned the treatment in NCD.  Denominator: Number of DR TB patients who started treatment in NCD.  *Note an indicator is not listed for the reduction in lost to follow up for Western Province as it currently sits at zero. This will however be monitored and reported on.</p>							
<b>Name:</b> Number (cumulative) of DR TB patients on shorter regimen (NCD & Western Province)		Number	0.00	400.00	Annual	Baseline: WHO TB Unit.  Ongoing: HIS.	NTP
<p>Description: Number (cumulative) of patients who started shorter DR regimen in NCD.</p>							
<b>Name:</b> Timely delivery of annual report compiled by NTP		Yes/No	N	Y	Annual	Baseline: WHO TB Unit.  Ongoing: Provincial Reporting.	NTP
<p>Description: Annual report delivered by agreed date.  (agreed time still to be discussed/determined with NDOH).</p>							
<b>Name:</b> The conduction of semi-annual review meeting which involves TB development partners and government agencies to review the progress and		Yes/No	N	Y	Annual	Ongoing: NTP.	NTP



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
make the consolidated, integrated work plan and budget							
<p><b>Description:</b> The conduction of semi-annual review meeting which involves TB development partners and key government agencies to review the progress and make the consolidated, integrated work plan and budget.</p>							
<b>Name:</b> Citizens and/or communities involved in planning/implementation/evaluation of development programs		Yes/No	N	Y	Annual	Ongoing: NCD and Western Province TB Program.	NTP
<p><b>Description:</b></p>							
<b>Name:</b> Project-supported organization(s) publishing reports containing information on feedback received from citizens and/or communities and if/how this feedback has been used		Yes/No	N	Y	Annual	Ongoing: NCD and Western Province TB program	NTP
<p><b>Description:</b></p>							

**Target Values****Project Development Objective Indicators**

Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
Number of people receiving tuberculosis treatment in accordance with the national guidelines (NCD)	6169.00	6500.00	6800.00	7100.00	7100.00	7100.00
Number of people receiving tuberculosis treatment in accordance with the national guidelines (Daru/South Fly District, Western Province)	1659.00	1750.00	1825.00	1900.00	1900.00	1900.00
The proportion of TB patients who have received drug-sensitivity testing (DST) (NCD)	20.00	40.00	50.00	70.00	80.00	80.00
The proportion of TB patients who have received DST (Daru/South Fly District, Western Province)	41.00	50.00	60.00	70.00	80.00	80.00
TB treatment success rate for DS TB (NCD)	56.00	77.00	80.00	83.00	85.00	85.00
TB treatment success rate for DS TB (Daru/South Fly District, Western Province)	71.00	77.00	80.00	83.00	85.00	85.00
TB treatment success rate for DR TB (NCD)	44.00			70.00	75.00	75.00
TB treatment success rate for DR TB (Daru/South Fly District, Western Province)	49.00			70.00	75.00	75.00



Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
TB treatment success rate for DR TB for females (NCD)	0.00			70.00	75.00	75.00
TB treatment success rate for DR TB for females (Daru/South Fly District, Western Province)	71.40			72.00	75.00	75.00
Number of BMUs where all clinical staff have been trained/ retrained on TB and DR TB (NCD & Western Province)	0.00	6.00	13.00	20.00		20.00

**Intermediate Results Indicators**

Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
Population-based screening in Daru is complete	N	N	Y	Y	Y	Y
Number of BMUs with functioning TB Smear microscopy (NCD & Western Province)	12.00	16.00	16.00	18.00	20.00	20.00
Number of BMUs with functioning Xpert MTB/Rif (NCD & Western Province)	5.00	12.00	14.00	16.00	16.00	16.00
Smear conversion rate among DS TB cases (by 2 months for new cases and 3 months for retreatment cases) (NCD)	73.00	75.00	78.00	83.00	85.00	85.00
Smear conversion rate among DS TB cases (by 2 months for new cases and 3 months for retreatment cases) (Daru/South Fly)	78.00	80.00	82.00	85.00		85.00



Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
District, Western Province)						
Culture conversion rate among DR TB cases (At 6 months for normal course and 4 months for shorter course) (NCD)	0.00	65.00	70.00	73.00	75.00	75.00
Culture conversion rate among DR TB cases (At 6 months for normal course and 4 months for shorter course) (Daru/South Fly District, Western Province)	65.00	68.00	70.00	73.00	75.00	75.00
A reduction in lost to follow up of DS TB patients (NCD)	10.00	8.00	6.40	5.00	4.00	4.00
A reduction in lost to follow up of DS TB patients (Daru/South Fly District, Western Province)	15.00	12.00	9.60	7.70	6.00	6.00
A reduction in lost to follow up of DR TB patients (NCD)	12.00	9.60	7.70	6.00	5.00	5.00
Number (cumulative) of DR TB patients on shorter regimen (NCD & Western Province)	0.00	0.00	100.00	225.00	400.00	400.00
Timely delivery of annual report compiled by NTP	N	Y	Y	Y	Y	Y
The conduction of semi-annual review meeting which involves TB development partners and government agencies to review the progress and make the consolidated, integrated work	N	Y	Y	Y	Y	Y



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Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
plan and budget						
Citizens and/or communities involved in planning/implementation/evaluation of development programs	N					Y
Project-supported organization(s) publishing reports containing information on feedback received from citizens and/or communities and if/how this feedback has been used	N	N	Y	Y	Y	Y

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## **ANNEX 1: DETAILED PROJECT DESCRIPTION**

### **COUNTRY : Papua New Guinea Emergency Tuberculosis Project**

1. The support envisaged through the IDA financing takes into consideration the strategies developed for addressing TB and DR TB in PNG, findings from the rGLC, and ongoing support provided by the partners and will aim to scale up/replicate existing successful programs. The financing will focus primarily on supporting activities under the Western Province TB strategy and the NCD TB strategy, which are deemed critical but not currently being financed. The project will also support some key inputs required centrally to contribute toward effectively controlling TB, such as laboratory equipment for analysis and development of an electronic recording and reporting mechanism.

2. Western Province's Health Authority has developed the Western Province TB Emergency Response Plan to respond to high rates of MDR TB. The plan seeks to establish a functional delivery system for TB health care by focusing initially on strengthening operations at the Daru General Hospital and then decentralizing health care operations to provide comprehensive community-based care. The plan includes an accelerated TB response strategy, which has established DART sites in Daru and South Fly District. Implementation of the plan began early in 2016 and has already improved the capacity and management of TB at Daru General Hospital. Introduction of the five DART sites has allowed patients to receive treatment closer to their homes, with meals provided to assist with nutrition and reduce the default rate. The plan recognizes that there are still many gaps in the current structure and implementation, in part due to human resource capacity constraints and predominately due to funding gaps or delays. The plan also seeks to strengthen the implementation of TB care and prevention in the Middle Fly and North Fly Districts through (a) improving governance and finance; (b) expanding and improving case management; (c) improving and monitoring infection control; (d) behavioral change and social mobilization; and (e) strengthening the recording and reporting system.

3. The NCD TB Strategic Plan, which was recently endorsed, sets out a broad range of key strategic targets and consists of four components: (a) advocacy and health promotion; (b) service delivery; (c) program support; and (d) coordination and oversight. The plan has divided the NCD into three key geographical areas, with each having a designated reference BMU site. In addition to improving the effectiveness of current services, the Plan envisages establishing Treatment Support Programs, two mobile clinics, and two roving pediatricians. The Treatment Supporter Posts will assist with administering the DOT, local advocacy, and health promotion activities.

4. The detailed project components are described below.

#### **Component 1: Early Detection of Active Tuberculosis Patients**

5. Early and accurate diagnosis of TB, both DS and DR cases, is a prerequisite for reducing transmission of the disease. There are often significant time lags between when a person starts experiencing symptoms, when he or she first seeks care, and when he or she is accurately diagnosed. The delay between the onset of symptoms and receipt of effective treatment is a time when patients can infect others in their households, workplaces, or communities. Screening for TB supports early case



detection, which will increase the number of TB patients receiving timely and effective care and thereby reduce transmission in the community.

6. The IDA Credit will finance the implementation of ACF strategies, which are currently under implementation in parts of Western Province and the NCD. Financing will be provided for the procurement of diagnostic medical devices, consumables, technical assistance, and other eligible expenditures deemed necessary for early detection of active TB patients.

*Subcomponent 1.1: Supporting Population-based TB Screening in Daru Island*

7. The 2016 rGLC has recommended immediate population-based screenings for Daru Island, with chest x-ray, followed by GeneXpert for confirmatory diagnosis for those with abnormal x-ray findings. Population-based screening means screening the entire population living in the catchment area, Daru Island in this case. At the end of the screening, it will be possible to place every individual on the island in one of two categories—TB or non-TB. As the diagnosis of pediatric TB is challenging, the assessment of children will be done under close supervision by pediatric TB experts. The decision to recommend the screening of the entire population was based on the high prevalence of DR TB cases and the evidence that a significant share of these cases were developed through primary contact instead of failed treatments.<sup>21</sup>

8. Implementing population-based screening requires diagnostic medical equipment, consumables, and skilled and dedicated human resources. The NDOH has authorized the procurement of a mobile van equipped with digital x-ray and other diagnostic equipment to carry out ACF. To complement this, two GeneXpert machines and 2,000 cartridges have been donated by USAID. The IDA Credit will finance the coordinating and monitoring technical assistance and manpower needed to implement the population-based screening. Financing will contribute to operational costs associated with ACF as well.

*Subcomponent 1.2: Supporting Systematic Screening for Active TB in Other Targeted Areas*

9. The project will also finance systematic screening for TB in other targeted areas. Unlike Daru, where a population-based screening approach is being employed to cover all residents of the island, in other targeted areas screening will be through contact tracing and by targeting specific risk groups. Contact tracing is a process by which all relevant contacts of an identified TB patient, in particular, other household members or coworkers, are contacted and screened for exposure to the bacteria. In addition, specific populations who are under heightened risk for TB, such as people living with HIV, and/or people in highly congested settlement areas<sup>22</sup> may also be screened. The NCD has developed a plan aimed at making the NCD free of TB and the project will finance aspects of screening approaches documented under this plan. The project will finance the procurement and operation of two mobile clinics, equipped with x-ray and other diagnostic equipment, and staffed with at least a community health

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<sup>21</sup> About 50 percent of MDR TB cases in Daru did not have a previous history of TB treatment, indicating that transmission of the MDR TB strains was through primary transmission (that is, contracting it through contact in the community).

<sup>22</sup> In other country contexts, high prevalence rates of DR TB have been found in prison populations or among mine workers, and hence targeted screening has been used for such specific population groups.





worker, health educator, and driver. The mobile clinics will focus on TB case finding and detection and provide support to BMUs and the Treatment Support Program.<sup>23</sup>

*Subcomponent 1.3: Strengthen the Health System Diagnostic Capacity*

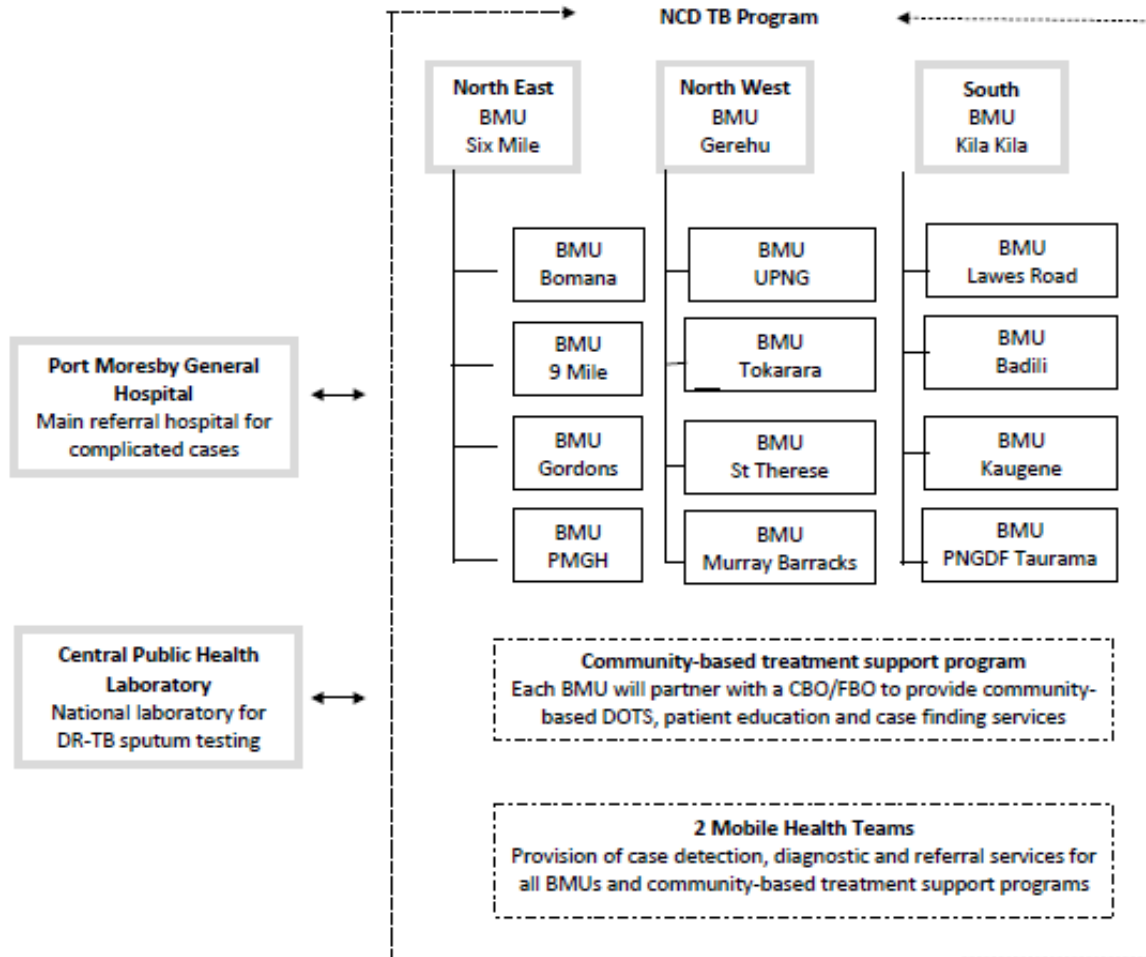
10. This subcomponent aims to expand the diagnostic capacity for the detection of DS and DR TB by strengthening capacities of the CPHL and BMUs for improved diagnostic capability that would make the screening, identification, and treatment of TB easier. Having more accessible and faster diagnosis will enable active TB patients to be enrolled for treatment as early as possible and potentially lead to improved treatment outcomes while concurrently lowering the risks of transmission to other members within the household, workplace, or community. The improvements made under the project will allow for testing and confirmation of DS and DR TB, monitoring patient treatment progress, and testing for second-line drug resistance (XDR TB). Expansion of diagnostic capacity will be made through investments in the CPHL, with the purchase of a container laboratory for culture and molecular LPA analyses. The investment will also include contracting qualified professional and technical laboratory staff who will be trained and placed at central and local levels in the health sector.

11. Diagnostic capacity will also be established at the BMU level using GeneXpert and microscopy; this will necessitate investments of relevant medical equipment for the targeted BMUs. The BMU is the primary location for smear microscopy services and monitoring of DOT and treatment supporter programs in their geographical areas of responsibility. Each BMU has its own staffing structure which normally includes a TB/HIV officer, nursing officer, community health worker, and laboratory officer. Reference BMUs are more advanced BMUs which are able to offer GeneXpert and x-ray services and treatment for more complex cases of TB, such as DR-TB, childhood TB, and HIV/TB coinfection. The project will first focus on the 3 reference BMU sites and 12 BMUs in the NCD, as well as the 5 BMUs in Western Province. The project will provide the funding for purchasing a GeneXpert mycobacterium tuberculosis/rifampicin (MTB/Rif) for the NCD South Reference Site (BMU KilaKila), since the North East (Six Mile), and North West (Gerehu) Reference Sites already have GeneXpert MTB/Rif; the three reference sites will also be provided with x-ray capacity. The other 12 BMUs in NCD will be supported to ensure that they are fully operational, maintained, staffed, and able to provide supervision of therapy and smear microscopy (see Figure 1.1 for the structure of the NCD TB Program).

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<sup>23</sup> The Treatment Support Program is part of the NCD TB Strategic Plan 2016–2020 and aims at implementing DOT at the BMU and community level through the hiring of treatment supporters and implementation of the nutrition program.

Figure 1.1. NCD TB Program Structure



## Component 2: Effective Treatment of Drug-susceptible and Drug-resistant Tuberculosis Patients

12. In May 2016, the WHO updated the treatment guidelines for DR TB and included a recommendation on the use of a shorter DR TB regimen. The composition of the TB drugs includes four to six months of Kanamycin (Km)-Moxifloxacin (Mfx)-Prothionamide (Pto)-Clofazimine (Cfz)-Pyrazinamide (Z)-High dose of Isoniazid (H) and Ethambutol (E) plus five months of Mfx-Cfz-Z-E. The duration of the treatment will be 9–12 months, with less side effects, improved patient outcomes, and the cost of the drugs will be less than US\$1,000 per patient. The project would support the effective treatment of both DS and DR TB patients including the new regimen through two subcomponents.



*Subcomponent 2.1: Improving Clinical Management of DS and DR TB*

13. The project will strengthen the treatment capacity across the BMUs in Western Province and the NCD. Financing will be provided to support assurance of early diagnosis and effective treatment of DS and DR TB by strengthening capacity across all the BMUs in the target areas. In particular, the complexity of DR TB diagnosis and treatment requires increased human resources, as well as necessary training of health staff at both the BMU and central levels. Processes and operating procedures, informed by existing implementation experience, will need to be developed. The smear conversion rate among DS TB cases will be used as an interim indicator at the end of the second month of treatment and as a final indicator at the end of the treatment to determine whether the patient should be considered cured or not. The culture conversion rate among DR TB will be used as an interim indicator at the end of the sixth month of DR treatment and as the final indicator at the end of the treatment to determine whether the patient should be considered cured or not.

14. Using the LPA laboratory container (financed under Subcomponent 1.3) will allow for the diagnosis of XDR TB cases and determining if the TB patient will be eligible for the shorter DR TB regimen. The project will provide the funding for technical assistance and training to health workers on diagnosis and effective treatment of TB patients, particularly the implementation of the shorter regimen to treat MDR TB patients. If there is a financing gap, the project will finance the procurement of TB medicines, particularly the second-line antibiotics for the shorter DR TB regimen.

*Subcomponent 2.2: Strengthen the Directly Observed Treatment Implementation and Reduce the Loss of Follow up of Patients in the BMUs*

15. The project will finance a program of activities at BMUs in the target areas designed to strengthen the implementation of patient adherence to DOT by DS and DR TB patients, including provision of treatment support to patients. The provision of treatment support, including nutrition support, is one of the strategies being used to increase patients' adherence to the TB treatment. DOT and nutritional support will be provided at the community level along with regular follow-up and monitoring from the BMU. In addition, capacity at the local health level, will be bolstered to improve TB control measures and improve the treatment follow-up rates.

16. The project will provide financial resources for the operation and expansion of five DART sites. The capacity of DART needs to be expanded as a result of the increased demand from the TB ACF. The primary goal of DART, currently operating in Daru by World Vision in close cooperation with the provincial health office and all TB partners operating in Western Province, is to increase case notification, implement DOT, and improve treatment success. The project will also finance similar programs proposed for the rest of South Fly District, and in North Fly and Middle Fly Districts to implement DOT and increase their treatment success rate.

17. For activities in NCD, the project will provide financial resources to set up and implement Treatment Supporter Posts, which will require financing of human sources, food vouchers, and technical assistance. Treatment Supporter Posts will be established in 'hotspot' communities and assist with the administering of DOT, local advocacy, and health promotion activities. Improved access to TB treatment will significantly decrease loss to follow-up, with staff at the posts having easier access to



patients to ensure their compliance with the treatment protocols. The posts will also allow for contact tracing to occur with ease in their areas of operation.

*Subcomponent 2.3: Supporting Social Mobilization in Targeted Areas*

18. As part of the holistic approach in Daru, the MAD for TB was established to improve the involvement of the community, as well as the public and private sector in TB/HIV prevention, diagnosis, and care. Community-level disease prevention efforts are being used to increase community awareness about TB, TB prevention measures, and TB treatment options. The MAD for TB was created by representatives from a variety of stakeholders which includes the communities, churches, schools, business houses, other NGOs, and public offices. The coordinator for the ERT assisted with the finalization of Terms of Reference to guide their plans and actions. Most of their activities have been geared toward TB awareness within their spheres, which was highlighted during the national World TB Day celebration MAD organized and participated in. In Middle and North Fly Districts, existing ACSM activities reach communities and villages, educating and mobilizing them to support the implementation of the strategy for Western Province. However, a model similar to that in Daru will be formed in Middle and North Fly Districts for communities to champion the fight against TB.

19. The just-approved NCD TB Strategy includes a provision for ACSM activities which proposes developing an appropriate medium for different stakeholders to be shared at advocacy meetings with local and political leaders. Community awareness campaigns will be undertaken where materials which have been developed for this purpose will be disseminated. Community-based organizations and faith-based organizations will also be encouraged to participate in treatment support activities in the NCD. The creation of multisector partnerships is envisaged, where partnering will take place not only with the business sector, but also with private health providers. In both target areas, because ACSM will be a major part of the activities of these community-based groups, training in TB will be provided for them to disseminate accurate information during health patrols and community events conducted at the provincial, district, or community level.

**Component 3: Strengthen the Government Systems for Managing its Health Services Delivery and Tuberculosis Response**

*20. Subcomponent 3.1: Strengthen the Government's Systems for Managing its Health Services Delivery and Tuberculosis Response at NTP and Decentralized Levels*

21. The project will finance analytical work and studies to help identify where the Government should focus efforts and resources to obtain maximum returns of improved health services delivery and inform potential follow-on investments.

22. The project will implement activities designed to strengthen the capacity of the NTP to execute the NSP including supporting management activities for the NTP, training and development of NTP staff, providing technical assistance to the NTP, and coordinating TB response activities with DP financing and program implementation. The project will provide, under Subcomponent 2.1, technical assistance and staff training for Western Province and the NCD to implement their respective strategies.



23. The overall capacity of the NTP urgently needs to be strengthened; of the five positions in the NTP, currently only two are filled. The IDA financing will strengthen the NTP management, including technical support for developing strategies as well as fulfilling management functions. Areas which will require strengthening include: (a) advocacy at the central level; (b) donor support coordination and partnership collaboration; (c) policy formulation and guideline development; (d) M&E; (e) mentoring and training health workers for clinical diagnosis and laboratory work; and (f) the capacity to coordinate and monitor procurement and FM and implement safeguards. The project will finance the recruitment of qualified consultants with the following skills: strategy formulation and review, information technology, M&E, and quality assurance. In addition, the project will finance capacity building at the provincial and district levels through the provision of technical staff and TB emergency response training.

*Subcomponent 3.2: Build and Strengthen the Electronic TB Information System*

24. Recording and reporting are key components of a TB control program. In PNG, laboratory registers and TB registers are being used at the BMU level. Paper-based quarterly aggregated reports on case detection, treatment outcome, and other programmatic data are sent from all BMUs to the provincial and the central level of the NTP. At the central level, data are entered into an Excel database and analyzed manually, as needed. For DR TB, a PMDT treatment register is being used at the BMU level where DR TB patients are diagnosed and treated. Semiannual reports on detection and enrollment and an annual report of treatment outcomes are sent from BMUs (currently the focus is on hotspot areas—Daru, NCD, and Gulf Province) to the provincial and central level. Information systems on DR TB patients are usually composed of several additional distinct parts, which require collecting data from different sources and processing that data into interpretable indicators for management and treatment decision making. In Daru General Hospital, in addition to the paper-based PMDT treatment register, various Excel-based forms are maintained for this purpose. Though the current system is functional to a certain extent, it hampers the timely recording and tracking of DR TB patients, thereby hampering the ability to make effective treatment decisions.

25. As patient numbers increase, the heavy demands for data management make an electronic system essential. Very often electronic patient records are based on the content of the treatment card or the Second-line TB Treatment Register. Once such individual patient records are entered into a system, the generation of indicators becomes easier. Information quality also improves as checks can easily be programmed at the time of data entry or at a later phase; this reduces transcription and computation errors. A comprehensive electronic tool (such as eTB manager), which will assist in case management and in recording and reporting, needs to be in place to strengthen the program. The formulation of an electronic information system on TB can facilitate (a) the standardization of patient data for registration; (b) assignment of appropriate treatment regimens; (c) monitoring of detection, patient enrollment, and treatment outcomes over time; and (d) surveillance of DR TB. It is imperative that the TB electronic registry system is in place and compatible with the NHIS.

26. The project will support financing the development and piloting of an electronic TB recording and reporting system to facilitate case management and TB M&E in the targeted area. This will require the procurement of necessary goods (tablets and computers), technical assistance, as well as the training of health workers on the use and implementation of the electronic information system both at the BMU level and the NTP. The proposed electronic database for this project will include the following



safeguards to ensure the safety and confidentiality of patient information: (a) guidelines for the entry and access of personal medical information; (b) secure access control (with different levels of access permissions for different people/roles within the system); and (c) robust audit/access tracking capability which records each time a patient record has been accessed, who accessed it, and what they did. These requirements will be included in the Terms of Reference for the design of the system as well as the Project Operation Manual.

*Subcomponent 3.3: Support to Project Management*

27. The project will carry out a program of activities designed to support management of the project, including project coordination, and M&E of the project. Lessons learned during the implementation of the project will be shared. Ongoing monitoring of performance and results will rely on the existing reporting system as well as the electronic information system as it develops. The project will solicit support for operational research, and stand-alone evaluations of the various strategies, will provide lessons from the implementation. This is particularly relevant and important in the ethnically, culturally, and geographically diverse context of PNG. The component will also finance the preparation of the necessary and required reporting documents from project implementation and the operational (including contracted PMU fiduciary staff) and recurrent costs for project implementation and monitoring (including audits) that will not be incurred in the absence of the project.



## ANNEX 2: IMPLEMENTATION ARRANGEMENTS

### COUNTRY : Papua New Guinea Emergency Tuberculosis Project

#### Project Institutional and Implementation Arrangements

1. The project is expected to be implemented over a five-year period, with effectiveness expected on December 1, 2017 and the closing date on June 30, 2022. The US\$15 million IDA-financed credit aims to address some of the main challenges of the TB epidemic in the targeted areas in PNG.<sup>24</sup> Efforts to address TB will require concerted and coordinated participation from a wide range of stakeholders. By complementing the Government's contributions and investments from other DPs, the three components will support activities in the target areas mainly to (a) promote early detection of active TB patients (Component 1); (b) provide effective treatment of DS and DR TB (Component 2); and (c) strengthen the government system to manage the TB response (Component 3). Given the need for a coordinated response against the spread of DS and DR TB across the country; the fragile situation of the country; and the intention of the Government to continue and/or expand successfully implemented interventions in areas with high rates of DR TB, a number of different implementation modalities were explored. These deliberations were held not only with the NDOH and other government stakeholders, but also with DPs<sup>25</sup> to gain their implementation experience.

2. **Oversight responsibility.** The oversight responsibility for project activities and results will rest with the deputy secretary of the NHSS section of the NDOH, where the DCSD is located. The NTP is the unit under the DCSD responsible for implementing the 2015–2020 NSP, coordinating TB efforts, liaising with DPs supporting those efforts, and monitoring implementation of the NSP. Relevant sections within the NDOH from Medical Standards (Curative Standards and Audits and Health Facility Standards) and Public Health (DCSD, Environmental Health, CPHL, and Health Promotion), as well as provincial and district level managers and staff in the target areas will also support implementation of the project. The roles and responsibilities of many of these sections are clearly articulated in the NSP. Guidance and support for fiduciary oversight within the NDOH rests with the Corporate Services and National Health Planning and Policy section, which has not managed a World Bank project in more than 10 years and, for that reason, the project will count on specific arrangements to be implemented as outlined in the following paragraphs, and detailed in the Project Operational Manual (POM).

3. **Stakeholders' coordination to implement the TB response.** This project supports the GoPNG's strategies to control the TB epidemic in the country. Although it is an IDA-specific financing, it shall not be seen as an isolated project, but as part of an overarching government program that counts on the collaboration of several DPs. The ERT will be the main instrument for stakeholders' coordination to implement the TB response in PNG. The ERT was established in August 2014 due to the urgency placed by both the Government and DPs on mounting a coordinated response to maximize efficiency and the attendant interaction necessary from both a technical and operational perspective to implement the TB

<sup>24</sup> Western Province (including Daru) and the NCD.

<sup>25</sup> During project preparation, meetings were held with the DFAT, WHO, UNOPS, United Nations Development Program, United Nations Children's Fund, World Vision, Health and HIV Implementation Services Providers, and the Asian Development Bank (ADB).





response. The ERT is cochaired by the deputy secretary of the NHSS and WHO's representative and has the purpose of deliberating on and monitoring TB activities throughout the country, with a focus on the three identified 'hotspots' (Western Province [including Daru], Gulf Provinces, and the NCD). It initially met on a monthly or as needed basis, and meetings are now being held every two months.

4. To strengthen the ERT's coordination role, it may be required to expand or revise its Terms of Reference to (a) organize semiannual reviews by relevant stakeholders; (b) consolidate information on DPs' financing in support of the NSP to ensure efforts and financing are not duplicated in this endeavor; (c) jointly agree on the annual budget and financing plan and respective implementation mechanisms; and (d) include representatives from central agencies, as discussions will involve budget and financing. Specifically on the semiannual reviews, they will serve as a forum to (a) assess progress on implementation; (b) assess the capacity of the NDOH to take on increasing responsibility for implementation of the NSP as the emergency response in the target sites takes hold; (c) assess the overall TB implementation cost, budget, and financing gaps and inform potential needs for the following budget year before the NDOH's annual budget submission; and (d) agree on the priorities of implementation and coordination plans for the first six months or one year. Such an approach will provide lessons in the event there is an interest in moving toward an integrated platform for DPs who are also supporting other aspects of the health sector.

5. **Technical support and PMU.** Because the NTP currently has a number of vacant positions and based on the prominent role that the NTP is expected to play in the fight against TB, the project will, during the start-up period, finance consultants to fill key existing vacancies and provide for advisory services. From a technical point of view, it is expected that the following areas within the NTP will need to be strengthened: (a) advocacy at central-level agencies on the urgency to address the TB issues in the country; (b) coordinating donor support and strengthening partnership and collaboration among all the partners, which includes roles and responsibilities, continuity of care (timely replacement), and uniformity of technical approaches across the supporting agencies; (c) formulation of policy and development guidelines; (d) M&E; and (e) mentoring and training health workers for clinical diagnosis and laboratory work. It was expected that staff of the NTP will manage some of these aspects; however, the project will support the contracting of consultants to fill the current shortfall and promote in-house capacity, so that the needed positions can be later replaced by the NTP staff.

6. To support the day-to-day NSP implementation, as well as the project implementation specificities, a PMU will be established under the guidance of the project director (the deputy secretary of the NHSS). Initially, the PMU will require hiring (a) a procurement specialist to work with staff within the NDOH, with a view of carrying out necessary procurement (in particular contracting of necessary agencies/firms) to kick-start implementation of activities; (b) a project coordinator; (c) accountant; (d) finance officer; and (e) a part-time FM specialist. The key roles of the PMU include:

- (a) ensuring proper and timely implementation of project activities;
- (b) ensuring continuous knowledge transfer and strengthening of institutional capacity of NDOH staff;
- (c) supporting implementation of Component 3;





- (d) promoting a results-based culture, especially making sure project and NSP indicators are regularly tracked and can feed into policy and management decision making;
- (e) assisting in the preparation of terms of reference;
- (f) assisting the NDOH in monitoring contracts under the project;
- (g) ensuring that procurement is carried out in the most expeditious manner, with technical input provided by relevant departments and/or in-country expertise in the relevant area being financed, following project rules;
- (h) presenting project progress and financial reports on a timely basis as required by the World Bank;
- (i) hosting and facilitating World Bank implementation review missions and working with the World Bank to optimize the operation's results and impact; and
- (j) disseminating results in such a manner as to strengthen reform constituencies and ensure the carrying out of reforms deriving from the implementation of the project or studies and recommendations.

7. **UN agencies.** At least two UN agencies have been identified to support project implementation of Components 1, 2, and 3—WHO and UNOPS. If necessary, other UN agencies may be identified during the project life cycle and brought on board to support implementation. Contracting of UN agencies will be done directly by the NDOH. A description of activities and their costs will be detailed in the terms of reference for each UN agency supporting project implementation. A legal Standard Agreement for World Bank-financed projects will govern the relationship between the UN agency and the NDOH.

8. WHO will be contracted to provide, among other things:

- (a) technical assistance to improve the capacity of the central and local governments to implement the TB strategies (Components 1, 2, and 3);
- (b) technical assistance to develop the protocol, training of human resources, and monitoring of the activities related to mass screening in Daru and ACF in the NCD (Component 1);
- (c) clinical training on TB patient management, particularly the implementation of short course regimen to treat MDR TB patients (Component 2); and
- (d) technical assistance for specification, development, implementation, and monitoring of the e-health module to track progress in the TB response (ensuring aspects of patient confidentiality are considered), as well as supervision and training on data interpretation during the system's implementation (Component 3).

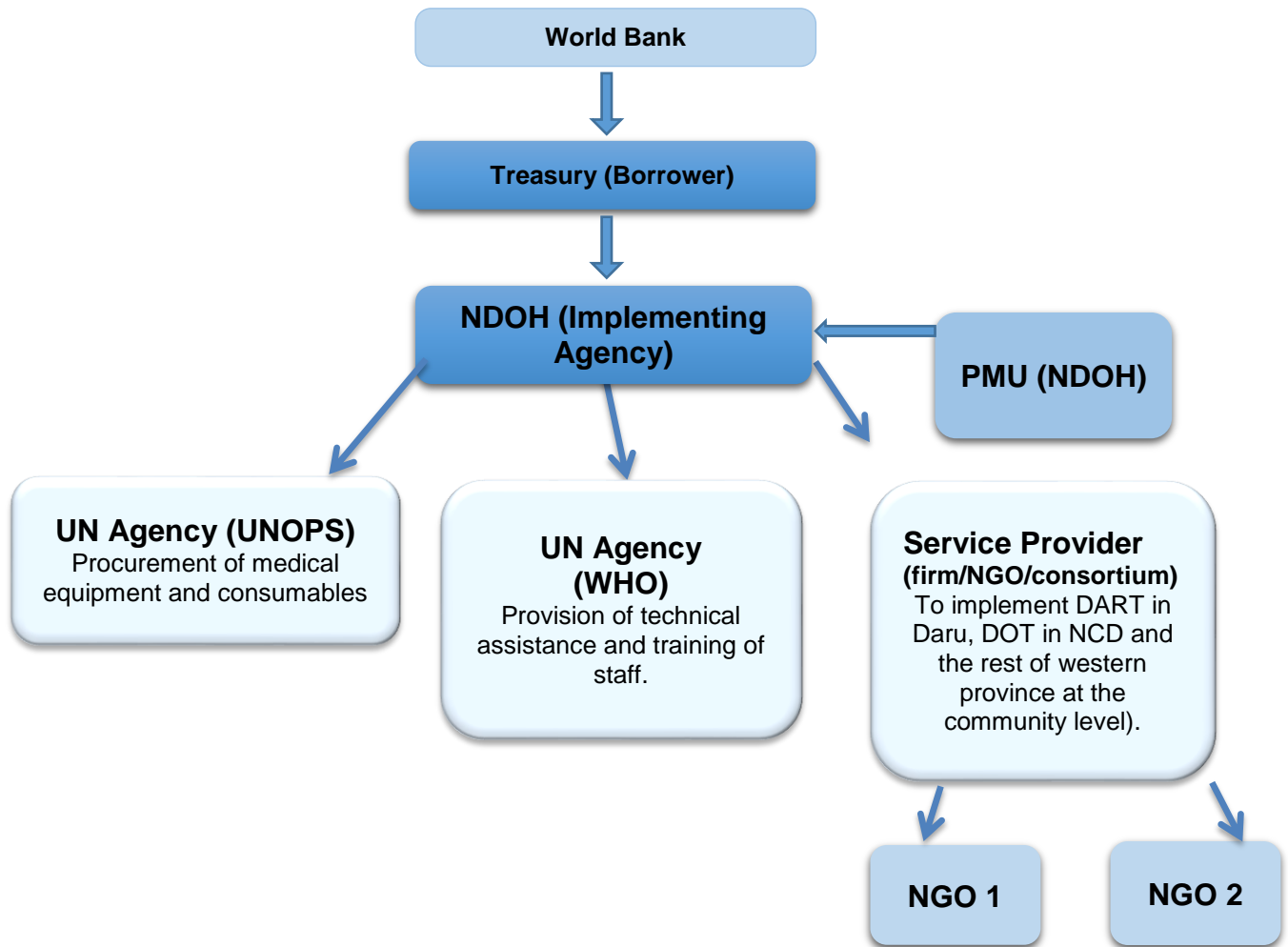
9. UNOPS will be contracted to provide medical equipment (LPA container laboratory, x-ray, diagnostic equipment, GeneXpert machine) and consumables (cartridges) and possibly TB drugs under Components 1 and 2 of the project.



10. **Service provider.** Direct selection of firms/organizations to implement decentralized activities under Components 2 and 3 will also be supported. This includes treatment support in DART, and DOT in the rest of Western Province and in the NCD. The selected firms/organizations will also be responsible for community and social mobilization. Such firms/organizations could also subcontract portions of the implementation to organizations currently implementing successful interventions on the ground to scale up or replicate in other areas.

11. **Additional support and flexibility.** Given the fragile situation of PNG, HEIS was included in the project design mainly to support the NDOH's hiring of consultants and contracting of UN agencies. HEIS is expected to be provided up to the first 6 months of implementation. The continued need for HEIS, and when to disengage from this support, will be reviewed during implementation. The use of a management firm to support the NDOH in project implementation may be a possibility if project implementation through a PMU does not produce the expected results. The need for such an approach will be assessed during project execution and implementation and revisited if needed.

**Figure 2.1. Implementation Arrangements**



## Financial Management

12. The scope of the work is set out in the World Bank Directive ‘Financial Management Manual for World Bank-Financed Investment Project Financing Operations’ issued by the vice president, OPCS on February 4, 2015 and as further elaborated on in the World Bank Guidance ‘Financial Management in World Bank-Financed Investment Operations’ issued by the director, Operations Risk Management, OPCS on February 24, 2015. Under the World Bank’s OP/BP 10.00 with respect to projects financed by the World Bank, the borrower and the project implementing agencies are required to maintain FM systems—including planning and budgeting, accounting, internal controls, funds flow, financial reporting, and auditing systems—adequate to ensure that they can provide to the World Bank accurate and timely information regarding project resources and expenditures. These arrangements are deemed acceptable if they are capable of correctly and completely recording all transactions and balances relating to the project. In addition, such arrangements are acceptable if they can facilitate the preparation of regular, timely, and reliable financial statements and safeguard the projects assets; and are subject to auditing arrangements acceptable to the World Bank.



13. **Overall assessment.** The existing FM systems are assessed as adequate to meet the FM requirements as stipulated in OP/BP 10.00. The project's overall FM risk is rated High.
14. **Budgeting.** A budget for the whole project will be required to be prepared, broken down by year and appropriate levels of detail (for example, component or category, whichever is deemed most relevant and useful). All donor-funded projects are to be included in the National Government Budget and annual budget submissions will be required.
15. **Counterpart funding.** The GoPNG is currently supporting the TB response through the procurement of drugs, as well as the provision of in-kind contributions (that is, staff costs, facilities, and so on), which have not yet been quantified. Given the interest in being able to accelerate implementation, retroactive financing will be made available to support eligible activities financed by the Government.
16. **Parallel/cofinancing.** DFAT is considering parallel and/or cofinancing. There is also consideration being given for other possible future donors to join the project. Cofinancing, if it proceeds, will be through a World Bank-administered single or multidonor trust fund, the latter to cater to the possibility of other donors joining the project in the future.
17. **Funds flow.** Funds will flow from the World Bank to GoPNG through (a) direct payments; (b) reimbursement of GoPNG expenditure; and (c) special commitments, if required (refer to disbursements section below for more details on disbursement arrangements).
18. **DA.** To mitigate risk factors, a DA is approved with a lower ceiling amount of approximately PGK 100,000–200,000 (US\$32,000-US\$64,000 equivalent) will enable the project to progress while limiting the exposure, hence acting as a further risk mitigating strategy. It is also recommended that the disbursement risk be High to force ex ante review of all withdrawal applications, to further add to risk mitigating strategies.
19. **Accounting and maintenance of accounting records.** All Government funds are bound by the Public Finances Management Act 1995 and the PNG Financial Management Manual. The GoPNG is currently implementing a new Integrated FM Information System (Finance One) and transitioning departments over from the old PNG Government Accounting System. The NDOH will use the relevant system to record accounting information. The NDOH and GoPNG operate on a cash basis of accounting. Accounting records are to be maintained by the NDOH and are to be made available to both auditors and the World Bank, as required.
20. **Internal controls (including internal audit).** The NDOH is bound by the Public Finances Management Act and PNG Financial Management Manual for its policies and procedures manual. The NDOH has an internal audit division and an audit committee. The project should be included in the annual internal audit plan for the NDOH and included in relevant reports to the Audit Committee.
21. **Periodic financial reporting.** Unaudited interim financial reports (IFRs) of the project will be prepared on a quarterly basis. The financial reports will include an analysis of actual expenditure for the current period, year to date, and the cumulative to date, plus outstanding commitments, compared against the total project budget. The format will be developed and agreed by the implementing agency



and the World Bank before the due date for the submission of the first IFRs. The IFRs will be forwarded to the World Bank within 45 days of the end of each calendar quarter.

22. **External audit.** An annual audit of the project financial statements will be required. The Auditor General’s Office of PNG is mandated to audit all Government funds. The auditor general requires annual financial statements to be prepared in accordance with International Public Sector Accounting Standards. The audited financial statements, audit report, and management letter must be received by the World Bank within six months of the end of the fiscal year and shall be made publicly available by the recipient in a manner acceptable to the World Bank according to the General Conditions of IDA Credits and Grants.

23. **FM Supervision Plan.** Table 2.1 shows the plan for supervision of the FM aspects of the project.

**Table 2.1. FM Supervision Plan**

FM activity	Frequency
<b>Desk reviews</b>	
Unaudited IFRs - review	Quarterly
Annual audit report - review	Annually
<b>On-site visits</b>	
Formal supervision	Semiannually initially, then annually based on risk and performance ratings
Monitoring of actions taken on issues highlighted in review of the IFRs and audit reports, auditors’ management letters, and other applicable reviews	As needed
Transaction reviews (if needed)	As needed basis, and in the case of any issue arising

24. **FM Action Plan.** A summary of the FM Action Plan is shown in Table 2.2.

**Table 2.2. FM Action Plan**

No.	Action	Date by which Action Required	Responsible
1	Prepare and agree on format of unaudited IFRs that will be used for quarterly reporting	Before the due date for the submission of the first IFR	The NDOH and World Bank FM specialist

**Disbursements**

25. The project could use the following disbursement methods: (a) direct payment; (b) reimbursement; and (c) special commitments. Direct payments will be used for the majority of payments due to the risks and issues identified by audit reports on incorrect use of project and donor funds. Reimbursement will only be used if the GoPNG funds were used for project expenses. Special commitments may be needed if goods are purchased from overseas. Disbursements will be against a list of payments and statements of expenditure. Required supporting documentation for disbursements will be outlined in the Disbursement Letter.



26. **Designated Account.** A DA with a very low ceiling of approximately PGK 100,000–200,000 will enable the project to progress while limiting the exposure, as a risk mitigating strategy. At the time of Board approval, the Recipient currently has a lapsed loan. No advances will be made to the Designated Account for the project until the lapsed loan is resolved.

Table 2.3. Eligible Expenditures

Category	Amount of the Credit Allocated (Expressed in USD)	Percentage of Expenditures to be Financed (Inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, operational costs, and training and workshops, for the project	15,000,000.00	100

Table 2.4. Funding Sources

Source	Amount (US\$, millions)	Share of Total (%)
World Bank - IDA Credit	15.00	100
<b>Total</b>	<b>15.00</b>	<b>100</b>

Procurement

27. **Institutional arrangement for procurement.** The NDOH will be the implementing agency of the project. A PMU will be established (staffed with a combination of NDOH staff and consultants to be employed) in the NDOH and is responsible for ensuring that the fiduciary aspects of the project are managed (procurement and FM). The PMU will also be responsible for building the capacity of the NTP to progressively take a more active role in the implementation of the project.

28. **Applicable procurement regulation.** Procurement for the proposed project will be carried out in accordance with the World Bank Procurement Regulations for IPF Borrowers (Borrowers Regulations), July 2016, and the provisions stipulated in the Financing Agreement.

29. **Procurement risk assessment.** A procurement risk assessment of the NDOH to implement procurement actions for the project was carried out and the overall procurement risk rating is High. The only World Bank project supporting the health sector broadly was approved in 1993 (Population and Family Health Project), which was extended beyond the original closing date in 1999 to 2003. The loan was parallel and cofinanced by the Australian Agency for International Development and the ADB. Findings from the completion report indicate that unfamiliarity with World Bank procurement procedures and restructuring within the implementing agency, as well as the GoPNG’s procurement requirements contributed to major delays. Consequently, the NDOH has no recent experience working with the World Bank and applying related policies and procedures. In addition, this will be the first project to be implemented in PNG under the New Procurement Framework. Thirdly, there is risk due to the complex and lengthy GoPNG procurement processes that need to be navigated. As this is an emergency operation being supported by the World Bank, every endeavor is being made to ensure the



procurement activities are packaged and prepared in such a way as to minimize the GoPNG approval timeframes. Even so, for larger procurements that exceed PGK 10 million (estimated at US\$3.16 million equivalent) the timeframe to approve will likely exceed 12 months.

30. The main procurement-related risks identified are
  - (a) corruption and bribery concerns in terms of internal controls within the department and broader context of the country;
  - (b) the Government does not have a functioning administrative system for handling of complaints and resolution of disputes during tendering or for contract management;
  - (c) few qualified suppliers/contractors in the market—limited competition needs security of supply at a good price;
  - (d) limited capacity of the NDOH staff on procurement and contract management;
  - (e) lack of knowledge and practice in application of the New Procurement Framework; and
  - (f) lengthy government approval processes.
  
31. The following mitigation measures are proposed:
  - (a) The PMU will be responsible for assisting the NDOH with all aspects of project implementation, including assisting with procurement. Accordingly, the PMU will need to provide dedicated procurement resourcing to ensure that all procurement activities are carried out in accordance with World Bank requirements under the New Procurement Regulations for IPF Borrowers.
  - (b) In supporting the NDOH to undertake procurement activities, the PMU will apply, wherever possible and appropriate, the Regional Guidance including simplified template documents in Making Procurement and Financial Management Work for Fragile and Small States in the Pacific, issued in January 2013 (modified July 2014).
  - (c) The PMU will apply the procurement procedures detailed in the POM and will develop detailed checklists to ensure consistent and compliant project procurement.
  - (d) The PMU will also develop a contract management system to ensure that all contracts under the project are effectively and efficiently managed; this will include the tracking of key contract milestones and performance indicators as well as capturing all procurement and contract records.
  - (e) Contracting of UN agencies to carry out aspects of the project, based on their technical capacity in the following areas: training and technical assistance relating to TB diagnosis and treatment, design of an electronic TB reporting and recording system, procurement of limited medical equipment, specialized equipment and consumables for use in case finding and treatment. The procurement of technical equipment and consumables is to include



requisite parts, warranty, and training in the equipment’s use.

- (f) One of the ways that is proposed to mitigate the risk of lengthy delays to project implementation is to include Direct Selection of UN Agencies in the Financing Agreement. This will also ensure that organizations that are uniquely qualified are able to be engaged in an efficient manner. This is particularly important as the GoPNG procurement systems do not allow for the direct/single-source selection, except following the declaration of an emergency (no such declarations have been made in PNG since independence).
- (g) The use of HEIS,<sup>26</sup> is expected during initial 6 months of implementation. The continued need for HEIS, and when to disengage from this support, will be reviewed during implementation.

32. **Procurement methods.** Table 2.5 and the subsequent paragraphs describe the various procurement methods to be used for activities financed by the proposed IDA Credit at the appraisal stage.

**Table 2.5. Procurement Methods**

Type of Procurement	Selection Methods
1. Goods (US\$5.2 million)	Medical testing equipment; consumables; TB medicines; and specialist vehicles
	Direct Selection: UN - According to paragraphs 6.47 and 6.48 of The World Bank Procurement Regulations for IPF Borrowers (July 2016).
2. Consulting Services (US\$4.0 million)	Training, coordinating the electronic recording and reporting information system, clinical capacity building at the frontlines and assisting policy development at the NDOH
	Direct Selection: UN - According to paragraphs 6.47 and 6.48 of The World Bank Procurement Regulations for IPF Borrowers (July, 2016).
3. Consulting Services (US\$3.8 million)	Managing the delivery of non-consulting services on the ground in the TB hotspots through specialist NGOs such as MSF, Burnet Institute, and World Vision
	Prequalification, Request for Bids
4. Consulting Services (US\$2million in total)	Individual consultants for the PMU, policy development; firms would be also considered
	Competitive selection by comparing qualifications

33. **Procurement of works.** Works are not envisaged at this stage.

34. **Procurement of goods.** Procurement of goods will include specialist medical testing equipment, specialist vehicles, and may include drugs in the event of a shortfall due to ACF—to be procured under arrangement with UNOPS (anticipated value US\$5.2 million).

35. **Procurement of non-consulting services.** This will include hiring a company to deliver non-consulting services on the ground in the TB hotspots. This service provider may subcontract to specialist

<sup>26</sup> The proposed HEIS is expected to be provided in the initial stage of project implementation. The support will focus on selection of individual consultants for the PMU and contracting WHO and UNOPS. The details of HEIS are included in the Memo for HEIS which was approved by Accredited Procurement Manager (APM) and Country Director (CD) dated October 12, 2016.





NGOs such as MSF, Burnet Institute, and/or World Vision, if necessary to be procured following an Initial Selection and Competitive Selection processes (anticipated value US\$3.8 million).

36. **Procurement of consulting services (firms and individuals).** Procurement of consulting services will be carried out in accordance with the World Bank Procurement Regulation for Investment Project Financing Borrowers. Activities to be financed include individual consultants to fulfil the role of the PMU. In addition, it is anticipated that a number of specialist individual consultants/ firms may need to be hired to either support efforts on the ground or to assist the Government with policy development (anticipated value US\$2 million). Consulting services also include the services of training, coordinating the electronic TB recording and reporting information system (including built in safeguards for patient confidentiality), clinical capacity building at the frontlines, which will be contracted to WHO through direct selection (anticipated value of US\$4.0 million).

37. **Frequency of procurement supervision.** In addition to the prior review to be carried out by the World Bank, supervision missions will be undertaken at least once per year. One in five procurement packages not subject to World Bank prior review will be examined ex post on an annual basis.

38. **Procurement Plan.** As this is an emergency situation, a draft Procurement Plan for the first 18 months has been prepared and will be finalized at project negotiations. Given the fluid situations on the ground, the Procurement Plan will be updated by the NDOH on an annual or as-needed basis to reflect actual project implementation need. Updating of the Procurement Plan will be done through the annual work plan which will be led by the NDOH and involve the key DPs which are active in TB.

## **Environmental and Social (including safeguards)**

### **Environmental Safeguards**

39. Environmental and infection control issues associated with this project are primarily related to the management of clinical and infectious waste materials generated from diagnostic and treatment services. The main types of waste likely to be generated by this project include human/biological waste (sputum), sharps (needles, glass slides, and so on), blister packs and packaging material, plastic residual (disposal syringes, cups, glasses, and so on), laboratory and general waste, and construction waste generated through the minor site works.

40. The potential wastes generated are well-defined, site-specific, and readily mitigated if managed in a systematic and sustained manner during service delivery activities. However, inadequate attention and poor management of infectious waste and airborne infection control can pose public health risks due to the infectious nature of TB.

41. The GoPNG response to the outbreak of MDR TB is primarily managed by the NDOH. The GoPNG has recognized the outbreak of MDR TB as an emergency and has accepted funding and technical assistance from donor partners. Current TB services are a part of the GoPNG's NSP (2015–2020).

42. The project has required the NDOH to produce a COEP. Due to the nature of the social and environmental impacts likely to be generated by the project, the project team determined that an Environmental and Social Management Framework was unnecessary, and a COEP would be sufficient in informing appropriate risk management and mitigation procedures. The COEP has been publically



disclosed on the NDOH website on October 14, 2016 and disclosed on the World Bank external website on October 24, 2016.

43. Monitoring mechanisms to review implementation of the COEP are institutionalized by way of periodic review missions and third-party assessments where feasible. Data will be collected on an ongoing basis from the BMUs, the reference BMUs, and the mobile clinics, to ensure proper management of clinical and infectious waste materials. During project implementation, it is likely that information materials and training modules based on the COEP will be sourced or produced and made available to the NDOH and the contracting agencies, if necessary. The NGOs engaged by the project are also likely to provide technical training and assistance to the BMUs to ensure they implement the requirements of the COEP.

44. Based on the findings of the Concept Phase Mission and Consultations, an Action Plan has been devised to inform project appraisal:

- (a) The World Bank will continue to support the NDOH in terms of the COEP.
- (b) The GoPNG will contract WHO to implement a portion of project activities and alternate NGOs to implement the remaining project activities. The NDOH will ensure the COEP is included in contractor bid documents.
- (c) The NDOH will continue to ensure that all relevant stakeholders are consulted on the COEP.

45. Any construction activities or physical works for treatment procedures, including the placement of containers on hospital grounds, will follow the relevant guidelines and procedures included in the COEP and will be closely monitored to ensure compliance.

46. The project has been classified as Category B in accordance with the World Bank Group's Operational Policy 4.01 (Environmental Assessment). The NDOH has had minimal exposure to the safeguard requirements of the World Bank and may require technical assistance to strengthen internal safeguard management capacity. Opportunities for improving the safeguards capacity of the NDOH will be considered during project appraisal and implementation.

### **Social Safeguards**

47. All project beneficiaries are considered IP. These IP must have equal access to TB testing and treatment, in line with the objective of the GoPNG of 'universal access to quality TB diagnosis and treatment'. An IPP has not been developed for this project, because all project beneficiaries are considered IP and they will be consulted at the time of medical screening.

48. **Consultations.** Stakeholder consultations have been carried out by the NDOH before project appraisal, to discuss the COEP. Consultations with affected people will occur at the time of medical screening, as discussed above. It is highly unlikely that project beneficiaries will be negatively affected by the safeguard components of this project, namely minor physical works and proper waste management and infection control, if managed correctly.



49. **Implementation structure.** The COEP will be implemented by the NDOH, and the contracting agencies, as well as by the BMUs and reference BMUs at the site level, and the mobile clinics.

50. **Disclosure.** The NDOH discloses relevant policies, guidelines, plans, and status reports on its website, including the COEP. The NDOH disclosed the COEP on October 14, 2016 and the World Bank disclosed the COEP on October 20, 2016.

51. **Grievance redress.** The grievance handling systems established by the NDOH will address grievances relating to the project, as well as the internal grievance redress systems of the contracting agencies. This is included in the COEP.

## Monitoring and Evaluation

52. The NDOH's overall M&E function rests with the M&E Unit under the Strategic Policy and Planning Management Division. The unit monitors 29 health indicators from the National Health Plan, including 2 TB-related indicators. The information is gathered through paper forms distributed to the health units and sent back to the NDOH on a monthly basis. Other additional indicators are monitored in parallel by other NDOH units according to their area of focus (that is, TB by the NTP, and so on). With donor support, the NDOH is currently establishing an E-Health integrated system in some provinces. To this end, a committee formed by the NDOH, DFAT, WHO, and the United Nations Children's Fund representatives was established to pursue the related activities. The feasibility of establishing an electronic-based system at the health facility level has been piloted in five provinces, with financing from the ADB, and evaluated in June 2016. The findings have led to discussions between the NDOH and partners (in particular DFAT and WHO) working in the health sector, around the financing and rolling out of this real-time monitoring system nationally.

53. The NTP, within the NDOH, is responsible for monitoring and reporting on more detailed TB-related indicators. It receives data from provinces, each of which have a TB program, with varying structures and levels of capacity. The NTP's role is to support the ability of provinces to collect and monitor data through training and follow-up supervision/management as well as collate the data into national figures. The NTP is also responsible to synthesize operational research and cross-fertilize the lessons learned from each province. The project through Component 3 will strengthen monitoring and reporting at both the provincial and national (NTP) level through the rollout of the E-Health system in all BMUs (by Year 3), assisting provinces' ability to capture the data and collate the provincial data, and the NTP's ability to collate the national data and report/disseminate it. Component 3 will also provide additional human resources to the NTP, ensuring the timeliness and completeness of data and the coordination and technical assistance when required for any aspect of the M&E of the program.

54. The reliability of health data in PNG is negatively affected by inconsistent approaches across provinces/facilities and incompleteness. However, in the project's targeted areas (the NCD and Western Province), TB data is perceived by stakeholders, such as WHO, as being reliable. This is due to strong supervision/management of TB programs in these areas by provincial coordinators and international NGOs and frequent reporting requirements of the ERT, where methodology/definitions are discussed and agreed upon. Data in targeted geographic areas will be further improved by the rollout of E-Health information systems to BMUs for TB case and laboratory management, noting this is an intermediate indicator of the project and thus considered a key deliverable. The end-project target for this indicator is E-Health information systems in all targeted area BMUs (15 in the NCD, 5 in Western Province).



55. The Results Framework includes one World Bank core indicator and TB indicators that are already being monitored by the NDOH, provincial TB programs, and DPs. Disaggregated data, while not reported on, is available. Additional indicators were included to capture the performance of activities being financed under Component 3. The team developed a definition for each indicator under the project, which is available in project files, and will be included in further detail in the POM. The results framework requires annual reporting on the indicators by the PMU. Many indicators are however currently reported on quarterly by the provinces and will continue to be. The PMU will flag any concerns with the data in quarterly indicators in progress reports.

56. The project will share lessons learned throughout project implementation. Lessons learned will be included in the Implementation Status and Results Report and Midterm Review.

### **Role of Partners**

57. Aside from the GoPNG's response to stopping TB, various stakeholders, including church-affiliated health service providers are actively involved. These efforts are augmented by a number of DPs which support these efforts either as financiers, implementers, or providers of technical assistance. Table 2.6 summarizes the roles of the main partners which are active in fighting TB in PNG.

58. **WHO.** As the lead technical agency, WHO provides overall technical guidance and assistance to the NTP. WHO cochairs the ERT meeting and (a) provides technical assistance at the national and provincial level; (b) assists with drafting and implementation of national strategies; and (c) coordinates development/implementing partners.

59. **DFAT.** The largest share of DP support is being financed by DFAT. Their financing supports health human resources strengthening, technical assistance, community engagement programs, infrastructure, as well as laboratory and supply chain assistance.

60. **The Global Fund.** The Global Fund's financing support on TB in PNG has been channeled primarily through a World Vision TB/Health Systems Strengthening grant (of which US\$4 million is for Health Systems Strengthening). The US\$18.45 million grant began on April 1, 2015 and will end on December 31, 2017.

61. **Burnet Institute.** Through financing from DFAT, Burnet Institute is providing technical guidance across all areas of the Western Province TB program to design a comprehensive model of care for TB services in Western Province. In addition, Burnet is building local capacity and strengthening health systems for implementation of the model of care.

62. **World Vision.** World Vision receives support from the Global Fund, which covers operations in the NCD and other parts of the country, that is, 28 of the 30 priority BMUs (excluding Daru and Kerema) across the country. Their activities are much broader than the DART operations as they support the NDOH in the respective BMUs working alongside our partners.

63. MSF provides support to the BMU at Gerehu Hospital in the NCD. In Gulf Province, it supports the in-patient department and BMU at Kerema General Hospital, as well as Malalaua and Ihu.



64. Oil Search Foundation is currently working in Gulf and Hela Provinces on TB-specific programming and is seeking to expand this to Southern Highlands Province. Oil Search Foundation provided a GeneXpert to Kerema General Hospital and has a medical officer in Hela Provincial Hospital who is now actively supporting the local TB BMU and community response. Oil Search Foundation has developed a TB strategy, aligned with the NTP, which includes scaling up technical, training, logistical, and advocacy support to local partners in its three Signature Program areas of support (Kikori District - Gulf; Nipa-Kutubu - Southern Highlands; Hela Province).

65. USAID, through FHI 360, has provided (a) 2 GeneXpert machines with 2,000 cartridges to support the Systematic Screening Initiative in Daru; (b) 85 courses of Bedaquiline for treatment of MDR TB cases; and (c) technical assistance to NTP in establishing a system for active drug safety monitoring and management including the development of a national Standard Operating Procedure and facilitating a national training on active drug safety monitoring and management and development of training curriculum and providing training in clinical guidelines on new drugs and regimen. Under the HIV program, FHI 360, with funding from USAID, is also providing technical assistance and implementing TB/HIV services. Five microscopes were recently procured to strengthen TB diagnosis in the NCD.

**Table 2.6. Roles of the Partners**

	<b>Financing (both in cash and in kind)</b>	<b>Implementation</b>	<b>Technical Assistance</b>
WHO			X
DFAT	X		
The Global Fund	X		
Burnet Institute		X	X
World Vision		X	
MSF	X	X	
Oil Search Foundation	X	X	
USAID FHI 360	X	X	X



## **ANNEX 3: IMPLEMENTATION SUPPORT PLAN**

**COUNTRY: Papua New Guinea**  
**Emergency Tuberculosis Project**

### **Strategy and Approach for Implementation Support**

1. The implementation support plan is based on the project's risk profile, the lessons learned from other TB projects, and from other projects involving a coordinated approach to supporting a national plan. It also draws upon the implementation experience from other sectors in PNG, since this will be the first support provided to the health sector since 1993. The approach is to provide implementation support that includes the participation and support of other partners, at a timing that fits in with any regularly scheduled reviews of the TB Program by existing mechanisms to encourage complementarity. The use of HEIS during project start-up and the uncertainty surrounding disengagement of this support has led to the staff week allocation for procurement staff being higher than might be needed in a project with such support.
2. The PMU, in consultation with the unit designated with responsibility for implementation of Component 3 of the Project, the World Bank, as well as other partners supporting the TB response (that is, DFAT, WHO, World Vision, USAID, MSF, Burnet Institute, and the Global Fund) determine the appropriate timing of semiannual reviews, taking into consideration availability of participants. Every effort will be made to ensure that the reviews by the World Bank coincide with existing mechanisms to evaluate the latest in-country situation and information is shared on lessons, successes, emerging needs, and other information relevant to the success of the World Bank support. Prior to the implementation support reviews, the PMU will have prepared, and shared with the World Bank, the semiannual review covering the previous six months, which will inform the review, along with any other information provided by the partners. Field visits will be undertaken to sites, including those supported by World Bank financing, to listen to the experiences of the implementers on the ground. The World Bank implementation review will also cover non-technical aspects of the support, including (a) FM; (b) procurement; (c) implementation arrangements; and (d) safeguards. Timing of any additional non-technical reviews will also be discussed and agreed upon with the NDOH. It is understood that, to the greatest extent possible, the World Bank team will accommodate any written request for 'as-needed' support for the project, including fiduciary aspects.
3. Each implementation review mission will produce a joint aide memoire that will be discussed at a wrap-up meeting to be chaired by the Department of National Planning and Monitoring. Such an aide memoire is envisaged to provide an overall view of the current situation relating to TB in the country and project implementation, with findings from the World Bank and any other partners who wish to include their support-specific sections, attached as annexes to the main text. Representatives from DPs, implementers, as well as relevant government departments will be invited to attend the wrap-up meetings. Any adjustment requiring more frequent reviews will be discussed, agreed upon, and documented in the aide memoire. If reviews relevant to TB are being conducted by DPs or other technical experts, the World Bank will be informed and afforded an opportunity to participate in such consultations/discussions.



4. The implementation support plan will be reviewed annually to ensure that it continues to meet the implementation support needs of the project. At either the halfway point of the project period, or when the funds are 50 percent disbursed, a ‘midterm’ review will be undertaken with a view to make any changes to the support, including any requirements necessitating restructuring which may be necessary based on the implementation experience and/or possible additional financing from other sources. The World Bank task team will work with the PMU and designated officials to clarify the requirements necessary to effect any changes. It is understood that any changes to the project that require amendments to the Financing Agreement will require a formal request from the Government’s signatory to the legal agreement.

5. Six months prior to the closing date of the project, the Government will commence preparation of its Implementation Completion and Results Report (ICR). The ICR author from the World Bank will participate in the final implementation review and gather the necessary information to prepare its ICR.

**Implementation Support Plan and Resource Requirements**

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Technical, implementation, and fiduciary	TB, operational, M&E, and fiduciary (FM, procurement, and safeguards)		Participate in semiannual reviews and provide technical input as relevant
12–48 months	Technical and fiduciary	TB, operational, M&E, and fiduciary (FM, procurement, and safeguards)		Participate in semiannual reviews and provide technical input as relevant
Other				

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task team leader	20 per year	2 per year	
Operations officer	20 per year	2 per year	
TB expert	2–4 per year	2 per year	
Procurement specialist	5 per year	2 per year	This is on the basis of using HEIS during the initial start-up; continued requirement at this



			level of support will be reviewed annually
FM specialist	4 per year	2 per year	
Environment specialist	1 per year	2 per year	
Other specialized health areas on an as needed basis	6 per year	2 per year	
M&E specialist	2 per year	1 per year	
Information technology specialist	2 per year	1 per year	

Partners

Name	Institution/Country	Role
DFAT	Australia	Funding
WHO	International	Technical advice
World Vision	International	Implementer
MSF	International	Implementer
Global Fund	International	Financier
USAID	United States	Funding
Burnet Institute	Australia	Implementer





## ANNEX 4: ECONOMIC ANALYSIS

### COUNTRY: Papua New Guinea Emergency Tuberculosis Project

1. The overall PDO is to improve the quality and expand the coverage and utilization of health services to control the spread of tuberculosis in targeted areas of Papua New Guinea by strengthening programmatic management of tuberculosis. The project will focus on target areas, scaling up/replicating existing successful programs, and supporting intervention efforts that are currently not funded but are deemed critical to control the epidemic. The following three components are important to achieving the proposed objective: (a) early detection efforts for active TB patients; (b) effective treatment programs for both DS and DR TB; and (c) a stronger government system to manage the TB response. The targeted areas were selected based on (a) underserved populations with a high burden of TB; (b) high incidence of poverty and TB; and (c) high incidence of MDR TB and XDR TB.

#### Project Development Impact

2. Treating TB is highly cost effective. Studies show that over 90 percent of TB cases can be cured with proper monitoring and high adherence to taking the full course of medicines with mortality reductions of about 60–70 percent (Vassall, n.d.). One study, which examined the economic costs and benefits of scaling up TB control in India between 1997 and 2006, concluded that the overall increase in economic well-being was valued at US\$88 billion for the 10-year period, and each dollar spent generated US\$115 worth of benefits.<sup>27</sup> The same study concluded that scaling up TB control resulted in a total health benefit of 29 million Disability Adjusted Life Years (DALYs) over the 10-year period, and 1.3 million deaths were averted.<sup>28</sup>

3. The project will contribute to saving health care costs related to treating TB by focusing on controlling the spread of DS and DR TB. One way in which the project will control the spread of DS and DR TB will be through improving case detection rates. This will be achieved by implementing ACF strategies, completing a mass population screening in Daru Island, the introduction of mobile clinics, and improved laboratory services at the local and national levels. WHO estimated that the number of MDR TB cases detected worldwide, represent only 41 percent of the global estimated cases and that the gaps are worse in the Western Pacific where the figures could be as low as 19 percent.<sup>29</sup> A systematic literature review, including 71 costings studies, found that the cost of treating DS TB placed an additional 33 percent burden on the providers. The study also found that the average cost of treating DS TB in LMICs was US\$273, versus US\$6,713 to treat MDR TB in LMICs (that is, almost 25 times the cost).<sup>30</sup> The introduction/piloting of the short course DR TB treatment will also contribute to savings in health care costs.

<sup>27</sup> Goodchild, M., Sahu, S., Wares, F., Shukla, RS., Chauhan LS., Floyd, K., et al. 2011. A cost-benefit analysis of scaling up tuberculosis control in India. *Int J Tuberc Lung Dis.* 2011 Mar; 15(3):358–362.

<sup>28</sup> Laxminarayan, R., Klein, E., Dye, C., Darley, S., Adeyi, O., et al. 2007. Economic Benefit of Tuberculosis Control. World Bank Policy Research Paper No. 4295.

<sup>29</sup> World Health Organization. Global TB Report, 2015.

[http://www.who.int/tb/publications/global\\_report/gtbr2015\\_executive\\_summary.pdf](http://www.who.int/tb/publications/global_report/gtbr2015_executive_summary.pdf)

<sup>30</sup> Laurence, YV., Griffiths, UK., Vassal, A., et al. 2015. Costs to Health Services and the Patient of Treating



4. The project will contribute to the reduction of morbidity and mortality by scaling up and improving access to and utilization of TB control services. This includes addressing service utilization barriers, such as indirect costs (for example, transport), geographical/access constraints, and quality concerns, through mobile clinics and improving services at BMUs. While PNG's results would be smaller than the results of the Indian study mentioned above, due to the different population size, TB still represents a substantial burden, attributed to 0.8 percent of all DALYs and 1.1 percent of all deaths (2013).<sup>31</sup> Therefore, improvements to the TB control programs will still generate significant reductions in DALYs and mortality.

5. The project will help PNG's TB control program to meet the global target success rates, 85 percent success rate for DS TB<sup>32</sup> and 75 percent success rate for DR TB.<sup>33</sup> The geographical targeted areas have significant room for improvement to meet global success rates. The current rates are as follows: (a) DS TB success rate of 56 percent (NCD) and 71 percent (Western Province); and (b) DR TB success rate (2013 cohort) of 44 percent (NCD) and 49 percent (Western Province).<sup>34</sup> Success rates are expected to improve due to improved diagnostic capacity, quality of services, and treatment support for DOT. These improvements will increase patients' access to treatment and staff capacity to follow up with patients. Improved patient follow-up will decrease the loss-to-follow-up numbers, which are currently DS TB 10 percent (NCD) and 15 percent (Western Province); DR 12 percent (NCD) and 0 percent (Western Province).<sup>35</sup> Success rates are also expected to improve through the introduction of a short-course DR treatment, which will reduce the length of treatment and thus the burden of TB treatment on patients. Last, improved laboratory services will ensure patients are prescribed the correct drug regimes.

6. The project will improve financial protection for families affected by TB. The TB burden disproportionately affects people of lower socioeconomic status. In PNG, the TB incidence, especially MDR TB and XDR TB, is concentrated in poor populations living in shanty-style settlements. Scaling up existing health systems and enhancing screening for TB will increase financial risk protection by reducing the incidence of catastrophic health expenditure among TB patients. Lonnroth et al. (2014) showed that high direct and indirect costs of care for TB patients limits access to treatment and leads to poor TB treatment outcomes, unrelenting TB transmission, and exacerbated poverty. These findings were confirmed by another study which found that 77 percent of TB patients were from households with a per capita income of less than US\$1 per day while the average cost for TB treatment to the patient was US\$145—around 50 percent of the annual per capita income (Pantoja et al. 2009). A systematic review of the financial burden of TB faced by patients and affected families, further shows that the mean total costs range from US\$55 to US\$8,198 across 40 studies conducted in LMICS, with an unweighted average of US\$847 and a median of US\$379 (Tanimura et al. 2014). Furthermore, total TB costs, on average, are equivalent to 58 percent and 39 percent of reported annual individual and household incomes,

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Tuberculosis: A Systematic Literature Review. *Pharmacoeconomics*. 2015; 33(9): 939–955.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4559093/>

<sup>31</sup> The Institute for Health Metrics and Evaluation. Global Burden of Disease Study.

<http://vizhub.healthdata.org/gbd-compare/>

<sup>32</sup> It is the same as the global TB target success rate for DS TB.

<sup>33</sup> World Health Organization. Global TB Report, 2015.

<sup>34</sup> PNG. 2014 Annual TB Report.

<sup>35</sup> Figures have been provided by provincial TB coordinators. NCD- Dr Niko Wuatai. WP- Dr Stenard Hiasihri.



respectively; 60 percent of these costs usually lead to income loss, particularly among poor people and those with MDR TB who incur a higher cost as a percentage of their income. Considering that the total cost of TB can be catastrophic, health care services should minimize financial risk while ideally at the same time provide suitable income replacement and other social protection interventions (Lonnroth et al. 2014; Tanimura et al. 2014).

7. The project will improve labor force participation and productivity of TB patients. Statistics shows that the majority of TB patients are in the most economically active age group (15–45 years) in PNG. Project-supported early detection and effective treatment efforts will significantly reduce sick leave and improve productivity once the disease is controlled. This is especially the case if the short regimen for MDR TB is implemented under the project. The project will also prevent further spread of disease in workplaces and communities and from the current TB hotspots into other provinces.

8. Overall, this pro-poor project will promote equity and shared prosperity by targeting geographic areas with high burdens of TB in PNG and address service utilization barriers which have traditionally hindered TB prevention and treatment outcomes. The project will facilitate improvements in technical and allocative efficiency by rolling out a harmonized package of services for TB prevention, control, and treatment

### **Cost-benefit Analysis for the Project**

9. A cost-benefit analysis was conducted focusing on selected benefits to determine whether the expected benefits outweigh the costs of the project. To estimate the benefits, life years rather than quality-adjusted life years (QALYs) and DALYs were used. This means that the analysis only considers mortality and does not consider the quality of life of patients living with TB, which can be measured through QALYs and DALYs. Life years saved rather than QALYs and DALYs were chosen because (a) life years saved is a transparent method for measuring population health and there are few value choices involved; and (b) QALYs and DALYs are complex metrics which are much harder to measure and track over time. They require definition and assignment of weights to consider the Health-Related Quality of Life after the intervention. The emphasis on mortality is also justified by empirical evidence, which shows that the burden of disability and suffering captured in a DALY is relatively smaller than mortality in low-income countries (Jha et al. 2015).

10. The analysis uses GDP per capita data, number of reported TB cases in Western Province and the NCD, TB mortality rates, and medical costs associated with TB. To calculate the costs and expected benefits from the project, a number of assumptions and empirical evidence were used to estimate the effect on TB morbidity, mortality, and medical savings from intervention. This includes the incidence of MDR and XDR TB; and case detection and treatment rates, days lost at work, and productivity information. The assumptions are detailed in paragraphs 12 to 19.

11. From the known number of all DS TB patients that were hospitalized in Western Province (35 patients), the proportion of all DS TB patients was applied to figures for the NCD. This proportion was also applied for projections through 2020.

12. The measure for lost output is GDP per capita (US\$1,533 in 2016 through to US\$1,604 in 2020). Although measures of GDP per employed are available, the GDP per capita is favoured due to the large



proportion of the workforce that are in the informal sector and are hence not calculated in GDP per employed estimates. Furthermore, due to a lack of age disaggregated data, a corollary is that the number of working age individuals with TB is not available.

13. Workdays lost before and after treatment are estimated at 48 and 35, respectively. This is derived from Rajeswari et al. (1999) who found that 83 workdays are lost due to TB in India. It is assumed that if the individual is hospitalized, then the time out of the workforce is the summation of the average time preceding treatment (48 workdays which are translated into calendar days) plus the average length of stay in hospital.

14. All diagnosed MDR TB and XDR TB individuals are admitted to hospital.

15. The average yearly growth rates in TB over the years 2008–2013 (approximately 34 percent) are applied to 2016 figures to produce business-as-usual projections through to 2020 for DS TB and DR TB. The intervention scenario uses a reduction rate in line with the UN's MDGs, which targeted for a 50 percent reduction in TB over the 1990–2015 period (this amounts to a yearly incidence proportion of approximately 0.97 of the year previous, equivalent to an approximately 2.8 percent yearly incidence decrease).

16. The XDR TB rate is consistently assumed to be 9.7 percent of the MDR TB cases.

17. The most recent, albeit unofficial, incidence numbers of MDR TB for 2015 are 150 cases in Western Province and 50 cases in the NCD. A sensitivity analysis has been conducted using official 2014 estimates from the NTP Annual Report, 2014.

18. The mortality burden of TB assumes that for each death averted, each individual lives on to at least the end of our period of analysis (that is, beyond 2020), and does not die from some other cause. Thus, a life saved in one year would contribute to productivity gains to all years left in the analysis period (maximum of five). This will produce a conservative estimate of the economic burden of mortality as the average TB death age in PNG is 49 years, while life expectancy at birth is 63. (Institute for Health Metrics and Evaluation Global Burden of Disease interactive tool, 2013; UN Population Division 2015). Based on data from the NCD and Western Province, the DS TB mortality rate is assumed at 2.1 percent; MDR TB mortality rate is assumed at 22 percent; and XDR TB mortality is assumed at 50 percent.<sup>36</sup>

19. A person, who dies from TB, does so at the start of the year.

20. Using the assumptions above, the benefits of the proposed TB project were calculated based on both deaths and income loss averted to produce the productivity gained from mortality, morbidity, and

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<sup>36</sup> The mortality rate for DS-TB. Western Province: 2.1 percent (2013), 2.2 percent (Q1, 2014 cohort), source ERT report August 2015; Peru: 1.7 percent (between 2000–2012) <http://journals.plos.org/plosone/article/figure/image?size=medium&id=info:doi/10.1371/journal.pone.0119332.t001>; the mortality rate for MDR TB: NCD: 22 percent (2014); Western Province: 35.7 percent (2011), 10.3 percent (2012), source ERT report August 2015. Peru: 18.6 percent (between 2000–2012) <http://journals.plos.org/plosone/article/figure/image?size=medium&id=info:doi/10.1371/journal.pone.0119332.t001>



medical costs averted. These gains are found by taking the difference in burdens under two scenarios: the first is a business-as-usual model, which represents the situation in which current TB incidence growth continues; the second is the intervention scenario, representative of how the TB epidemic could be controlled. All potential gains from interventions are estimated by taking the difference in burdens between the two scenarios.

21. To calculate productivity gained from intervention two forms of gains were estimated, the productivity gained from death aversion, as well as the aversion of labor loss due to morbidity. The use of GDP per capita produces more conservative productivity gain estimates as TB is disproportionately found among the most economically active age group (15–45) in PNG. The mortality incidence is multiplied by the GDP per capita for a given year as well as the GDP per capita of each year in analysis. This means a death in 2016 would contribute five years of burden to the analysis, while a death in the year 2020 would contribute just one year. Calculating the morbidity burden involved multiplying the GDP per capita by the average proportion of calendar days that an individual is out of the workforce in a year. This proportion of the year differs depending on whether the individual was hospitalised. Approximately 2.1 percent of DS TB patients and all MDR TB and XDR TB individuals are assumed to be hospitalised.

22. The medical costs associated with TB consist of expenditures on hospital bed days, DOT and clinical review visits, pathology costs, x-rays, sputum smears, and pharmaceutical costs. The per unit costs for x-rays, sputum smears, and pathology as well as the average number of tests required per patient are provided by Daru hospital in Western Province. Of the medical costs, the biggest savings that can be found is in the avoidance of bed days in hospital.

23. The overall economic analysis for the regional TB Project (table 4.1) shows high benefits relative to costs. The benefit-cost ratio is estimated at 14.29:1, which implies that for every US\$1 invested through the project, there is a yield of US\$14.29. The present value of the benefits and costs are calculated at a 3 percent discount rate, the standard rate used in cost-benefit analysis in the health sector (WHO 2003). It should also be understood that costs and benefits represent total entities and not incremental benefits of TB control from baseline.



**Table 4.1. Cost-benefit Analysis Results**

	Benefit/Cost US\$	2016	2017	2018	2019	2020
<b>Discount factor</b>		1.00	0.97	0.94	0.92	0.89
<b>Productivity gains</b>						
From deaths averted		493,825	920,995	1,217,877	1,282,310	954,335
Productivity gain from work-day loss averted		1,465,347	3,439,715	6,109,352	9,728,525	14,518,262
<b>Discounted stream of productivity gains</b>						
Mortality		493,825	894,170	1,147,966	1,173,495	847,914
Morbidity		1,465,347	3,339,530	5,758,650	8,902,979	12,899,288
Total		1,959,172	4,233,699	6,906,616	10,076,474	13,747,202
PV benefits - Productivity gains (A)	36,923,164					
<b>Medical cost aversion</b>						
Medical cost total		7,398,409	17,649,546	30,820,448	48,514,154	72,353,669
Discounted stream		7,398,409	17,135,481	29,051,228	44,397,323	64,285,298
PV benefits - medical cost aversion (B)	162,267,738					
<b>Total PV benefit due to project intervention</b>						
A+B	199,190,902					
<b>Monetary Costs</b>						
Project funds (US\$)	15,000,000					
Fund disbursement			3,750,000	3,750,000	3,750,000	3,750,000
Discounted stream			3,640,777	3,534,735	3,431,781	3,331,826
PV of cost (US\$)	13,939,119					
Net present value	185,251,783					
Benefit-cost ratio	14.29					

24. Considering that the project will use intensified diagnosis and focus on reducing MDR TB and XDR TB, it is presumed that this project will be very beneficial as shown by a 14.29:1 benefit-cost ratio. Vassall (2014) showed that the benefit-cost ratio for diagnosis and treatment of TB, based on current screening practices, is in the range of 11:1 to 192:1. Very conservative assumptions were used to estimate the impact of this regional TB project leading to underestimation of the total economic and social benefits. For example, economic benefits of increased life years of saved children before they become active in the labour force are not included and family care costs, transport costs, and income tax loss were ignored. In addition, productivity that would accrue from deaths averted beyond the years of analysis are not included.

25. Furthermore, welfare gains from reduced poverty or improved equity are not included even though the relationship between TB and poverty is well established. TB deaths averted can contribute to restoring physical capacity to work, while the costs of seeking and accessing care during illness can be reduced. The analysis also assumes that there are no new advances in TB diagnosis and treatment. However, during the duration of the TB project, new technologies may be discovered, which could further shorten diagnosis and treatment with positive benefits. On the other hand, the analysis may have underestimated the costs of strengthening and expanding TB services through a broader health systems approach. Most studies used in the analysis tackle TB control interventions from a disease perspective but rapid scale-up of TB control may require broader health system investments. Many other benefits are also excluded because they cannot be measured or translated to monetary value easily, for example, efficiency improvement. Therefore, the result of this analysis should be interpreted as an underestimation of the return of this project given the fact that it does not include all expected benefits.



26. Though the values of the variables used to calculate the benefit-cost ratio were based on the most probable forecast, these variables can be influenced by a number of factors during project implementation. Therefore, various sensitivity analyses (Table 4.2) were used to assess the risks that the project may face during its tenure. The first step was to identify variables that could influence the project’s aggregate costs and net benefits. Sensitivity tests were then conducted on a range of individual parameters that are critical to the project, quantifying the effects of variations on the project’s costs and benefits and ultimately on the benefit-cost ratio. Based on the sensitivity analyses, the model was found sensitive to variations in the following parameters on morbidity, TB growth rates, costs, and benefits: (a) discount rate; (b) the rate of growth in TB under both scenarios; (c) project costs (funding); (d) an alternative source of MDR TB incidence numbers; and (e) altering the average number of days a TB infected individual is withdrawn from the workforce. The sensitivity tests show strong benefits relative to costs of the overall TB project and that project objectives will still be achieved if certain assumptions do not, or only partly, occur. The large economic benefits (benefit-cost ratios ranging from 4.5:1 to 15.7:1) are mainly due to the number of bed days, using the plausible assumption that each death averted provides considerable welfare gains (discounted at either 3 percent or 5 percent).

**Table 4.2. Sensitivity Analysis on Variations on Morbidity, TB Growth, Costs, and Benefits**

Situation	Variable/Scenario	Cost/Benefit Ratio at 3% Discount Rate	Cost/Benefit Ratio at 5% Discount Rate
1.	Baseline scenario	14.4	14.3
2.	Projected growth in yearly TB incidence under the business-as-usual scenario halved (~17%) in comparison to the baseline scenario (34%)	6.2	6.1
3.	Projected reduction rate in TB incidence under the intervention scenario (~2.8%) changed to no reduction that is, incidence held constant	13.7	13.6
4.	Projected reduction rate in TB incidence under the intervention scenario (~2.8%) changed to an average 10% yearly growth	10.9	10.8
5.	Combination of situation 2 and 3	5.5	5.5
6.	A 50% increase in project costs (funding)	9.6	9.5
7.	Using MDR TB values from Tuberculosis Control Program Annual Report 2014 in place of unofficial 2015 values	17.2	17.1
8.	Number of days out of workforce before treatment due to morbidity changed to Zambia average (12.5 work days) <sup>37</sup>	12.5	12.4

**Financial Sustainability**

<sup>37</sup> Needham and Godfrey-Faussett 1996.

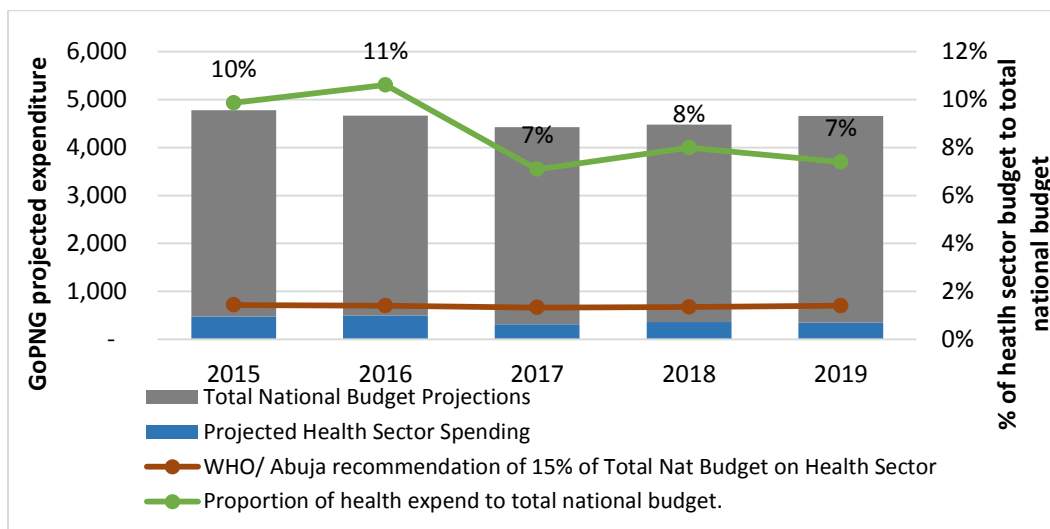


27. While sustainability is always an important consideration in any operation, it is important to recognize that the immediate concern of the proposed project is to establish measures that can halt the spread of the TB epidemic in PNG. At this point, expediency of the proposed project perhaps trumps concerns of sustainability, given the importance of bringing the epidemic under control. However, strengthening of the basic health services to face the epidemic, as well as of institutional arrangements at the NDOH level, is expected to build some of the foundation needed for continued improvements.

28. That being said, the long-term financial sustainability of this project needs to be carefully assessed. Figure 4.1 provides a summary of projected financing to the health sector over the medium term from 2015 to 2019, in line with the 2016 budget. The projections for 2017 and beyond have been reduced due to the expected discontinuation of the Provincial Support Improvement Programme funding to hospital infrastructure and also incorporates a reduction in DP support.

29. Several criteria will need to be met for sustainability to be achieved under this budget situation. These include, among other things, (a) sustained recurrent financing to support service delivery; (b) establishing the needed mechanisms for service delivery; and (c) ensuring that the needed human resource capacity is in place. It is not likely that these sustainability conditions will be met by the GoPNG in the time frame of the proposed project. However, waiting for the necessary conditions to be met before assisting the GoPNG in tackling this epidemic will be a graver mistake because of the potential harm it could do to individuals, families, and the communities in which they live.

**Figure 4.1. GoPNG Health Sector Projections (US\$)**



Source: Government of PNG 2016 National Budget Book, Volume 1: Economic and Development Policies.

30. Sustainability concerns are brought to the forefront through the proposed project by ensuring that it is fully aligned with GoPNG’s strategy on TB. Furthermore, the project supports the GoPNG to strengthen domestic capacities to handle this crisis in the medium to long term. In the short term, external partners will not only be needed to support and finance anti-TB programs, they will also be needed to boost frontline service delivery using external and international partners. Systematic screening of TB patients and enrollment in treatment regimens will require capacity building at the grass





roots level for screening, diagnosis, notification, and treatment. Given the highly algorithmic nature of TB treatment, capacities built will support program sustainability.

31. The project will also contribute to improving the financial sustainability of the program. First, the project will finance capacity building of laboratory capabilities in PNG across various levels of health facilities, including the CPHL. This will significantly reduce laboratory costs, which currently includes the export of all samples to Brisbane for culture analysis. The strengthened laboratory network will also improve the diagnosis and treatment of other diseases. Second, on the advice of the rGLC mission, it is likely that the GoPNG will shift treatment of DR TB to a shorter regimen. The shorter regimen will reduce treatment time for DR TB patients from 18–24 months to 9–12 months. This will have a significant impact on the per patient treatment cost and hence contribute toward the financial sustainability of TB treatment in PNG.

### **Is Public Sector Provision or Financing the Appropriate Vehicle?**

32. There are a number of broad rationales for government provision of TB services.

33. First, the public sector plays an essential role in both health financing and health services delivery in PNG. Government spending accounted for over 80 percent of total health spending in 2014.<sup>38</sup> Health services are mostly provided by public health facilities and the Christian health services, which are also heavily subsidized by the public sector.

34. Second, the development objective to improve TB patient health outcomes and financial protection is consistent with government objectives and strategies. As evidenced by the MDGs, the UHC, and the Sustainable Development Goals, as well as numerous other international and national declarations, policies and strategies, improved health outcomes, as well as, increasingly, protection from impoverishment due to spending on health care, are important public policy and development objectives in themselves, meriting government intervention and resources. The GoPNG agrees with this and is committed to improving health care service delivery for ‘the rural majority and the urban disadvantaged’<sup>39</sup> and ensuring more equitable access to services. Aligned to this, the GoPNG has a Free Primary Health Care and Subsidized Specialist Policy, which includes a commitment to provide free access to TB treatment.

35. Third, there are large positive externalities to control a potentially fatal infectious disease such as TB through government intervention. TB symptoms (coughing, fever, and fatigue) might not lead patients to actively seek care; but infected TB patients may continue spreading disease in the community. Government intervention, particularly on ACF, will benefit society by early diagnosis and timely treatment. Adherence to an antibiotic protocol is the key for effective treatment. However, leaving this practice entirely to patients often results in the discontinuation of medicines, which may pose further risks and increase the likelihood of MDR TB. Yet, government intervention, through community engagement and treatment support programs, can largely increase the patient follow-up rate and ensure that patients take antibiotics on a daily basis. Thus, government intervention is required

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<sup>38</sup> World Health Accounts.

<sup>39</sup> NDOH (National Department of Health). 2014. Free Primary Health Care and Subsidized Specialist Treatment Policy, Papua New Guinea. [http://www.health.gov.pg/publications/FPHCSSSP\\_2014.pdf](http://www.health.gov.pg/publications/FPHCSSSP_2014.pdf)



for positive externalities to materialize and to prevent and mitigate the negative externalities of poor quality of TB care.

36. Fourth, reducing the health and financial burdens of TB on the poor requires government intervention and resources. TB is widely considered to be a disease of poverty, associated with crowding and poor living conditions. At the same time, the poorest have the greatest difficulty in accessing treatment due to both direct costs, if any, and indirect costs associated with transportation and wage losses. To advance equity objectives, the government can intervene and provide free TB care to patients, as well as provide food subsidy or vouchers to TB patients. Subsidies and vouchers not only serve as incentives for patients to comply with the treatment but also aim to improve the quantity and quality of food received by the TB families.

37. Fifth, the government will need to align TB prevention with other national priorities. For example, PNG will host the upcoming Asia Pacific Economic Cooperation meeting in 2018. Over 20,000 attendees will arrive in the NCD to participate in the event. The NCD has been declared as the most 'important TB hotspot: it has five times the national average TB case notification, representing 25 percent of the total TB caseload'<sup>40</sup> and is one of the identified hotspots for MDR TB and XDR TB cases. Government intervention will be essential to bring the TB epidemic under control in the NCD.

#### **Why Should the World Bank get Involved and What is the World Bank's Value-add?**

38. Improved TB control in PNG will contribute to the eventual global public good of disease elimination. Given the global benefit that is expected from achieving the long-term goal of disease elimination, the international community should contribute to achieving this. More immediate potential global public goods could stem from improved knowledge and implementation strategies developed by PNG's TB program that could be adapted elsewhere to the benefit of the populations of other countries.

39. World Bank support provides a platform for engagement with government and DPs for a coordinated TB response. The World Bank can draw on its worldwide expertise and experiences in technical, procurement, FM, and safeguard areas to urgently address TB in targeted areas and at the same time build the government's capacity in developing and implementing TB strategies.

40. The World Bank also adds value by strategically linking this operation with its existing health engagement in PNG on health system strengthening. This includes the technical assistance on public FM, analytical work, and policy dialogues on financing and institutional sustainability of donor-financed programs.

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<sup>40</sup> NDOH (National Department of Health). 2015. MDR/XDR-TB Emergency Response Team Annual Report, Papua New Guinea.



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